

# CITY OF CERRITOS



JANUARY 2022

**FINAL**

## **2020 URBAN WATER MANAGEMENT PLAN**



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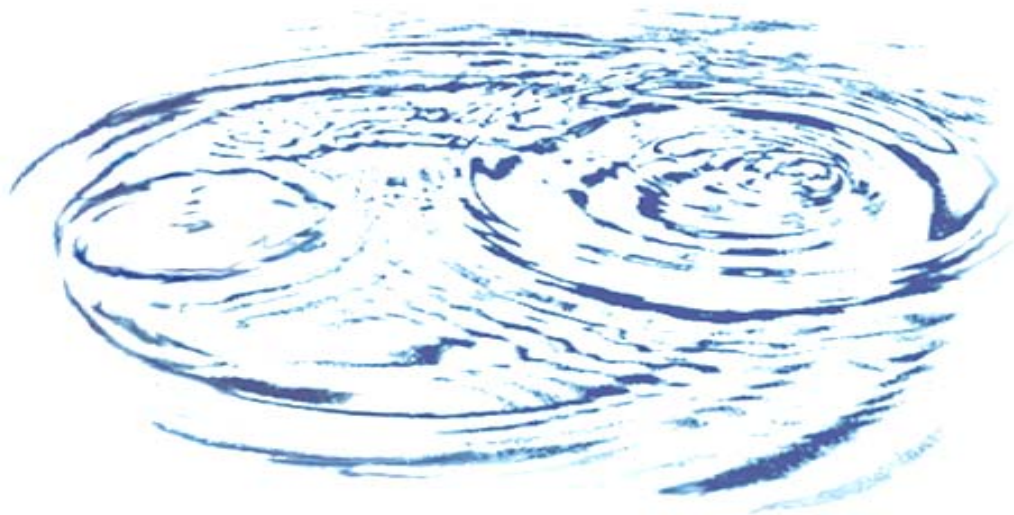
**FINAL**



**City of Cerritos**

**2020**

**Urban Water Management Plan**



**JANUARY 2022**



861 Village Oaks Drive, Suite 100 • Covina, California 91724  
Phone: (626) 967-6202 • FAX: (626) 331-7065 • Web site: [www.stetsonengineers.com](http://www.stetsonengineers.com)  
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# TABLE OF CONTENTS

Page

<b>CHAPTER 1.....</b>	<b>1-1</b>
<b>URBAN WATER MANAGEMENT PLAN INTRODUCTION AND OVERVIEW .....</b>	<b>1-1</b>
1.1    RECOMMENDED UWMP ORGANIZATION .....	1-4
1.2    UWMPS IN RELATION TO OTHER EFFORTS.....	1-5
1.3    UWMPS AND GRANT OR LOAN ELIGIBILITY.....	1-5
1.4    DEMONSTRATION OF CONSISTENCY WITH THE DELTA PLAN FOR PARTICIPANTS IN COVERED ACTIONS .....	1-6
1.5    TIPS FOR UWMP PREPARERS .....	1-7
<b>CHAPTER 2.....</b>	<b>2-1</b>
<b>PLAN PREPARATION .....</b>	<b>2-1</b>
2.1    PLAN PREPARATION.....	2-2
2.2    BASIS FOR PREPARING A PLAN .....	2-3
2.2.1    PUBLIC WATER SYSTEMS .....	2-4
2.2.2    SUPPLIERS SERVING MULTIPLE SERVICE AREAS / PUBLIC WATER SYSTEMS.....	2-5
2.3    REGIONAL PLANNING .....	2-5
2.4    INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE .....	2-6
2.4.1    REGIONAL UWMP .....	2-7
2.4.2    REGIONAL ALLIANCE .....	2-7
2.5    FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE.....	2-8
2.5.1    FISCAL OR CALENDAR YEAR .....	2-8
2.5.2    REPORTING COMPLETE 2020 DATA.....	2-9
2.5.3    UNITS OF MEASURE .....	2-9
2.6    COORDINATION AND OUTREACH .....	2-9
2.6.1    WHOLESALE AND RETAIL COORDINATION .....	2-9
2.6.2    COORDINATION WITH OTHER AGENCIES AND THE COMMUNITY .....	2-10
2.6.3    NOTICE TO CITIES AND COUNTIES .....	2-11
<b>CHAPTER 3.....</b>	<b>3-1</b>
<b>SYSTEM DESCRIPTION .....</b>	<b>3-1</b>
3.1    GENERAL DESCRIPTION.....	3-2
3.2    SERVICE AREA BOUNDARY MAPS .....	3-3
3.3    SERVICE AREA CLIMATE .....	3-3
3.4    SERVICE AREA POPULATION AND DEMOGRAPHICS .....	3-5
3.4.1    SERVICE AREA POPULATION .....	3-5
3.4.2    OTHER SOCIAL, ECONOMIC, AND DEMOGRAPHIC FACTORS .....	3-9
3.5    LAND USES WITHIN SERVICE AREA .....	3-9

**TABLE OF CONTENTS  
(Continued)**

	<u>Page</u>
<b>CHAPTER 4.....</b>	<b>4-1</b>
<b>WATER USE CHARACTERIZATION.....</b>	<b>4-1</b>
4.1    NON-POTABLE VERSUS POTABLE WATER USE .....	4-2
4.2    PAST, CURRENT, AND PROJECTED WATER USES BY SECTOR.....	4-3
4.2.1    WATER USE SECTORS LISTED IN WATER CODE.....	4-7
4.2.2    WATER USE SECTORS IN ADDITION TO THOSE LISTED IN WATER CODE.....	4-9
4.2.3    PAST WATER USE .....	4-9
4.2.4    DISTRIBUTION SYSTEM WATER LOSS.....	4-9
4.2.5    CURRENT WATER USE.....	4-12
4.2.6    PROJECTED WATER USE.....	4-13
4.2.7    CHARACTERISTIC FIVE-YEAR WATER USE .....	4-15
4.3    WORKSHEETS AND REPORTING TABLES .....	4-16
4.3.1    OPTIONAL PLANNING TOOL USE ANALYSIS WORKSHEET .....	4-16
4.3.2    DWR 2020 UWMP SUBMITTAL TABLES .....	4-17
4.4    WATER USE FOR LOWER INCOME HOUSEHOLDS.....	4-17
4.5    CLIMATE CHANGE CONSIDERATIONS .....	4-19
<b>CHAPTER 5.....</b>	<b>5-1</b>
<b>SB X7-7 BASELINE, TARGETS, AND 2020 COMPLIANCE.....</b>	<b>5-1</b>
5.1    GUIDANCE FOR WHOLESALE SUPPLIERS .....	5-2
5.2    SB X7-7 FORMS AND SUMMARY TABLE.....	5-2
5.2.1    SB X7-7 VERIFICATION FORM (BASELINES AND TARGETS) .....	5-3
5.2.2    SB X7-7 COMPLIANCE FORM .....	5-4
5.2.3    SUBMITTAL TABLES 5-1 AND 5-2 .....	5-4
5.2.4    REGIONAL UWMP/ REGIONAL ALLIANCE .....	5-5
5.3    BASELINE AND TARGET CALCULATIONS FOR 2020 UWMPs .....	5-5
5.3.1    SUPPLIER SUBMITTED 2015 UWMP, NO CHANGE TO SERVICE AREA.....	5-5
5.4    METHODS FOR CALCULATING POPULATION AND GROSS WATER USE.....	5-6
5.4.1    SERVICE AREA POPULATION .....	5-6
5.4.2    GROSS WATER USE .....	5-8
5.5    2020 COMPLIANCE DAILY PER CAPITA WATER USE (GPCD).....	5-9
5.5.1    2020 ADJUSTMENTS FOR FACTORS OUTSIDE OF SUPPLIER’S CONTROL.....	5-10
5.5.2    2020 ADJUSTMENTS TO 2020 GROSS WATER USE.....	5-10
5.5.3    IF SUPPLIER DOES NOT MEET 2020 TARGET.....	5-11
5.6    REGIONAL ALLIANCE .....	5-11
<b>CHAPTER 6.....</b>	<b>6-1</b>
<b>WATER SUPPLY CHARACTERIZATION .....</b>	<b>6-1</b>
6.1    WATER SUPPLY ANALYSIS OVERVIEW .....	6-3
6.1.1    SPECIFIC ANALYSIS APPLICABLE TO ALL WATER SUPPLY SOURCES.....	6-4
6.1.2    OTHER CHARACTERIZATION CONSIDERATIONS .....	6-7

**TABLE OF CONTENTS  
(Continued)**

	<u>Page</u>
6.1.3	OPTIONAL PLANNING TOOL .....6-7
6.2	NARRATIVE SECTIONS FOR SUPPLIER’S UWMP WATER SUPPLY CHARACTERIZATION .....6-8
6.2.1	PURCHASED OR IMPORTED WATER .....6-8
6.2.2	GROUNDWATER.....6-10
6.2.3	SURFACE WATER.....6-19
6.2.4	STORMWATER .....6-19
6.2.5	WASTEWATER AND RECYCLED WATER.....6-20
6.2.6	DESALINATED WATER OPPORTUNITIES.....6-30
6.2.7	WATER EXCHANGES AND TRANSFERS .....6-31
6.2.8	FUTURE WATER PROJECTS.....6-33
6.2.9	SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER.....6-34
6.2.10	SPECIAL CONDITIONS.....6-37
6.3	SUBMITTAL TABLES COMPLETION USING THE OPTIONAL PLANNING TOOL .....6-38
6.4	ENERGY USE .....6-38
<b>CHAPTER 7.....</b>	<b>7-1</b>
<b>WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT .....</b>	<b>7-1</b>
7.1	INTRODUCTION.....7-2
7.2	WATER SERVICE RELIABILITY ASSESSMENT .....7-3
7.2.1	SERVICE RELIABILITY - CONSTRAINTS ON WATER SOURCES .....7-6
7.2.2	SERVICE RELIABILITY - YEAR TYPE CHARACTERIZATION .....7-7
7.2.3	WATER SERVICE RELIABILITY – SUPPLY AND DEMAND COMPARISON.....7-9
7.2.4	DESCRIPTION OF MANAGEMENT TOOLS AND OPTIONS .....7-13
7.3	DROUGHT RISK ASSESSMENT .....7-14
7.3.1	DRA DATA, METHODS, AND BASIS FOR WATER SHORTAGE CONDITION.....7-15
7.3.2	DRA INDIVIDUAL WATER SOURCE RELIABILITY .....7-16
7.3.3	DRA TOTAL WATER SUPPLY AND USE COMPARISON .....7-19
7.3.4	OPTIONAL PLANNING TOOL WORKBOOK.....7-21
<b>CHAPTER 8.....</b>	<b>8-1</b>
<b>WATER SHORTAGE CONTINGENCY PLAN .....</b>	<b>8-1</b>
8.1	WATER SUPPLY RELIABILITY ANALYSIS .....8-3
8.2	ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES .....8-4
8.2.1	DECISION MAKING PROCESS .....8-5
8.2.2	DATA AND METHODOLOGIES .....8-6
8.3	SIX STANDARD WATER SHORTAGE LEVELS.....8-8
8.4	SHORTAGE RESPONSE ACTIONS .....8-11
8.4.1	DEMAND REDUCTION .....8-11
8.4.2	SUPPLY AUGMENTATION.....8-16
8.4.3	OPERATIONAL CHANGES .....8-17
8.4.4	ADDITIONAL MANDATORY RESTRICTIONS .....8-18



**TABLE OF CONTENTS  
(Continued)**

	<u>Page</u>
8.4.5 EMERGENCY RESPONSE PLAN .....	8-18
8.4.6 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN .....	8-20
8.4.7 SHORTAGE RESPONSE ACTION EFFECTIVENESS .....	8-23
8.5 COMMUNICATION PROTOCOLS .....	8-25
8.6 COMPLIANCE AND ENFORCEMENT .....	8-26
8.7 LEGAL AUTHORITIES.....	8-28
8.8 FINANCIAL CONSEQUENCES OF WSCP .....	8-29
8.9 MONITORING AND REPORTING.....	8-30
8.10 WSCP REFINEMENT PROCEDURES.....	8-31
8.11 SPECIAL WATER FEATURE DISTINCTION .....	8-32
8.12 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY.....	8-33
<b>CHAPTER 9.....</b>	<b>9-1</b>
<b>DEMAND MANAGEMENT MEASURES.....</b>	<b>9-1</b>
9.1 DEMAND MANAGEMENT MEASURES FOR WHOLESALE SUPPLIERS .....	9-2
9.2 EXISTING DEMAND MANAGEMENT MEASURES FOR RETAIL SUPPLIERS .....	9-3
9.2.1 WATER WASTE PREVENTION ORDINANCES .....	9-3
9.2.2 METERING.....	9-4
9.2.3 CONSERVATION PRICING.....	9-5
9.2.4 PUBLIC EDUCATION AND OUTREACH.....	9-5
9.2.5 PROGRAMS TO ASSESS AND MANAGE DISTRIBUTION SYSTEM REAL LOSS .....	9-6
9.2.6 WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT .....	9-7
9.2.7 OTHER DEMAND MANAGEMENT MEASURES .....	9-7
9.3 REPORTING IMPLEMENTATION .....	9-8
9.3.1 IMPLEMENTATION OVER THE PAST FIVE YEARS.....	9-8
9.3.2 IMPLEMENTATION TO ACHIEVE WATER USE TARGETS.....	9-11
9.4 WATER USE OBJECTIVES (FUTURE REQUIREMENTS).....	9-11
<b>CHAPTER 10.....</b>	<b>10-1</b>
<b>PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION .....</b>	<b>10-1</b>
10.1 INCLUSION OF ALL 2020 DATA.....	10-2
10.2 NOTICE OF PUBLIC HEARING .....	10-2
10.2.1 NOTICE TO CITIES AND COUNTIES .....	10-3
10.2.2 NOTICE TO THE PUBLIC.....	10-5
10.3 PUBLIC HEARING AND ADOPTION .....	10-6
10.3.1 PUBLIC HEARING.....	10-6
10.3.2 ADOPTION.....	10-6
10.4 PLAN SUBMITTAL .....	10-7
10.4.1 SUBMITTING A UWMP AND WATER SHORTAGE CONTINGENCY PLAN TO DWR .....	10-7
10.4.2 ELECTRONIC DATA SUBMITTAL.....	10-8

**TABLE OF CONTENTS  
(Continued)**

	<u>Page</u>
10.4.3 SUBMITTING A UWMP, INCLUDING WSCP, TO THE CALIFORNIA STATE LIBRARY .....	10-8
10.4.4 SUBMITTING A UWMP TO CITIES AND COUNTIES.....	10-9
10.5 PUBLIC AVAILABILITY .....	10-9
10.6 NOTIFICATION TO PUBLIC UTILITIES COMMISSION.....	10-10
10.7 AMENDING AN ADOPTED UWMP OR WATER SHORTAGE CONTINGENCY PLAN .....	10-10
10.7.1 AMENDING A UWMP .....	10-10
10.7.2 AMENDING A WATER SHORTAGE CONTINGENCY PLAN .....	10-11

**TABLE OF CONTENTS  
(Continued)**

**LIST OF TABLES**

Table 2-1	Public Water Systems .....	2-5
Table 2-2	Plan Identification Type .....	2-6
Table 2-3	Supplier Identification.....	2-8
Table 2-4	Water Supplier Information Exchange.....	2-10
Table 3-1	Population – Current and Projected .....	3-8
Table 4-1	Demands for Potable and Non-Potable Water - Actual.....	4-4
Table 4-2	Use for Potable and Non-Potable Water - Projected .....	4-5
Table 4-3	Total Gross Water Use (Potable and Non-Potable) .....	4-6
Table 4-4	12 Month Water Loss Audit Report .....	4-12
Table 4-5	Inclusion in Water Use Projections.....	4-18
Table 5-1	Baselines and Targets Summary from SB X7-7 Verification Form .....	5-4
Table 5-2	2020 Compliance from SB X7-7 2020 Compliance Form .....	5-5
Table 6-1	Groundwater Volume Pumped.....	6-19
Table 6-2	Wastewater Collected Within Area in 2020 .....	6-24
Table 6-3	Wastewater Treatment and Discharge within Service Area in 2020.....	6-25
Table 6-4	Current and Projected Recycled Water Direct Beneficial Uses Within Service Area .....	6-27
Table 6-5	2015 Recycled Water Use Projection Compared to 2020 Actual .....	6-28
Table 6-6	Methods to Expand Future Recycled Water Use.....	6-30
Table 6-7	Expected Future Water Supply Projects or Programs .....	6-34
Table 6-8	Water Supplies - Actual.....	6-36
Table 6-9	Water Supplies – Projected .....	6-37
Table 7-1	Basis of Water Year Data (Reliability Assessment) .....	7-8
Table 7-2	Normal Year Supply and Demand Comparison .....	7-10
Table 7-3	Single Dry Year Supply and Demand Comparison .....	7-11
Table 7-4	Multiple Dry Years Supply and Demand Comparison.....	7-12
Table 7-5	Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b).....	7-20
Table 8-1	Water Shortage Contingency Planning Levels .....	8-10
Table 8-2	Demand Reduction Actions .....	8-15
Table 8-3	Supply Augmentation and Other Actions .....	8-16
Table 10-1	Notification to Cities and Counties .....	10-4



## TABLE OF CONTENTS (Continued)

### LIST OF FIGURES

- Figure 1 Water Service Area
- Figure 2 Water Service Area and City Boundaries
- Figure 3 Central Basin Map

## TABLE OF CONTENTS (Continued)

### LIST OF APPENDICES

Appendix A	DWR Standardized Tables
Appendix B	Demonstration of Reduced Imported Water Reliance
Appendix C	Completed Plan Checklist
Appendix D	60 – Day Notification Letters and Public Hearing Notifications
Appendix E	AWWA Water Loss Audit Reports
Appendix F	Climate Change Considerations (Cal- Adapt Data)
Appendix G	SB X7-7 Verification Form
Appendix H	SB X7-7 2020 Compliance Form
Appendix I	Central Basin Judgment
Appendix J	Recycled Water System
Appendix K	Water Lease Records
Appendix L	Water Waste Resolutions
Appendix M	City of Cerritos Hazard Mitigation Plan
Appendix N	Los Angeles County All-Hazards Mitigation Plan
Appendix O	Water Rates Structure
Appendix P	Resolution Adopting 2020 Plan and WSCP

## TABLE OF CONTENTS (Continued)

### LIST OF ACRONYMS

AB	Assembly Bill
AF	Acre-Feet
AFY	Acre-Feet per Year
Annual Assessment	Annual Water Supply and Demand Assessment
AWWA	American Water Works Association
CBMWD	Central Basin Municipal Water District
CY	Calendar Year
CIMIS	California Irrigation Management Information System
CWC	California Water Code
DAC	Disadvantaged Communities
Delta	Sacramento- San Joaquin Delta
DOF	California Department of Finance
DMM	Demand Management Measures
DRA	Drought Risk Assessment
DWR	California Department of Water Resources
ERP	Emergency Response Plan
ETo	Evapotranspiration
GCM	General Circulation Models
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
GIS	Geographical Information Systems
GSP	Groundwater Sustainability Plan
GSWC	Golden State Water Company
Judgement	The Central Basin Judgement
JWPCP	Joint Water Pollution Control Plant
kWh	Kilowatt Hours
LACSD	Sanitation Districts of Los Angeles County
LVL	Leo J. Vander Lans Advanced Water Treatment Facility
MGD	Million gallons per day
MSL	Mean Sea Level
MWD	Metropolitan Water District of Southern California
NAICS	North American Industry Classification System
PCE	Perchloroethylene
PFAS	Per- and Poly- Fluoroalkyl Substances
Plan	Urban Water Management Plan
RCP	Representative Concentration Pathway



## **TABLE OF CONTENTS (Continued)**

RDM	MWD's Robust Decision Making Approach
RRA	Risk and Resilience Assessment
SB	Senate Bill
SB X7-7	The Water Conservation Act of 2009
SCAG	Southern California Association of Governments
SCE	Southern California Edison
SGMA	Sustainable Groundwater Management Act of 2014
SWRCB-DDW	State Water Resources Control Board - Division of Drinking Water
SWP	State Water Project
TCE	Trichloroethylene
TDS	Total Dissolved Solids
The City	The City of Cerritos
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
VOCs	Volatile Organic Chemicals
Water Code	California Water Code
WIN	Central Basin Water Independence Now Program
WRCC	Western Regional Climate Center
WRD	Water Replenishment District of Southern California
WRP	Water Reclamation Plant
WSCP	Water Shortage Contingency Plan
WSAP	Water Supply Allocation Plan
WUCA	Water Utility Climate Alliance
WUE	Water Use Efficiency

**TABLE OF CONTENTS**  
**(Continued)**

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## **CHAPTER 1**

### **URBAN WATER MANAGEMENT PLAN INTRODUCTION AND OVERVIEW**

#### **LAY DESCRIPTION - INTRODUCTION**

An urban water supplier is defined (pursuant to Section 10617 of the California Water Code<sup>1</sup>) as “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.”

The City of Cerritos (City) is classified as an urban water supplier because it serves more than 3,000 customers (i.e. individual metered accounts) and it supplies more than 3,000 acre-feet of water annually to its customers for municipal purposes.

In accordance with the “Urban Water Management Planning Act”, which was enacted by the California Legislature in 1983, every urban water supplier (including the City) is required to prepare and adopt an Urban Water Management Plan (UWMP), periodically review its UWMP, and incorporate updated and new information into an updated UWMP at least once every five years.

The City’s most recent update was its 2015 UWMP (or 2015 Plan) which was submitted to, and approved by, the California Department of Water Resources (DWR). Urban water suppliers (including the City) are required to complete and submit their 2020 UWMPs to DWR by July 1<sup>st</sup>, 2021.

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<sup>1</sup> References to CWC Sections in this 2020 UWMP were obtained from <https://leginfo.ca.gov/>





The current requirements for preparing the UWMP are included in California Water Code (CWC) Sections 10608 through 10657. The City's 2020 UWMP (or 2020 Plan) was prepared consistent with the CWC and the recommended organization provided in DWR's Final "Urban Water Management Plan Guidebook 2020" (Final 2020 UWMP Guidebook), dated March 2021.

The UWMP provides urban water suppliers (including the City) with a reliable management action plan for long-term resource planning to ensure adequate water supplies are available to meet existing and future water supply needs. In addition, the 2020 UWMP incorporates water supply reliability determinations resulting from potential prolonged drought, regulatory revisions, and/or changing climatic conditions.

The City's 2020 Plan consists of the following Chapters:

- Chapter 1 Urban Water Management Plan Introduction and Overview
- Chapter 2 Plan Preparation
- Chapter 3 System Description
- Chapter 4 Water Use Characterization
- Chapter 5 SB X7-7 Baselines, Targets, and 2020 Compliance
- Chapter 6 Water Supply Characterization
- Chapter 7 Water Service Reliability and Drought Risk Assessment
- Chapter 8 Water Shortage Contingency Plan
- Chapter 9 Demand Management Measures
- Chapter 10 Plan Adoption, Submittal, and Implementation

A lay description is presented at the beginning of each of these Chapters.



## **LAY DESCRIPTION – CHAPTER 1**

### **URBAN WATER MANAGEMENT PLAN INTRODUCTION AND OVERVIEW**

Chapter 1 (Urban Water Management Plan Introduction and Overview) of the City's 2020 Plan discusses and provides the following:

- An overall lay description of the 2020 Plan, including California Water Code and Urban Water Management Plan Act requirements, is provided. The City is required to prepare an Urban Water Management Plan.
- The City's 2020 Plan was prepared consistent with the recommended organization provided in DWR's Final "Urban Water Management Plan Guidebook 2020", dated March 2021. A description regarding the organization of the 2020 Plan, including a summary of each Chapter, is provided. The City's Water Shortage Contingency Plan (discussed in Chapter 8) is also included in the 2020 Plan.
- The 2020 Plan incorporates DWR's water use and supply tables (standardized tables) for the reporting and submittal of UWMP data. These tables are included within the respective sections of the 2020 Plan and in Appendix A.
- The City's coordination efforts with other planning agencies are discussed, including coordination efforts with Central Basin Municipal Water District and the Southern California Association of Governments.
- The City's eligibility to receive grants and loans administered by the State of California and/or DWR, as a result of preparing the 2020 Plan, is discussed.
- Information is provided which demonstrates the City's prior, continued, and projected reduction on imported water supplies obtained (either directly or indirectly) from the Sacramento-San Joaquin Delta. The City has reduced its reliance on the imported water supplies for Calendar Year 2015 and Calendar Year 2020. In addition, the City is projected to continue reducing its reliance on imported water supplies through Calendar Year 2045.



- The checklist developed by DWR and used by the City to incorporate the specific UWMP requirements is discussed. The completed checklist is provided in Appendix C.

### 1.1 RECOMMENDED UWMP ORGANIZATION

The City's 2020 UWMP (2020 Plan) was prepared consistent with the recommended organization provided in DWR's Final "Urban Water Management Plan Guidebook 2020" (Final 2020 UWMP Guidebook), dated March 2021. The City's 2020 Plan consists of the following Chapters:

Chapter 1	Urban Water Management Plan Introduction and Overview
Chapter 2	Plan Preparation
Chapter 3	System Description
Chapter 4	Water Use Characterization
Chapter 5	SB X7-7 Baselines, Targets, and 2020 Compliance
Chapter 6	Water Supply Characterization
Chapter 7	Water Service Reliability and Drought Risk Assessment
Chapter 8	Water Shortage Contingency Plan
Chapter 9	Demand Management Measures
Chapter 10	Plan Adoption, Submittal, and Implementation

Pursuant to CWC requirements, the City's 2020 Plan incorporates DWR's water use and supply tables (standardized tables) for the reporting and submittal of UWMP data. DWR's standardized tables are provided within the body of the 2020 Plan text as well as in Appendix A. The City also submitted the UWMP data (standardized tables) electronically through DWR's Online Submittal Tool.



The City's 2020 Plan also provides supporting documents (appendices) including notification letters of the Plan update, public notice of the Plan hearing, and adoption resolution from the City's governing body. Further discussions regarding these supporting documents are provided within the individual Chapters of the City's 2020 Plan.

### 1.2 UWMPs IN RELATION TO OTHER EFFORTS

The City's 2020 Plan was prepared in coordination with planning agencies including the City of Cerritos Department of Public Works, Water and Power, the Los Angeles County Department of Regional Planning, and the Southern California Association of Governments<sup>2</sup> (SCAG). In addition, the City's 2020 Plan was prepared using management documents including the City's "General Plan 2004" and "Hazard Mitigation Plan 2016", and the County of Los Angeles 2019 "All- Hazards Mitigation Plan."

The City is a sub-agency of Central Basin Municipal Water District (CBMWD), a wholesale water agency. CBMWD prepared a 2020 Plan which is incorporated by reference in the City's 2020 Plan. In addition, the City provided its 2020 Plan to CBMWD which includes water use projections in five-year increments for a normal year, a single dry year, and a five consecutive year drought condition over the next 25 years.

### 1.3 UWMPs AND GRANT OR LOAN ELIGIBILITY

Pursuant to DWR's Final 2020 UWMP Guidebook:

*"In order for a Supplier to be eligible for any water grant or loan administered by DWR, the Supplier must have a current UWMP on file that has been determined by DWR to*

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<sup>2</sup> Population projection data was obtained from SCAG, as discussed in Section 3.4.



*address the requirements of the Water Code. A current UWMP must also be maintained by the Supplier throughout the term of any grant or loan administered by DWR. A UWMP may also be required in order to be eligible for other state funding, depending on the conditions that are specified in the funding guidelines. Suppliers are encouraged to seek guidance on the specifics of any state funding source from the respective funding agencies. The following sections of the Water Code are pertinent to Suppliers considering pursuit of grants or loans.”*

The City’s 2020 Plan has been prepared to meet eligibility requirements for grants and loans administered by the State and/or DWR.

### **1.4 DEMONSTRATION OF CONSISTENCY WITH THE DELTA PLAN FOR PARTICIPANTS IN COVERED ACTIONS**

Pursuant to DWR, an urban water supplier that anticipates participating in or receiving water from a proposed project (or “covered action”) such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta) should provide information in their 2015 and 2020 UWMPs for use in demonstrating consistency with Delta Plan Policy WR P1, “*Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance*”. In addition, pursuant to California Code of Regulations, Title 23, § 5003:

*(c)(1) Water suppliers that have done all of the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:*

*(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;*





*(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and*

*(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code section 1011(a).*

The City has reduced its reliance on the imported water supplies for CY 2015 and CY 2020. In addition, the City is projected to continue reducing its reliance on the imported water supplies through CY 2045. A further discussion which the City's measurable reduction in imported water reliance and improvement in regional self-reliance is provided in Appendix B.

### **1.5 TIPS FOR UWMP PREPARERS**

The City's 2020 Plan (which includes the City's 2020 Water Shortage Contingency Plan (WSCP)) is considered an update to the City's 2015 Plan. However, the 2020 Plan and the WSCP are considered stand-alone documents. As discussed in Section 1.1, the City's 2020 Plan was prepared consistent with the recommended organization provided in DWR's Final 2020 UWMP Guidebook.

A checklist of specific UWMP requirements is included in Appendix C. The checklist includes the page number where the required elements are addressed to assist in DWR's review of the submitted Plan.



## CHAPTER 2

### PLAN PREPARATION

#### LAY DESCRIPTION – CHAPTER 2

#### PLAN PREPARATION

Chapter 2 (Plan Preparation) of the City’s 2020 Plan discusses and provides the following:

- The basis for preparing an Urban Water Management Plan is provided. The City is required to prepare the 2020 Plan because it is an “urban water supplier” (The City serves more than 3,000 customers and it supplies more than 3,000 acre-feet of water annually to its customers for municipal purposes).
- The City is a “Public Water System” and is regulated by the State Water Resources Control Board - Division of Drinking Water. The City’s Public Water System numbers are provided in Table 2-1.
- The City’s Plan has been prepared as an “individual” plan rather than a “regional” plan in an effort to provide information specific to the City to best inform its employees, management and customers.
- Information presented in the City’s 2020 Plan is provided on a “calendar year” basis which is from January through December 31, 2020.
- Water quantities presented in the City’s 2020 Plan are provided on an “acre-foot” basis.
- The City’s coordination and outreach efforts with wholesale water agencies, other retail water agencies, and the community are described. The City coordinated the preparation of its 2020 Plan with the Los Angeles County, Metropolitan Water District of Southern California, Central Basin Municipal Water District, Golden



State Water Company, the Water Replenishment District of Southern California, and the Cities of La Palma, Santa Fe Springs, and Norwalk.

- The City's notification process to the cities and county within which the City provides water supplies is discussed.

### 2.1 PLAN PREPARATION

As discussed in Section 1.1, the City's 2020 Plan was prepared consistent with the recommended organization provided in DWR's Final 2020 UWMP Guidebook. Pursuant to DWR's Final 2020 UWMP Guidebook:

*"The California Water Code (Water Code) specifies several requirements for preparing a UWMP, including who is required to prepare a UWMP; how to prepare a UWMP, depending on whether the Supplier chooses to participate in a regional or individual planning effort; selection of reporting year-type; and coordination, notification, and outreach."*

Pursuant to CWC requirements, the City's 2020 Plan incorporates DWR's water use and supply tables (standardized tables) for the reporting and submittal of UWMP data.



## 2.2 BASIS FOR PREPARING A PLAN

### CWC 10617.

*"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. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.*

### CWC 10620.

*(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.*

### CWC 10621.

*(a) Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.*

The City's 2020 Plan was prepared in accordance with the UWMP Act which was established in 1983. The UWMP Act requires every "urban water supplier" to prepare and adopt a Plan, to periodically review its Plan at least once every five years and make any amendments or changes which are indicated by the review. An "Urban Water Supplier" is defined as 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 (AF) of water annually.

Section 10621(a) of the CWC states, "*Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update*". As a result, DWR requires the 2020 Plans be submitted by July 1, 2021.



The City is an “urban water supplier” pursuant to Section 10617 of the CWC and directly serves potable water to more than 3,000 customers and supplies more than 3,000 acre-feet per year (AFY) at retail for municipal purposes. The City’s 2020 Plan is an update to the City’s 2015 Plan.

### **2.2.1 PUBLIC WATER SYSTEMS**

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#### **CWC 10644.**

*(a)(2) The plan, or amendments to the plan, submitted to the department ... shall include any standardized forms, tables, or displays specified by the department.*

#### **California Health and Safety Code 116275.**

*(h) "Public water system" means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.*

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Pursuant to CWC requirements, the City’s 2020 Plan incorporates DWR’s standardized tables for the reporting and submittal of UWMP data. The standardized tables are provided within the body of the 2020 Plan text as well as in Appendix A. The City also submitted the UWMP data (from the standardized tables) electronically through DWR’s Online Submittal Tool.

In addition, the City is a Public Water System and is regulated by the State Water Resources Control Board - Division of Drinking Water (SWRCB-DDW). The SWRCB-DDW requires water agencies provide the number of connections, water usage, and other information annually. The information provided to SWRCB-DDW indicates the City serves potable water to more than 3,000 customers and supplies more than 3,000 AFY. Table 2-1 provides the City’s Public Water System name and number.



### 2.2.2 SUPPLIERS SERVING MULTIPLE SERVICE AREAS / PUBLIC WATER SYSTEMS

The City is a Public Water System which provides water service primarily within areas of the City of Cerritos and small portions of the City of La Palma. The City has prepared an individual 2020 Plan for this system. Table 2-1 provides the City’s Public Water System name and number.

Table 2-1 Public Water Systems

Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
<i>Add additional rows as needed</i>			
CA1910019	City of Cerritos	15,743	10,614
<b>TOTAL</b>		<b>15,743</b>	<b>10,614</b>
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>			
NOTES: The "Volume of Water Supplied 2020" includes recycled water supplies of 2,159 AF. Source for "Number of Municipal Connections 2020": <a href="https://sdwis.waterboards.ca.gov/PDWW/">https://sdwis.waterboards.ca.gov/PDWW/</a>			

### 2.3 REGIONAL PLANNING

The City has developed its 2020 Plan reporting solely on its service area to address all requirements of the CWC. The City’s 2020 Plan was not developed as a Regional Plan.





**2.4 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE**

As shown in Table 2-2, the City’s 2020 Plan is an “Individual UWMP”. The City has developed its 2020 Plan reporting solely on its service area to address all requirements of the CWC, including water use targets and baselines pursuant to SB X7-7 Water Conservation Act of 2009 reporting (discussed further in Chapter 5). The City notified and coordinated with appropriate regional agencies and constituents (See Section 2.6).

**Table 2-2 Plan Identification Type**

Submittal Table 2-2: Plan Identification		
Select Only One	Type of Plan	Name of RUWMP or Regional Alliance <i>if applicable</i> (select from drop down list)
<input checked="" type="checkbox"/>	<b>Individual UWMP</b>	
<input type="checkbox"/>	<input type="checkbox"/> Water Supplier is also a member of a RUWMP	
	<input type="checkbox"/> Water Supplier is also a member of a Regional Alliance	
<input type="checkbox"/>	<b>Regional Urban Water Management Plan (RUWMP)</b>	
NOTES:		



## 2.4.1 REGIONAL UWMP

### CWC 10620.

*(d)(1) An urban water supplier may satisfy the requirements of this part by participation in area wide, regional, watershed, or basin wide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.*

As indicated in Table 2-2, the City's 2020 Plan was developed as an "Individual UWMP" and not part of a Regional Plan.

## 2.4.2 REGIONAL ALLIANCE

### CWC 10608.20.

*(a)(1) ...Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28...*

### CWC 10608.28.

*(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:*

- (1) Through an urban wholesale water supplier.*
- (2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).*
- (3) Through a regional water management group as defined in Section 10537.*
- (4) By an integrated regional water management funding area.*
- (5) By hydrologic region.*
- (6) Through other appropriate geographic scales for which computation methods have been developed by the department.*

*(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.*

As indicated in Table 2-2, the City's 2020 Plan was developed as an "Individual UWMP" and not part of a Regional Alliance.



## 2.5 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

### CWC 10608.20.

*(a)(1) Urban retail water suppliers...may determine the targets on a fiscal or calendar year basis.*

### 2.5.1 FISCAL OR CALENDAR YEAR

The data provided in the City’s 2020 Plan is reported on a calendar year (CY) basis, unless noted otherwise, as shown in Table 2-3. A calendar year begins on January 1<sup>st</sup> of every year.

**Table 2-3 Supplier Identification**

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
<input type="checkbox"/>	Supplier is a wholesaler
<input checked="" type="checkbox"/>	Supplier is a retailer
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables are in calendar years
<input type="checkbox"/>	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
01/01	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>	
NOTES:	



## 2.5.2 REPORTING COMPLETE 2020 DATA

The data provided in the City's 2020 Plan is provided on a CY basis through December 31, 2020.

## 2.5.3 UNITS OF MEASURE

As shown in Table 2-3, the data provided in the City's 2020 Plan is reported in units of AF, unless noted otherwise.

## 2.6 COORDINATION AND OUTREACH

### CWC 10631.

*(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).*

### 2.6.1 WHOLESALE AND RETAIL COORDINATION

The City is a sub-agency of CBMWD, a wholesale agency. As indicated in Table 2-4, the City has provided its 2020 Plan to CBMWD which includes water use projections in five-year increments for a normal year, a single dry year, and a five consecutive year drought condition over the next 25 years.



Table 2-4 Water Supplier Information Exchange

Submittal Table 2-4 Retail: Water Supplier Information Exchange
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Wholesale Water Supplier Name
<i>Add additional rows as needed</i>
Central Basin Municipal Water District
NOTES:

**2.6.2 COORDINATION WITH OTHER AGENCIES AND THE COMMUNITY**

**CWC 10620.**

*(d)(3) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

**CWC 10642.**

*Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan...*

The City is a retail water supplier that serves customers in the Cities of Cerritos and La Palma. The City is required to coordinate the preparation of the Plan with appropriate agencies in the area, including appropriate water suppliers that share a common source. Therefore, the City coordinated the preparation of its 2020 Plan with the Los Angeles County, Metropolitan Water District of Southern California, Central Basin Municipal Water



District, Golden State Water Company, the Water Replenishment District of Southern California, and the Cities of La Palma, Santa Fe Springs, and Norwalk. As discussed in Section 10.2, the City notified these agencies, as well as the cities and county within which the City provides water supplies, at least sixty (60) days prior to the public hearing of the preparation of the 2020 Plan and invited them to participate in the development of the 2020 Plan. A copy of the notification letters sent to these agencies is provided in Appendix D.

### 2.6.3 NOTICE TO CITIES AND COUNTIES

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#### [CWC 10621.](#)

*(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

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As discussed in Section 10.2, notification was provided to the cities and county within which the City provides water supplies that the City was reviewing and considering amendments (updates) to the previous 2015 Plan, and as a result preparing the 2020 Plan. Notification was provided at least 60 days prior to the public hearing (see Appendix D).



## CHAPTER 3

### SYSTEM DESCRIPTION

#### LAY DESCRIPTION – CHAPTER 3

#### SYSTEM DESCRIPTION

Chapter 3 (System Description) of the City's 2020 Plan discusses and provides the following:

- A description of the City's service area is provided. The City provides water service to residential (single-family and multi-family), commercial, institutional, and open space customers within the City of Cerritos and small portions of the City of La Palma. The City's service area is generally bordered on the north by the City of Norwalk and the City of Santa Fe Springs, on the east by the City of Buena Park and the City of La Mirada, on the south by the City of La Palma, on the southwest by the City of Lakewood, and on the west by the City of Bellflower.
- The City's water service area encompasses an area of approximately 9 square miles. The location of the City's water service area is provided in Figure 1.
- A description regarding the City's water service area climate is provided. The monthly historical average temperatures (including minimum and maximum), monthly historical average rainfall, and monthly evapotranspiration in the vicinity of the City's service area is summarized. The sources of the climate information are also discussed.
- The population within the City's water service area is discussed and projected. The sources of the population information are also discussed. The City provides water service to an area with a current population of 50,143. The City is projected to have a population of 56,433 by Calendar Year 2045.



- A discussion of land use information used by the City to develop the 2020 Plan is provided. The City reviewed the current and projected land uses within its service area. The City also reviewed data provided by the Southern California of Governments, the Department of Finance, and the United States Census Bureau and prepared for counties, cities, and unincorporated areas within Southern California.

### 3.1 GENERAL DESCRIPTION

#### CWC 10631.

*(a) Describe the service area of the supplier, including current and projected population, climate, and other social, economic, and demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available. The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier's water management planning. Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.*

The City of Cerritos was officially incorporated in 1956 as the City of Dairy Valley. The City's water service area is approximately 9 square miles and is located within the southern region of Los Angeles County. The service area covers approximately 90 percent of the land within the City's municipal boundaries and a small area in the City of La Palma. The City is bounded on the north by the City of Norwalk and the City of Santa Fe Springs, on the east by the City of Buena Park and the City of La Mirada, on the south by the City of La Palma, on southwest by the City of Lakewood, and on the west by the City of Bellflower. Figure 1 shows the City's service area boundaries. The service area consists of residential (single-family and multi-family), commercial, institutional, and open space land uses. The City provides domestic water from three groundwater wells within





the Central Basin, imported surface water from MWD through CBMWD, and recycled water from the Sanitation Districts of Los Angeles County (LACSD).

### 3.2 SERVICE AREA BOUNDARY MAPS

As discussed in Section 3.1, the City's service area covers approximately 9 square miles in the southern region of Los Angeles County. A service area boundary map is provided on Figure 1. The City's water service area boundary relative to the municipal boundaries of the Cities of Artesia, Bellflower, Buena Park, La Palma, Lakewood, and Norwalk as well as unincorporated areas of Los Angeles County is provided on Figure 2.

The City's service area map was submitted online through DWR's Population Tool in a "KML" file format (i.e. Google Earth format). The KML file was originally created in a Geographical Information Systems (GIS) shape file format and converted into a KML format. To the extent information was available, metadata was included in the KML file (including map projection, contact information, start and end dates for which the map is valid, constraints, attribute table definitions, and digitizing base).

### 3.3 SERVICE AREA CLIMATE

#### CWC 10631.

*(a) Describe the service area of the supplier, including ... climate...*

#### CWC 10630.

*It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied, while accounting for impacts from climate change.*



The monthly historical average temperatures (including minimum and maximum), monthly historical average rainfall, and monthly evapotranspiration (ETo) in the vicinity of the City’s service area is summarized in the tabulation below. Historical climate information was obtained from the Western Regional Climate Center (WRCC) and from DWR’s California Irrigation Management Information System (CIMIS).

**Service Area Climate Information**

Month	Average Temperature (F)	Average Minimum Temperature (F)	Average Maximum Temperature (F)	Average Total Precipitation (Inches)	ETo (Inches)
January	58.6	47.8	69.6	3.2	1.94
February	60.2	48.8	71.4	3.2	2.36
March	61.6	50.4	72.9	2.2	3.67
April	65.5	53.3	77.6	1.0	4.58
May	68.3	57.3	79.4	0.2	4.74
June	72.5	60.9	84.0	0.1	4.89
July	76.5	64.2	88.6	0.0	5.64
August	77.2	65.1	89.5	0.1	5.45
September	75.6	63.6	87.7	0.3	4.48
October	70.6	58.5	82.9	0.5	3.21
November	63.4	51.5	75.4	1.4	2.08
December	59.0	47.4	70.5	2.0	1.66
Annual	67.0	55.3	79.1	14.5	44.7

**Source:**

Historical average monthly precipitation information was obtained from the Western Regional Climate Center (<http://www.wrcc.dri.edu/>) and is based on data collected from Station 049660 (Whittier City Yard, California) from 1949 through 2014. Historical average monthly temperature information was obtained from the Western Regional Climate Center (<http://www.wrcc.dri.edu/>) and is based on data collected from Station 045790 (Montebello, California) from 1979 through 2011. Historical monthly average ETo information was obtained from the California Irrigation Management Information Systems (<http://www.cimis.water.ca.gov>) and is based on data collected from Station 174 (Long Beach).



The historical average rainfall in the vicinity of the City's service area is 14.5 inches. The City's service area has a dry climate where the average minimum monthly temperature reaches approximately 47 degrees Fahrenheit. The warm, dry summers reach average maximum monthly temperatures of approximately 89 degrees Fahrenheit. Although changes in climatic conditions may have an impact (as discussed in Section 4.5), the projected water supply demands will be based on an average year, a single dry year, and a five consecutive year drought condition, based on historical data and projected demands. Precipitation within the vicinity of the City's service area is discussed further in Section 7.2.

A discussion of the City's source of supply, how that source may be impacted by climate change, and the proactive actions the City and other local/regional water managers may take to address the potential climate change on water supplies is provided in Section 4.5.

### 3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

#### 3.4.1 SERVICE AREA POPULATION

##### CWC 10631.

*(a) Describe the service area of the supplier, including current and projected population... The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.*

The City provides water service to an area with a current population of approximately 50,143. Table 3-1 presents the current and projected population of the area encompassed by the City's service area from CY 2020 to CY 2045. The City is projected to have a population of 56,433 by CY 2045.



The City initially reviewed the available historical populations within its service area for population growth trends. The City determined historical U.S. Census population within its service area using DWR's Population Tool (<https://wuedata.water.ca.gov/>). The City's service area boundary was uploaded to DWR's Population Tool in a "KML" file format (i.e. Google Earth format). The KML file was originally created in GIS shapefile format and converted into a KML format. The uploaded KML file represents The City's service area boundary from 1990 to present (2020). DWR's Population Tool utilized U.S. Census data from 1990, 2000, and 2010, along with the City's service area boundary, to estimate the population served by the City in the years 1990, 2000, 2010, and 2020.

The City reviewed population projection estimates from data provided by SCAG. The data provided by SCAG was based on "The 2020-2045 Regional Transportation Plan / Sustainable Communities Strategy of the Southern California Association of Governments", dated September 2020. Population projection data was also provided in SCAG's "Pre-Certified Local Housing Data for the City of Cerritos", dated April 2021.

The City's Plan incorporates the 2020 population estimate of approximately 50,143 for the City of Cerritos utilizing data from the U.S. Census American Community Survey<sup>3</sup> and from the California Census 2020<sup>4</sup>. The 2020 population estimated is consistent with the population estimates from the other sources discussed above, including DWR's Population Tool and projection data from the SCAG reports. The CY 2020 population is also consistent with the historical population growth trends.

A discussion of the methodology used to calculate the current CY 2020 population within the City's service area is also provided in Section 5.4 and is consistent with DWR requirements. This current CY 2020 population was used to determine compliance with the City's SB X7-7 water use target for 2020, as discussed in Section 5.5.

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<sup>3</sup> <https://data.census.gov/cedsci/table?q=1600000US0612552&tid=ACSDP5Y2019.DP05>

<sup>4</sup> <https://census.ca.gov/reports/#htc-fact-sheets> (Census 2020 California Hard-to-Count Fact Sheet, Cerritos – Los Angeles County)



Projected populations in the City’s service area were based on growth rate projections obtained from data provided by SCAG in their September 2020 report. The data provided by SCAG incorporates demographic trends, existing land use, general plan land use policies, and input and projections through the year 2045 from the Department of Finance (DOF) and the U.S. Census Bureau for counties, cities, and unincorporated areas within Southern California. In addition, SCAG has recently developed a Regional Housing Needs Assessment (RHNA) methodology for the 6th cycle RHNA. RHNA is a representation of future housing needs for all income levels in a jurisdiction and is a requirement of California State Housing Law. Every jurisdiction is required to plan for its RHNA allocation in the Housing Element of its General Plan. Pursuant to SCAG’s “*6th Cycle Final RHNA Allocation*”, adopted March 2021 and modified in June 2021, the total RHNA allocation of housing within the City of Cerritos through 2029 is estimated at 1,908 units (including 679 “very-low” income units, 345 “low” income units, 332 “moderate” income units, and 552 “above moderate” income units). Based on the City’s average household size of 3.1 persons, the total population growth resulting from the RHNA housing allocation through 2029 is estimated at approximately 5,915 people. The City’s 2020 Plan incorporates currently available population projections from SCAG and the estimated population growth based on the RHNA housing allocation. The City will consider updating its Plan, or including information in its 2025 Plan, when updated SCAG population projections become available.



Table 3-1 Population – Current and Projected

Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045(opt)
	50,143	53,172	56,199	56,276	56,354	56,433

NOTES: 2020 population was obtained from the California Census 2020 and from the United States Census Bureau's American Community Survey. 2025 and 2030 populations are based on housing unit allocations identified in SCAG's Regional Housing Needs Assessment. Growth rates obtained from SCAG data were applied to the 2030 population and projected through 2045. (See Section 3.4.1).

*DISCLAIMER AND LEGAL NOTICE: This Urban Water Management Plan and Water Shortage Contingency Plan (collectively, the Plan) uses population projections based on data provided by the Southern California Association of Governments (SCAG), which provided to the City two different projections of population growth. The first projection had an increase from 2020 to 2030, a 10-year period, of approximately 140 persons as population growth. The second projection had an increase from 2021 to 2029, an 8-year period, of 1,908 residential housing units, which equates to an increase in population for this 8-year period (assuming application of the City’s average household size of 3.1 persons) of 5,915 persons as population growth. Despite the City’s efforts to obtain clarification from State legislative leaders in the State Senate and Assembly, the Director of the California Department of Water Resources, and Executive Director of SCAG, no response was provided to the City for clarification or guidance regarding which population growth assumption should be used in this Plan. The City recognizes that two separate and potentially conflicting State laws apply with respect to SCAG and its population growth forecasts, with the first State law set forth in the Urban Water Management Planning Act (Water Code § 10610 et seq.), and the second State law set forth in the Planning and Zoning Law and, specifically, the statutes commonly referred to as the Housing Element Law (Government Code § 65580 et seq.). In order for this Plan to be consistent with the City’s contemporaneous Housing Element Update, and in order for this Plan to more accurately describe and evaluate sources of water supply, reasonable and practical efficient uses of water, and water reclamation and demand management activities, as required by Water Code § 10615, this Plan uses the higher population projections from SCAG, i.e., an assumption of 5,915 persons over the 8-year period, for purposes of forecast population in the City for the applicable 5-year period covered by this Plan.*



### 3.4.2 OTHER SOCIAL, ECONOMIC, AND DEMOGRAPHIC FACTORS

#### CWC 10631.

*(a) Describe the service area of the supplier, including... other social, economic, and demographic factors affecting the supplier's water management planning.*

No other demographic factors affect the City's water management planning. However, increased population will have an impact on water demand. At this time, there are no new developments in the City's service area that significantly impact current water demands. The Housing Element of the City's General Plan has been updated to include the 6th Cycle Final RHNA Allocation.

### 3.5 LAND USES WITHIN SERVICE AREA

The City reviewed the current and projected land uses within its service area during the preparation of this 2020 Plan. Information regarding current and projected land uses is included in the City's "General Plan 2004". The existing land uses within the City's service area includes residential (single-family and multi-family), commercial, institutional, and open space. The projected land uses within the City's service area are expected to remain similar to the existing land uses. In addition, although mostly built-out, the projected population within the City's service area is anticipated to increase (as discussed in Section 3.4). A discussion of the existing and projected water uses for the individual water use sectors within the City's service area, which includes the different land uses, is provided in Section 4.2. As discussed in Section 2.6, the City coordinated the preparation of the 2020 Plan with the Cities of Cerritos, Norwalk, and Santa Fe Springs, the County of Los Angeles, and other agencies.

As discussed in Section 3.4, the City obtained data from the SCAG document entitled "The 2020-2045 Regional Transportation Plan / Sustainable Communities Strategy of the



Southern California Association of Governments", dated September 2020. Projected populations in the City's service area were based on growth rate projections developed by SCAG. The data provided by SCAG incorporates demographic trends, existing land use, general plan land use policies, and input and projections through the year 2045 from the DOF and the U.S. Census Bureau for counties, cities, and unincorporated areas within Southern California





## **CHAPTER 4**

### **WATER USE CHARACTERIZATION**

#### **LAY DESCRIPTION – CHAPTER 4**

#### **WATER USE CHARACTERIZATION**

Chapter 4 (Water Use Characterization) of the City’s 2020 Plan discusses and provides the following:

- The City provides water service to individual “water use sectors”. These water use sectors include single-family residential, multi-family, commercial, institutional (and governmental), and open space. Individual descriptions for these water use sectors are provided in Section 4.2.1.
- The City’s total water demands (including potable and recycled water) over the past 10 years have ranged from 9,946 AFY to 11,910 AFY, with an average of 10,894 AFY. The City currently measures its water use through meter data and billing records.
- The City conducts an annual water loss audit to identify distribution system water losses. Water losses can result from pipeline leaks and inaccurate metering due to faulty meters. Water loss estimates are incorporated into the City’s projected water demands.
- The City’s current and projected water demands are provided in five-year increments over the next 25 years and are provided (through CY 2045) as shown on Table 4-3.
- The City’s water demand projections incorporate water savings which are the result of implementation of new plumbing codes along with consumer awareness of the need to conserve water.



- The projected water demands for lower income households are identified and are included in the City's total projected water demands.
- The City's source of water supply and how this source may be impacted by climate change are discussed. The proactive actions the City and other local/regional water managers may take to address the potential climate change impacts on water supplies are also discussed.
- The City will be able to provide sufficient water supplies to meet the projected water demands of its customers, including during a five consecutive year drought period.

### 4.1 NON-POTABLE VERSUS POTABLE WATER USE

The CWC requires a description and quantification of water uses within the City's service area, including both non-potable and potable water. Recycled water (non-potable) uses are addressed in Section 6.2.5; however, a summary is provided in Table 4-3. Furthermore, Chapter 4 addresses the City's potable water demands.



## 4.2 PAST, CURRENT, AND PROJECTED WATER USES BY SECTOR

### CWC 10635.

*(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.*

### CWC 10631.

*(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following...*

*(2) The water use projections shall be in the same five-year increments described in subdivision (a).*

*(4)(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.*

*(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:*

*(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.*

*(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.*

The City's current and projected water demands are provided in five-year increments over the next 25 years (through CY 2045) in Tables 4-1, 4-2, and 4-3. The City's total water demands were projected based on a review of the SB X7-7 calculations which are discussed in Chapter 5 (including the SB X7-7 water use target for 2020), current water use factors based on recent water demands, and the total population projections based on land use trends within the City.



The City provides water service to individual “water use sectors” as identified by the CWC. The water use sectors supplied by the City are discussed in Section 4.2.1. The water use for each of these sectors during CY 2020 is provided in Table 4-1. The projected water use for each individual water use sector is provided in Table 4-2 and is based on the percentage breakdown of water use from each individual water use sector in CY 2020 (the percentages were then applied to the projected total water use).

**Table 4-1 Demands for Potable and Non-Potable Water - Actual**

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable <sup>1</sup> Water - Actual			
Use Type	2020 Actual		
<b>Drop down list</b> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume <sup>2</sup>
Add additional rows as needed			
Single Family		Drinking Water	4,520
Multi-Family		Drinking Water	481
Commercial		Drinking Water	1,352
Landscape		Drinking Water	464
Sales/Transfers/Exchanges to other agencies	City of Norwalk and Golden State Water Company	Drinking Water	1,228
Losses		Drinking Water	410
<b>TOTAL</b>			<b>8,455</b>
<sup>1</sup> Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4. <sup>2</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: Recycled water demands are provided in Table 4-3 and Table 6-4.			



**Table 4-2 Use for Potable and Non-Potable Water - Projected**

Submittal Table 4-2 Retail: Use for Potable and Non-Potable <sup>1</sup> Water - Projected						
Use Type	Additional Description (as needed)	Projected Water Use <sup>2</sup> <i>Report To the Extent that Records are Available</i>				
<u>Drop down list</u> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family		5,301	5,564	5,477	5,422	5,366
Multi-Family		561	600	617	629	641
Commercial		1,576	1,685	1,735	1,769	1,803
Landscape		541	578	595	607	619
Sales/Transfers/Exchanges to other agencies		1,400	1,600	1,900	2,100	2,300
Losses		478	512	527	537	547
<b>TOTAL</b>		<b>9,857</b>	<b>10,539</b>	<b>10,851</b>	<b>11,064</b>	<b>11,276</b>
<sup>1</sup> Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4. Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES:						



**Table 4-3 Total Gross Water Use (Potable and Non-Potable)**

<b>Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)</b>						
	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable <i>From Tables 4-1R and 4-2 R</i>	8,455	9,857	10,539	10,851	11,064	11,276
Recycled Water Demand <sup>1</sup> <i>From Table 6-4</i>	2,159	2,500	2,500	2,500	2,500	2,500
Optional Deduction of Recycled Water Put Into Long-Term Storage <sup>2</sup>						
<b>TOTAL WATER USE</b>	<b>10,614</b>	<b>12,357</b>	<b>13,039</b>	<b>13,351</b>	<b>13,564</b>	<b>13,776</b>
<p><sup>1</sup> Recycled water demand fields will be blank until Table 6-4 is complete</p> <p><sup>2</sup> Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier <i>may</i> deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.</p>						
NOTES:						



#### 4.2.1 WATER USE SECTORS LISTED IN WATER CODE

##### CWC 10631.

*(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:*

- (A) Single-family residential.*
- (B) Multifamily.*
- (C) Commercial.*
- (D) Industrial.*
- (E) Institutional and governmental.*
- (F) Landscape.*
- (G) Sales to other agencies.*
- (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.*
- (I) Agricultural.*
- (J) Distribution system water loss.*

As shown in Table 4-1, the City's service area includes the following water use sectors listed in the CWC:

- Single-family residential  
(A single-family dwelling unit is a lot with a free-standing building containing one dwelling unit that may include a detached secondary dwelling. Single-family residential water demands are included in retail demands.)
- Multi-family residential  
(Multiple dwelling units are contained within one building or several buildings within one complex. Multi-family residential water demands are included in retail demands.)
- Commercial  
(Commercial users are defined as water users that provide or distribute a product or service.)



- Institutional (and governmental)  
(Institutional users are defined as water user dedicated to public service. Institutional users include, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.)
- Landscape  
(Landscape connections supply water solely for landscape irrigation. Landscapes users may be associated with multi-family, commercial, industrial, or institutional/governmental sites, but are considered a separate water use sector if the connection is solely for landscape irrigation. Landscape water demands are included in retail demands.)
- Distribution system losses  
(Distribution system losses represent the potable water losses from the pressurized water distribution system and water storage facilities, up to the point of delivery to the customers. Additional information is discussed in Section 4.2.4)
- Sales to Other Agencies  
(Water sales made to another agency. Projected sales may be based on projected demand provided by the receiving agency. There is inherent uncertainty in future projections, therefore, any projected sales reported in the Plan are for planning purposes only and are not considered a commitment on the part of the seller. This is a wholesale demand.)

The City regularly sells potable water to the City of Norwalk and Golden State Water Company.





#### 4.2.2 WATER USE SECTORS IN ADDITION TO THOSE LISTED IN WATER CODE

The City's service area does not include other water demand sectors which are not listed in the CWC (including exchanges, surface water augmentation, transfers, and wetlands or wildlife habitat).

#### 4.2.3 PAST WATER USE

Chapter 6 provides a discussion of the source of water supply the City uses to meet its water demands. Section 6.1 provides a tabulation of the City's historical annual water demands for its water supply source. Over the past ten years, the City's total water demands (including potable and recycled water) have ranged from 9,946 AFY to 11,910 AFY, with an average of 10,894 AFY. In addition, the City recently experienced a five consecutive year drought within its service area from CY 2011 to CY 2015. The City also reviewed its historical water demands to determine the projected water demands and water supply reliability (discussed in Chapter 7). The City is able to provide sufficient water supplies to meet the projected water demands of its customers, including during a five consecutive year drought period.

#### 4.2.4 DISTRIBUTION SYSTEM WATER LOSS

##### CWC 10631.

*(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following...*

*(J) Distribution system water loss.*



**CWC 10631.**

*(3)(A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.*

*(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.*

*(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.*

Distribution system water losses represent the potable water losses from the pressurized water distribution system and water storage facilities, up to the point of delivery to the customers. Sources of distribution system water loss can include inaccurate metering due to faulty meters and water use not metered such as firefighting, flushing of the water system, and pipeline leaks.

The CWC Section 10608.34 requires “On or before October 1, 2017, and on or before October 1 of each year thereafter, each urban retail water supplier shall submit a completed and validated water loss audit report for the previous calendar year or the previous fiscal year...” The water loss audits must follow American Water Works Association (AWWA) guidance and be validated by a certified water audit validator. The City has completed the annual water loss audit process through October 1, 2020, as required by the CWC (i.e. the City has completed water loss audits representing calendar years 2016, 2017, 2018, and 2019). The City’s water loss audits were prepared and validated pursuant to DWR requirements. The annual water loss audit reports submitted by retail water agencies in California, including the City (provided in Appendix E), are available on DWR’s website ([https://wuedata.water.ca.gov/awwa\\_plans](https://wuedata.water.ca.gov/awwa_plans)).

The City’s annual water loss audits identify real water losses (e.g. leaks and main failures) and apparent water losses (e.g. customer meter inaccuracies, systematic data handling



errors in customer billing systems, and unauthorized consumption). The City's distribution system water losses are based on the sum of the real and apparent water losses and are summarized in Table 4-4 for the past five years. Over the past five years, the City's average distribution system water losses represent approximately 6.1 percent of its total water demands. This average water loss factor was incorporated into the City's total potable water demand projections (Tables 4-2 and 4-3).

The CWC Section 10608.34 directs the SWRCB-DDW to "adopt rules requiring urban retail water suppliers to meet performance standards for the volume of water losses." Pursuant to this law, and as discussed above, urban retail water suppliers (including the City) have been submitting water loss audits to DWR annually since October 2017. Pursuant to Assembly Bill (AB) 1668 and Senate Bill (SB) 606, urban retail water suppliers are required to calculate an "urban water use objective" that includes indoor, outdoor, commercial, industrial and institutional irrigation uses, and allowed system water loss by the year 2024. In addition, by CY 2028, urban retail water suppliers are required to comply with individual volumetric standards (based on an economic model) for leak detection and repair actions. The goal of the proposed water loss standards is to reduce collective water losses throughout California by approximately 40 percent. The City will continue to develop its water loss standard and urban water use objective pursuant to SWRCB-DDW requirements.



Table 4-4 12 Month Water Loss Audit Report

Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss <sup>1,2</sup>
01/2016	420
01/2017	736
01/2018	459
01/2019	460
01/2020	410
<sup>1</sup> Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet. <sup>2</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.	
NOTES: The "Volume of Water Loss" quantities for CY 2016 through CY 2019 were obtained from the annual AWWA Water Loss Audits (and based on the combination of apparent losses and real losses). The AWWA Water Loss Audits were reported on a calendar year basis. The AWWA Water Loss Audit for calendar year 2020 will be prepared by October 2021. The "Volume of Water Loss" quantity for for CY 2020 was estimated based on metered water production less metered water deliveries to customers.	

### 4.2.5 CURRENT WATER USE

The City currently measures its water use through meter data and billing records. The water use for the City’s individual water use sectors during CY 2020 is provided in Table 4-1. Recycled water uses are addressed separately in Section 6.2.5; however, a summary is provided in Table 4-3. The City’s total water uses during CY 2020 have been reviewed for compliance with the SB X7-7 water use target for 2020 adopted in the City’s 2015 Plan (discussed in Section 5.5).

DWR has created an optional “Planning Tool Worksheet” for water suppliers to review and assess monthly water use trends. DWR has deemed the tool as optional and the City is not required by DWR to use the tool. However, Section 6.1 provides a tabulation



of the City's historical annual water uses for each water supply source. During the past 10 years, the City experienced a five consecutive year drought within its service area from CY 2011 to CY 2015. Historical records indicate the City's annual water demands had been greater prior to CY 2011. The City has been able to provide sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands. In addition, the City has been able to provide water service to meet maximum day water demands for these years, including during the summer months. A further discussion regarding the reliability of the City's water supply sources is provided in Chapter 7.

### 4.2.6 PROJECTED WATER USE

#### CWC 10635.

*(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.*

#### CWC 10631.

*(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).*



**CWC 10631.**

*(d)(4)(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.*

*(d)(4)(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:*

*(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.*

*(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.*

The City's projected water demands are provided in five-year increments over the next 25 years (through CY 2045) in Table 4-3. The City's projected water demands and water supplies during a normal year, a single dry year, and a five consecutive year drought are provided in Chapter 7. The projected water demands for each of the City's water use sectors are provided in Table 4-2.

The City's water demands were projected based on a review of the SB X7-7 calculations discussed in Chapter 5 (including the SB X7-7 water use target for 2020), existing water use factors based on recent water demands, and the total population projections based on land use trends within the City. The projected water demands for the water use sectors were based on the percentage breakdown of water demands from each individual water use sector in CY 2020 (the percentages were then applied to the projected total water demands). A discussion of the City's water supplies from CBMWD, a wholesaler, are discussed in Section 6.2. As discussed in Section 2.6, the City has coordinated its water demand projections with CBMWD for each water use sector.

The City's water demand projections incorporate water savings, or "passive savings", which are the result of implementation of new plumbing codes along with consumer awareness of the need to conserve water. The City's Resolution No. 2015-16, "A Resolution of the City Council of the City of Cerritos Implementing Emergency Water



Conservation Regulations”, which was adopted in June 2015 (discussed in Section 9.2.1), includes methods for current and ongoing reduction in water use and water waste. Prior to the adoption of Resolution No. 2015-16, the City’s water use rate ranged from approximately 150 gallons per capita per day (GPCD) to 182 GPCD (from CY 1997 through CY 2006). As identified in Section 5.5, the City’s actual water use rate during CY 2020 was 129 GPCD which is a decrease of up to 53 GPCD from the recent historical water use and includes passive savings. The City’s projected water demands, incorporate water use targets less than its established SB X7-7 water use target for 2020 and incorporate ongoing water passive savings and reduced water use. As indicated in Table 4-5, estimated future water savings have been considered as part of the City’s water use projections.

#### 4.2.7 CHARACTERISTIC FIVE-YEAR WATER USE

##### CWC 10635.

*(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:*

*(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.*

*(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.*

The City’s projected water demands are provided in five-year increments over the next 25 years (and through CY 2045) in Table 4-3. The City’s projected water demands and water supplies during a normal year, a single dry year, and a five consecutive year drought over the next 25 years (and through CY 2045) are provided in Chapter 7.



The City’s “Drought Risk Assessment” (DRA) for the next five years (from CY 2020 through CY 2025) is discussed in Section 7.3. The DRA includes the City’s projected annual water demands and supplies for each of the next five years and was prepared based on the five driest consecutive years on record. The DRA provides an assessment of the City’s water service reliability during a drought lasting five years. The DRA reflects anticipated water demands and supplies prior to any expected benefits associated with water supply shortage responses included in the City’s WSCP (provided in Chapter 8). In addition to historical drought hydrology, the City considered impacts to water supplies and demands based on climate change conditions (discussed in Section 4.5) and anticipated regulatory changes, including the urban water use objectives (discussed in Section 4.2.4)

### **4.3 WORKSHEETS AND REPORTING TABLES**

The City’s current and projected water demands, including the water demands for each of the City’s water use sectors, are provided in five-year increments over the next 25 years (and through CY 2045) in Tables 4-1, 4-2, and 4-3.

#### **4.3.1 OPTIONAL PLANNING TOOL USE ANALYSIS WORKSHEET**

As discussed in Section 4.2.5, DWR has deemed the “Planning Tool Worksheet” as optional and the City is not required by DWR to use the tool. The City has provided sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands. The City has also been able to provide water service to meet maximum day water demands for these years, including during the summer months. A further discussion regarding the reliability of the City’s water supply source is provided in Chapter 7.





### 4.3.2 DWR 2020 UWMP SUBMITTAL TABLES

The City's current water demands for each of the water use sectors during CY 2020 are provided in Table 4-1. The City's projected water demands for each of the water use sectors, in five-year increments over the next 25 years (and through CY 2045), are provided in Table 4-2. The City's total projected water demands, including potable and recycled water, in five-year increments over the next 25 years (and through CY 2045), are summarized in Table 4-3. The City's distribution system water losses over the past five years, based on the sum of the real and apparent water losses, are summarized in Table 4-4. The City's annual AWWA water loss audits are provided in Appendix E.

## 4.4 WATER USE FOR LOWER INCOME HOUSEHOLDS

### [CWC 10631.1.](#)

*(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.*

### [California Health and Safety Code 50079.5.](#)

*(a) "Lower income households" means persons and families whose income does not exceed the qualifying limits for lower income families... In the event the federal standards are discontinued, the department shall, by regulation, establish income limits for lower income households for all geographic areas of the state at 80 percent of area median income, adjusted for family size and revised annually.*

The City's water demand projections provided in Table 4-3 include projected water demands for lower income single-family and multi-family households. A lower income household is defined as a household with an income less than 80 percent of the area median income, adjusted for family size. For the purpose of this evaluation the entire Los Angeles County was used for the "area median income". The total number of lower income households within the City's service area was estimated based on billing records provided by the City, a review of median household income range statistics provided by



the U.S. Census Bureau (<https://data.census.gov/cedsci/>), and a review of GIS maps of Disadvantaged Communities<sup>5</sup> (DACs), including block groups, tracts, and places, provided by DWR. The estimated number of lower income households located within the City’s service area is approximately 27 percent of the total number of households. As indicated in Table 4-2, the total projected residential water demands within the City in 2045 is estimated at about 6,007 AFY. Based on a 27 percent use factor of total residential water demands, the projected water demand for lower income households will be about 1,622 AFY by CY 2045. The projected water demands for lower income households were included in the City’s total projected water demands, as indicated in Table 4-5.

**Table 4-5 Inclusion in Water Use Projections**

<b>Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections</b>	
<p><b>Are Future Water Savings Included in Projections?</b>            (Refer to Appendix K of UWMP Guidebook)  <i>Drop down list (y/n)</i></p>	Yes
<p>If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.</p>	Section 4.2.6 and Chapter 8
<p><b>Are Lower Income Residential Demands Included In Projections?</b>  <i>Drop down list (y/n)</i></p>	Yes
NOTES:	

<sup>5</sup> GIS information for DACs is based on data from the US Census showing census block groups, tracts, and places identified as disadvantaged communities (less than 80 percent of the State's median household income) or severely disadvantaged communities (less than 60 percent of the State's median household income)



## 4.5 CLIMATE CHANGE CONSIDERATIONS

### CWC 10630.

*It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied, while accounting for impacts from climate change.*

### CWC 10635.

*(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following...*

*(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.*

Climate is defined as “the average course or condition of the weather at a place usually over a period of years as exhibited by temperature, wind velocity and precipitation<sup>6</sup>”. A change in the climate which produces a greater amount of precipitation (i.e. more runoff and/or snowpack) and lower temperatures is generally a benefit to water supplies. However, drought conditions which may result in decreased precipitation, decreased runoff, and increased temperature may adversely affect an urban water supplier’s ability to meet demands by potentially impacting supplies. Consequently, the focus of impacts of climate change is on these adverse consequences.

Section 6.2 of this 2020 Plan describes the City’s source of water supply, management practices associated with this source, and the long-term reliability of this source. Section 7.3 includes a DRA which considers the potential impacts of climate change to the City’s water supply source. Chapter 8 provides a detailed discussion of the City’s WSCP,

<sup>6</sup> [www.merriam-webster.com](http://www.merriam-webster.com)



including, but not limited to, the six standard water shortage levels in the event climate change results in a reduction to water supplies associated with a periodic drought condition. The following is a discussion of the City's source of supply, how this source may be impacted by climate change, and the proactive actions the City and other local/regional water managers may take to address the potential climate change impacts on water supplies.

### Imported Water Supplies

The City receives treated imported water as discussed in Section 6.2.1 and relies on the WRD to manage the groundwater supplies of the Central Basin. Consequently, the City indirectly relies on the Metropolitan Water District of Southern California for those imported water supplies. MWD has prepared a Regional 2020 Urban Water Management Plan which includes a discussion (Section 2.6 in MWD's 2020 UWMP) of the reliability of its water supplies and the impacts of climate change and is incorporated by reference in this Plan. Furthermore, the City is a sub-agency of the Central Basin Municipal Water District which has also provided a discussion of climate change considerations and that discussion is included by reference. The following is a brief summary of MWD's efforts:

#### Resource Planning

- MWD has established the Robust Decision Making (RDM) approach to identify vulnerabilities to its water supplies. Climate change information was applied to MWD's simulated water supply scenarios to demonstrate the vulnerability of water supplies to climate change.
- MWD altered the inflow hydrology scenarios on the Colorado River simulation model to reflect modified inflow to MWD's Colorado River aqueduct.



### Knowledge Sharing and Research Support

- MWD is an active and founding member of the Water Utility Climate Alliance (WUCA) which includes 12 nationwide partners collaborating on climate change considerations. As such, MWD shares agency actions on climate change and adaptation. WUCA has also released numerous research papers on climate change.

### Implementation of Programs and Policies

- MWD's programs include the use of solar energy, use of ride share programs, and reduction of greenhouse emissions. Collectively these actions are intended to impact the effects of climate change.

### Groundwater Supplies – Central Basin

The City relies on groundwater produced from the Central Basin as noted in Section 6.2.2 of this UWMP. As previously noted, the Central Basin has been identified by DWR as a very low-priority groundwater basin partially due to the fact it is adjudicated. In that regard, the Central Basin is actively managed by the Water Replenishment District of Southern California which serves as the Central Basin Watermaster and those management activities are described in detail in Section 6.2.2.

Recognizing the potential impacts of climate change on the Central Basin groundwater supplies (decreased local runoff and replenishment, along with increased groundwater production, may lead to decreased groundwater levels), the City has used climate tools available on the California Energy Commission's Cal-Adapt website (<https://cal-adapt.org/>) to identify potential future climate change cycles for the Central Basin. The Cal-Adapt website has been developed by the Geospatial Innovation Facility at the University of



California, Berkeley with funding and advisory oversight by the California Energy Commission and California Strategic Growth Council.

To address the uncertainty in future greenhouse gas emissions, Cal-Adapt has developed a Representative Concentration Pathway 4.5 (RCP 4.5) scenario and a Representative Concentration Pathway 8.5 (RCP 8.5) scenario. RCP 4.5 represents a scenario in which greenhouse gas emissions peak around 2040, then decline and stabilize. RCP 8.5 represents a scenario in which emissions continue to strongly rise through 2050 and plateau around 2100. RCP 4.5 is a “medium” emissions scenario that models a future in which there is an effort made by societies to reduce greenhouse gas emissions, whereas RCP 8.5 is a “business-as-usual” scenario. For the City’s climate change analysis, the RCP 4.5 scenario was selected.

The Cal-Adapt climate tools also incorporate several General Circulation Models (GCMs), which represent physical processes in the atmosphere, ocean, and land surface. These GCMs projected future climates under conditions such as warm/dry, cooler/wetter, and average simulations. For the City’s climate change analysis, the average condition GCM (CanESM2) was selected.

The climate tools available on the Cal-Adapt website were used to simulate projected annual precipitation and annual average maximum temperature in the Central Basin. An electronic boundary of the Central Basin was submitted online through the Cal-Adapt website in a “KML” file format (i.e. Google Earth format) and data using several of the available climate tools was generated.

Based on the data generated by the Cal-Adapt simulations (see Appendix F), the average annual rainfall in the Central Basin is projected to be 14.90 inches over the next 25 years (through 2045), compared to a historical average of 13.72 inches (from 1950 through 2019). In addition, the average maximum temperature is projected to be 78.4 degrees Fahrenheit compared to a historical average of 75.4 degrees Fahrenheit. Although there



may be more precipitation in the future, it may be more likely to fall as rainfall compared to snowfall. The simulations do not denote the duration or intensity of storms contributing to the annual precipitation. Notwithstanding, the San Gabriel River watershed includes a complex and interconnected series of dams, reservoirs and replenishment basins to capture stormwater runoff. In an average to below average year of precipitation, over 95 percent of the precipitation in the watershed is retained within the watershed and is not lost to the ocean. Consequently, most if not all precipitation (whether it is rain or snowfall) likely will be captured for use in the Central Basin area and not adversely impacted by a potentially higher average annual temperature.

Recognizing these potential impacts to local hydrology resulting from climate change and the resultant impacts to the groundwater supplies, WRD has taken (and may reinstate as needed) the following proactive actions to anticipate and circumvent the potential impacts of climate change. These actions will enable the City to rely on the Central Basin as a reliable source of supply.

### Recycled Water Groundwater Replenishment

The WRD has actively used recycled water for groundwater replenishment for many decades. Historically the recycled water replenishment was supplemented with untreated imported water replenishment as part of Central Basin management. However, WRD has also established the Water Independence Now (WIN) program. The WIN program includes a treatment facility (previously referred to as the Groundwater Reliability Improvement Program) which includes ultrafiltration, reverse osmosis, and ultraviolet disinfection and advanced oxidation to treat recycled water by significantly reducing the total dissolved solids concentration. This action will gradually help to improve the water quality of the Central Basin, plus reduce or eliminate the future need to purchase untreated imported water.



### Water Storage Programs

The Central Basin Adjudication allows Parties to the Judgment to pump up to 20 percent more of its annual Allowed Pumping Allocation plus any carry-over water rights as described in Section 6.2.2. In addition, the Central Basin Judgment includes an amendment which implemented a water storage program. A party may store up to 50 percent of the party's Allowed Pumping Allocation in an Individual Storage Account and 150 percent of the party's Allowed Pumping Allocation in a Community Storage Account if space is available. The amendments also allow parties to convert unused Allowed Pumping Allocation to stored water and revised the amount of carryover to be equal to 60 percent of the party's Allowed Pumping Allocation minus the amount of carryover water set aside for storage. The purpose of the storage program creates an added reliability in water supply from the Central Basin.





## **CHAPTER 5**

### **SB X7-7 BASELINE, TARGETS, AND 2020 COMPLIANCE**

#### **LAY DESCRIPTION – CHAPTER 5**

#### **SB X7-7 BASELINES, TARGETS, AND 2020 COMPLIANCE**

Chapter 5 (SB X7-7 Baselines, Targets, and 2020 Compliance) of the City's 2020 Plan discusses and provides the following:

- The Water Conservation Act of 2009 (or SB X7-7) required that the State of California achieve a 20 percent reduction in urban water use by the year 2020.
- SB X7-7 required urban water suppliers, including the City, to develop a “2020 Water Use Target” to assist the State of California to achieve the 20 percent reduction. The 2020 Water Use Target represents the amount of water each person should use per day (i.e. gallons per capita per day or GPCD) by the year 2020.
- The City previously determined its 2020 Water Use Target during the preparation of its 2015 Plan by completing standardized tables (or the SB X7-7 Verification Form) to demonstrate compliance with the Water Conservation Act of 2009. The City's SB X7-7 Verification Form has not been modified and is included as part of this 2020 Plan as Appendix G. The City's 2020 Water Use Target is 142 GPCD.
- The City's 2020 Plan incorporates the 2020 Water Use Target and determines compliance based on actual water use.
- The population within the City's service area during CY 2020 is estimated at 50,143. The City's population was estimated using information provided by the Southern California Association of Governments and from the California Department of Water Resources' online “Population Tool” which incorporates United States Census data



in a Geographic Information Systems format to estimate the population within the City's service area.

- The City's "gross water" use represents the total volume of water entering its distribution system from its water supply sources. The City's gross water use excludes recycled water deliveries or water conveyed to another supplier. The City's annual gross water during CY 2020 was 7,227 AF.
- The City's per-capita water use is based on the gross water use divided by the population. The City's per-capita water use during Calendar Year 2020 was 129 GPCD. The City's confirmed 2020 Water Use Target is 142 GPCD. The City's per-capita water use during Calendar Year 2020 meets the 2020 Water Use Target.
- The City has also demonstrated compliance with the 2020 Water Use Target by completing the SB X7-7 2020 Compliance Form (provided in Appendix H).

### 5.1 GUIDANCE FOR WHOLESALE SUPPLIERS

#### [CWC 10608.12.](#)

*(l) "Urban wholesale water supplier," means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.*

The City is not a wholesale agency and is not required by DWR to complete Section 5.1.

### 5.2 SB X7-7 FORMS AND SUMMARY TABLE

The City previously calculated "Baseline" water uses and a "2020 Water Use Target" in its 2015 Plan. There were two different Baseline periods identified (including a 10-year Baseline period and a 5-year Baseline period). The average water use within these Baseline periods, expressed in GPCD, represents the Baseline water use for each period.



The Baseline water uses were used to determine The City's 2020 Water Use Target (which represents the per capita water use target for 2020 pursuant to SB X7-7).

According to Section 10608.22 of the CWC, if an urban retail water supplier's 5-year Baseline period water use is greater than 100 GPCD, the calculated 2020 Water Use Target may need to be reduced. A 5-year Baseline period was identified by the City and information regarding the starting year, ending year, and average water use rate during this period is provided in Table 5-1. The average was use rate during the identified 5-year Baseline period was greater than 100 GPCD. As a result, the 5-year Baseline period was used to determine whether the 2020 Water Use Target required any adjustments.

The City's calculated 2020 Water Use Target was compared with the 95 percent of the average water use within the 5-year Baseline to confirm whether any adjustments were required. The City's confirmed 2020 Water Use Target is 142 GPCD and is summarized in Table 5-1.

### **5.2.1 SB X7-7 VERIFICATION FORM (BASELINES AND TARGETS)**

The City's service area has not changed (i.e. expansion or contraction) since the 2015 Plan was prepared. The City's 2020 Plan incorporates the Baseline water uses and 2020 Water Use Target calculated in the 2015 Plan. The City previously prepared standardized tables (SB X7-7 Verification Form) to demonstrate compliance with the Water Conservation Act of 2009 in its 2015 Plan, including compliance with the City's 2015 Interim Water Use Target. The City's SB X7-7 Verification Form has not been modified and is included as part of this 2020 Plan as Appendix G.



**5.2.2 SB X7-7 COMPLIANCE FORM**

The City’s compliance with its 2020 Water Use Target is summarized in the following sections. The City has also demonstrated compliance with the 2020 Water Use Target by completing the SB X7-7 2020 Compliance Form (provided in Appendix H).

**5.2.3 SUBMITTAL TABLES 5-1 AND 5-2**

Summary information from the SB X7-7 Verification Form and from the SB X7-7 2020 Compliance Form is provided in Tables 5-1 and 5-2 below.

**Table 5-1 Baselines and Targets Summary from SB X7-7 Verification Form**

<b>Submittal Table 5-1 Baselines and Targets Summary From SB X7-7 Verification Form</b>				
<i>Retail Supplier or Regional Alliance Only</i>				
Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	1997	2010	164	142
5 Year	2004	2008	161	
<i>*All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)</i>				
NOTES:				



**Table 5-2 2020 Compliance from SB X7-7 2020 Compliance Form**

<b>Submittal Table 5-2: 2020 Compliance From SB X7-7 2020 Compliance Form</b> <i>Retail Supplier or Regional Alliance Only</i>				
2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* <i>(Adjusted if applicable)</i>		
129	0	129	142	Y
<i>*All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)</i>				
NOTES:				

### 5.2.4 REGIONAL UWMP/ REGIONAL ALLIANCE

As discussed in Section 2.4, the City’s 2020 Plan was not developed as part of a Regional Alliance. Information from the City’s 2020 Plan is not required to be reported in a Regional Alliance report.

## 5.3 BASELINE AND TARGET CALCULATIONS FOR 2020 UWMPs

### 5.3.1 SUPPLIER SUBMITTED 2015 UWMP, NO CHANGE TO SERVICE AREA

The general requirements associated with determining the Baseline periods, Baseline water uses, and 2020 Water Use Target were previously provided by DWR. Based on the requirements, the City calculated the Baseline water uses and 2020 Water Use Target



in its 2015 Plan. The City's service area has not changed (i.e. expansion or contraction) since the 2015 Plan was prepared. The City's 2020 Plan incorporates the Baseline water uses and 2020 Water Use Target calculated in the 2015 Plan. The City's SB X7-7 Verification Form is included in Appendix G.

As discussed in Section 5.2.1, the City prepared standardized tables (SB X7-7 Verification Form) to demonstrate compliance with the Water Conservation Act of 2009. The City's SB X7-7 Verification Form is provided in Appendix G and includes Baseline water uses and the 2020 Water Use Target. A summary of the Baseline water uses and 2020 Water Use Target is provided below.

The CWC allows an urban water supplier to calculate up to a 15-year Baseline period if at least 10 percent of its 2008 retail water demands were met through recycled water deliveries within its service area, otherwise calculation of a 10-year Baseline period is required. The City's recycled water deliveries were less than 10 percent of its retail water demands during CY 2007. Consequently, a 10-year Baseline period was identified by the City and information regarding the starting year, ending year, and average water use rate during this period is provided in Table 5-1. Water systems could potentially identify their 2020 Water Use Target by calculating 80 percent of the 10-year Baseline water use.

## 5.4 METHODS FOR CALCULATING POPULATION AND GROSS WATER USE

### 5.4.1 SERVICE AREA POPULATION

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#### [CWC 10608.20.](#)

*(e) An urban retail water supplier shall include in its urban water management plan due in 2010 pursuant to Part 2.6 (commencing with Section 10610) the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*



*(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.*

**CWC 10644.**

*(a)(2) The plan... shall include any standardized forms, tables, or displays specified by the department.*

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A discussion regarding the City's compliance with the 2020 Water Use Target is provided in Section 5.5. Compliance with the 2020 Water Use Target is based on the total estimated population within the City's water service during CY 2020. Because U.S. Census 2020 population data was not available during the preparation of the 2020 Plan, the City reviewed the methodologies recommended by DWR to estimate the CY 2020 population. The population methodology used by the City in the 2020 Plan is provided below.

The City initially reviewed the available historical populations within its service area for population growth trends. The City determined historical U.S. Census population within its service area using DWR's Population Tool (<https://wuedata.water.ca.gov/>). The City's service area boundary was uploaded to DWR's Population Tool in a "KML" file format (i.e. Google Earth format). The KML file was originally created in GIS shapefile format and converted into a KML format. The uploaded KML file represents The City's service area boundary from 1990 to present (2020). DWR's Population Tool utilized U.S. Census data from 1990, 2000, and 2010, along with the City's service area boundary, to estimate the population served by the City in the years 1990, 2000, 2010, and 2020.

The City reviewed population projection estimates from data provided by SCAG. The data provided by SCAG was based on "The 2020-2045 Regional Transportation Plan / Sustainable Communities Strategy of the Southern California Association of Governments", dated September 2020. Population projection data was also provided in SCAG's "Pre-Certified Local Housing Data for the City of Cerritos", dated April 2021.



The City's Plan incorporates a 2020 population estimate based on U.S. Census American Community Survey and from the California Census 2020, consistent with the population estimates from the other sources discussed above. The estimated population within the City's service area for CY 2020 is estimated to be 50,143. The CY 2020 population is consistent with the historical population growth trends. The City's CY 2020 population is presented in Table 3 of the SB X7-7 2020 Compliance Form.

## 5.4.2 GROSS WATER USE

### CWC 10608.12.

*(h) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:*

- (1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.*
- (2) The net volume of water that the urban retail water supplier places into long-term storage.*
- (3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.*
- (4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.*

### California Code of Regulations Title 23 Division 2 Chapter 5.1 Article 1, Section 596.

*(a) An urban retail water supplier that has a substantial percentage of industrial water use in its service area is eligible to exclude the process water use of existing industrial water customers from the calculation of its gross water use to avoid a disproportionate burden on another customer sector.*

Gross water use represents the total volume of water entering a distribution system (but excludes recycled water deliveries, water placed into long term storage, water conveyed to another supplier, water delivered for agricultural use, and process water if there is a substantial percentage used for industrial purposes) over a 12-month period. The City's annual gross water use amounts are based on the total amount of water entering the City's distribution system from its water supply sources (including groundwater production





wells and purchased imported water). The annual gross water use by the City during CY 2020 was 7,227 AF.

The annual gross water use amounts within the City for each year of the Baseline periods (discussed in Section 5.2) are provided in SB X7-7 Verification Form, Table 4 (Appendix G). A further discussion of the Baseline periods is provided in Section 5.2.

The City currently does not use indirect recycled water within its service area. The City is not required by DWR to complete SB X7-7 Verification Form, Table 4-B.

Industrial process water is not subtracted from the City's gross water use provided in SB X7-7 Verification Form, Table 4. The City is not required by DWR to complete SB X7-7 Verification Form, Table 4-C.1, Table 4-C.2, Table 4-C.3, Table 4-C.4, and Table 4-D.

### 5.5 2020 COMPLIANCE DAILY PER CAPITA WATER USE (GPCD)

#### CWC 10608.12.

*(f) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.*

#### CWC 10608.20.

*(e) An urban retail water supplier shall include in its urban water management plan due in 2010... compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*

As discussed in Section 5.5, the annual gross water use by the City during CY 2020 was 7,227 AF. As discussed in Section 5.4, the estimated population within the City's service area for CY 2020 is 50,143. As a result, the City's per-capita water use during CY 2020 was 129 GPCD. As discussed in Section 5.2, the City's confirmed 2020 Water Use Target is 142 GPCD. The City's per-capita water use during CY 2020 meets the 2020 Water



Use Target and is in compliance. The City has also demonstrated compliance with the 2020 Water Use Target by completing the SB X7-7 2020 Compliance Form (provided in Appendix H).

### 5.5.1 2020 ADJUSTMENTS FOR FACTORS OUTSIDE OF SUPPLIER'S CONTROL

#### CWC 10608.24.

*(d)(1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:*

*(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.*

*(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.*

*(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.*

*(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.*

#### Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use, Methodology 4.

*This section discusses adjustments to compliance-year GPCD because of changes in distribution area caused by mergers, annexation, and other scenarios that occur between the baseline and compliance years.*

The City has determined compliance with the 2020 Water Use Target without adjusting its annual gross water use during CY 2020.

### 5.5.2 2020 ADJUSTMENTS TO 2020 GROSS WATER USE



The City's 2020 Plan incorporates the Baseline water uses and 2020 Water Use Target calculated in the 2015 Plan. There were no special situations that required the City to recalculate the Baseline water uses and 2020 Water Use Target.

### **5.5.3 IF SUPPLIER DOES NOT MEET 2020 TARGET**

The City's per-capita water use during CY 2020 meets the 2020 Water Use Target and is in compliance.

### **5.6 REGIONAL ALLIANCE**

As discussed in Section 2.4, the City's 2020 Plan was not developed as part of a Regional Alliance. Information from the City's 2020 Plan is not required to be reported in a Regional Alliance report.



## CHAPTER 6

### WATER SUPPLY CHARACTERIZATION

#### LAY DESCRIPTION – CHAPTER 6

#### WATER SUPPLY CHARACTERIZATION

Chapter 6 (Water Supply Characterization) of the City's 2020 Plan discusses and provides the following:

- The City's water supply sources include: groundwater pumped from the Central Basin, imported water purchased from MWD through CBMWD, and recycled water purchased from LACSD.
- A tabulation of the City's historical water supplies is provided in Section 6.1.
- A discussion regarding the City's imported water supplies purchased from Central Basin Municipal Water District is provided. Information regarding imported water connections, capacities, reliability, and historical production is provided.
- A discussion regarding the City's groundwater supplies from the Central Basin is provided. Information regarding basin location, adjudication, management, water levels, water quality, water rights, and historical production is provided.
- A discussion regarding the City's recycled water supplies is provided. The City's recycled water supplies are produced by the Sanitation Districts of Los Angeles County. The City uses recycled water for landscape irrigation at parks, schools, golf courses, Artesia Cemetery, Cerritos College, medians and parkways, and a nursery and greenbelts as well as industrial use at local companies for carpet dying and concrete mixing.
- The City's proposed future projects to maximize its water supply resources are discussed.



- The City’s “energy intensity” is discussed and represents the quantity of energy consumed, measured in kilowatt hours, divided by the volume of water, measured in acre-feet over a one-year period. The total energy intensity associated with the City’s water management processes was estimated during CY 2019.

In this Chapter, the City will identify and describe each of its sources of water supply. In addition, the City will describe the following:

- Management of its water supply source;
- Current provisions of a basin adjudication or Groundwater Sustainability Plan, as applicable, pertaining to management of groundwater supplies;
- Measures the City is taking to develop potential new sources of water supply (as applicable); and,
- Opportunities for exchanges and transfers on a long- or short-term basis.

The characterization of the City’s water supply source will account for the anticipated availability during a normal year, a single dry year, a five consecutive year drought, along with projections through CY 2045.



## 6.1 WATER SUPPLY ANALYSIS OVERVIEW

### CWC 10631.

*(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:*

*(1) A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.*

*(2) When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies*

### CWC 10631.

*(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).*

The City's sources of water supply include: groundwater pumped from the Central Basin; treated, imported water from Metropolitan Water District of Southern California through Central Basin Municipal Water District; and recycled water purchased from the Sanitation Districts of Los Angeles County. A tabulation of the City's historical water supplies is provided below.

The City's main source of water supply is groundwater pumped from the Central Basin. As noted on the tabulation below, the City regularly sells potable water to the City of Norwalk and Golden State Water Company. A portion of these sales include treated imported water, while the balance is groundwater. As discussed in Section 6.2.2, the



City’s current Allowed Pumping Allocation in the Central Basin is 4,680.03 AFY. As discussed in Section 6.2.7, the City leases Central Basin water rights on an annual basis to allow for additional production above its Allowed Pumping Allocation.

Calendar Year	System Water Supply Sources (AF)					Sales to Norwalk and GSWC	Total (City)
	Potable Water			Recycled Water	Subtotal		
	Central Basin Groundwater	Central Basin MWD Imported Water	Potable Subtotal				
2011	8,568	445	9,012	2,220	11,232	(860)	10,372
2012	8,830	407	9,236	2,465	11,701	(759)	10,942
2013	9,080	366	9,445	2,465	11,910	(797)	11,113
2014	9,079	108	9,187	2,630	11,817	(778)	11,039
2015	6,275	1,451	7,726	2,221	9,946	(726)	9,220
2016	7,531	314	7,845	2,298	10,143	(799)	9,344
2017	8,238	0	8,238	2,137	10,374	(878)	9,497
2018	8,382	0	8,382	2,512	10,895	(783)	10,111
2019	7,996	79	8,076	2,227	10,302	(1,230)	9,072
2020	8,448	7	8,455	2,159	10,614	(1,228)	9,387

Source: Data provided by the City

### 6.1.1 SPECIFIC ANALYSIS APPLICABLE TO ALL WATER SUPPLY SOURCES

The section below provides a discussion of the following information to the extent practical:



- The City's existing and planned sources of water supply are identified;
- The City's source of supply is quantified in five-year increments through CY 2045;
- The anticipated supply availability under normal, single dry, and five consecutive dry years, and any other water year conditions included in the DRA (see Chapter 7) are described;
- The management of the City's water supply in correlation with other identified supplies is described; and,
- Information pertinent to the reliability analysis, including climate change effects, is considered.

The City historically has relied on groundwater pumped from the Central Basin; treated, imported water from Metropolitan Water District of Southern California through Central Basin Municipal Water District; and recycled water purchased from the Sanitation Districts of Los Angeles County. The following descriptions summarize the City's sources of supply (detailed descriptions are provided in Section 6.2).

### Existing and Planned Sources of Supply

#### Purchased Treated Imported Water

The City has historically purchased treated imported water from CBMWD, as described in Section 6.2.1. In addition, Section 6.2.1 provides a detailed discussion of the existing and planned supply of the treated imported water, including a description of the management and reliability of those treated imported water supplies. Table 6-8 summarizes the actual treated imported water supply for CY 2020. In addition, Table 6-9 summarizes the projected water supply, in five-year increments, through CY 2045 under varying water supply conditions.





### Groundwater

The City has historically pumped groundwater directly from the Central Basin as described in Section 6.2.2. In addition, Section 6.2.2 provides a detailed discussion of the existing and planned supply of the groundwater, including a description of the management and reliability of those groundwater supplies. Table 6-8 summarizes the actual groundwater supplies for CY 2020. In addition, Table 6-9 summarizes the projected water supply, in five-year increments, through CY 2045 under varying water supply conditions.

### Surface Water

The City does not use surface water supplies to meet its water demands.

### Storm Water

The City has historically received groundwater from the Central Basin. Management and use of the stormwater runoff from the groundwater basin watershed is crucial to groundwater management. However, the City currently does not have its own program to beneficially use stormwater runoff as a direct source of supply. However, a potential stormwater capture program within the City is discussed in Section 6.2.4.

### Wastewater and Recycled Water

The City has historically purchased recycled water supplies from the Sanitation Districts of Los Angeles County as described in Section 6.2.5. In addition, Section 6.2.5 provides a detailed discussion of the existing and planned use of the recycled water, including a description of the management and reliability of those recycled water supplies. Table 6-8 summarizes the actual recycled water supplies for CY 2020. In addition, Table 6-9



summarizes the projected recycled water supply, in five-year increments, through CY 2045 under varying water supply conditions.

### **6.1.2 OTHER CHARACTERIZATION CONSIDERATIONS**

A description of the City's water system along with a map of the area which receives water supplies from the City is included in Chapter 3. In addition, the agencies which manage the water supplies treated by the City are identified in Section 6.2.1 (imported water), 6.2.2 (groundwater), 6.2.3 (surface water), 6.2.4 (stormwater), and 6.2.5 (recycled water).

### **6.1.3 OPTIONAL PLANNING TOOL**

As discussed in Section 4.2.5, DWR has created an optional "Planning Tool Worksheet" for water suppliers to review and assess monthly water use trends. However, DWR has deemed the tool as optional and the City is not required by DWR to use the tool. Section 6.1 provides a tabulation of the City's historical annual water uses for each water supply source. During the past 10 years, the City experienced a five consecutive year drought within its service area from CY 2011 to CY 2015. In addition, historical records indicate the City's annual water demands typically have been even greater prior to CY 2012. The City has been able to provide sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands. In addition, the City has been able to provide water service to meet maximum day water demands for these years, including during the summer months. A further discussion regarding the reliability of the City's water supply sources is provided in Chapter 7.



## 6.2 NARRATIVE SECTIONS FOR SUPPLIER'S UWMP WATER SUPPLY CHARACTERIZATION

### 6.2.1 PURCHASED OR IMPORTED WATER

#### CENTRAL BASIN MUNICIPAL WATER DISTRICT

The City can purchase treated, imported water from Metropolitan Water District of Southern California through Central Basin Municipal Water District. MWD imports water from the Colorado River through the Colorado River Aqueduct, owned and operated by MWD, and the State Water Project, which utilizes the California Aqueduct for transmission to Southern California. Water delivered to CBMWD's sub-agencies can be treated at MWD's Weymouth Treatment Plant located in the City of La Verne.

CBMWD uses a tiered rate structure for water sales to its sub-agencies, including the City. Any water purchases in excess of the Tier 1 allocation may incur Tier 2 rates. The City can purchase treated, imported water directly from its CENB-46 connection with a capacity of 30 cubic feet per second). The City's purchases of treated, imported water from CBMWD over the past five years has been tabulated in Section 6.1. Over the past five years, the City has purchased 0 AFY to 314 AFY, with an average of 80 AFY from CBMWD. The City's projected purchases of treated, imported water from CBMWD, over the next 25 years in five-year increments, is provided in Table 6-9.

The City's treated imported water supplies from MWD, through CBMWD, may be impacted during a multi-year drought or other conditions which limits MWD from delivering sufficient water supplies to all of its member agencies, and consequently to the City. In anticipation of such a reduction in supplies, MWD developed a Water Supply Allocation Plan (WSAP) which is briefly described below. The WSAP provides a means of equitably providing reduced water supplies to each of MWD's member agencies for up to 10 levels of reduction representing up to a 50 percent reduction.



During CY 2007, critically dry conditions impacted MWD's water supply sources. In addition, a ruling in the Federal Courts in August 2007 provided protective measures for the Delta Smelt (and subsequently other aquatic species) in the Sacramento-San Joaquin River Delta resulting in restrictions on the availability of State Water Project water. As a result, MWD adopted a Water Supply Allocation Plan in February 2008 to allocate available water supplies to its member agencies. MWD revised the WSAP in December 2014.

The WSAP establishes ten different shortage levels and a corresponding Allocation to each member agency. Based on the shortage levels established by MWD, the WSAP provides a separate reduced Allocation to a member agency for its 1) Municipal and Industrial (M&I) retail demand and 2) replenishment demand. The WSAP formula considers historical local water production, full service treated water deliveries, agricultural deliveries and water conservation efforts when calculating each member agency's Allocation.

In general, the WSAP process calculates total historical member agency demand. That historical demand is then compared to member agency projected local supply for a specific Allocation year. The balance required from MWD, less an Allocation reduction factor, is the member agency's "Water Supply Allocation" of imported water from MWD. When a member agency reduces its local demand through conservation or other means, the Allocation of imported water will increase. Depending on MWD's available supply, MWD can establish a specific WSAP shortage level. The shortage level causes a regional reduction and calculates an allocation for each of its member agency. Additional information about MWD's WSAP is provided in MWD's Regional 2020 UWMP which is incorporated by reference. The following is a summary of MWD's water shortage levels:



- Level 1 – Regional Percent Reduction of 5%
- Level 2 – Regional Percent Reduction of 10%
- Level 3 – Regional Percent Reduction of 15%
- Level 4 – Regional Percent Reduction of 20%
- Level 5 – Regional Percent Reduction of 25%
- Level 6 – Regional Percent Reduction of 30%
- Level 7 – Regional Percent Reduction of 35%
- Level 8 – Regional Percent Reduction of 40%
- Level 9 – Regional Percent Reduction of 45%
- Level 10 – Regional Percent Reduction of 50%

In response to a fourth consecutive year of below average rainfall and critically dry conditions, MWD declared a WSAP Allocation Level 3 for fiscal year 2015-16, which represented a regional reduction of 15 percent. MWD rescinded the WSAP for fiscal year 2016-17 and has not reinstated the WSAP since that time.

## 6.2.2 GROUNDWATER

### CWC 10631.

*(b)(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:*

*(A) The current version of any groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720), any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management for basins underlying the urban water supplier's service area.*

*(B) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to coordinate with groundwater sustainability agencies or groundwater*



*management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).*

*(C) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

*(D) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

## CENTRAL BASIN

### **Central Basin - Sustainable Groundwater Management Act**

The Central Basin is a subbasin of the Coastal Plain of Los Angeles Groundwater Basin pursuant to DWR Bulletin 118, Basin Number 4-11.04. Pursuant to the Sustainable Groundwater Management Act of 2014 (SGMA), the Central Basin was named as an adjudicated groundwater basin and is exempt from the requirements of developing a Groundwater Sustainability Plan (GSP) and subsequently was designated a very-low-priority basin in DWR's 2019 SGMA Basin Prioritization report. In compliance with SGMA, the Central Basin Watermaster (which is the Water Replenishment District of Southern California, or WRD) submits its Annual Report to DWR.

### **Central Basin - Adjudication**

On January 2, 1962, the Central and West Basin Water Replenishment District (now the Water Replenishment District of Southern California) filed Case No. 786,656 in the Superior Court, County of Los Angeles, naming more than 700 parties as defendants. It sought to adjudicate water rights of groundwater and regulate pumping from the Central Basin. By September 1962, a proposed agreement had been approved by a sufficient number of water producers (producers owning over 75 percent of the Assumed Relative



Rights within Central Basin) to guarantee control over groundwater pumping in Central Basin. On September 28, 1962, the Court signed the “Order Pursuant to Stipulation and Interim Agreement and Petition for Order” and appointed the Department of Water Resources as Watermaster.

Subsequently, a stipulated judgment was drafted. Approval was received by public utility water companies and other producers representing well over 200,000 AF, or 75 percent, of the total rights within Central Basin. This was a prerequisite to filing the stipulated judgment with the Court. On May 17, 1965, the case went to trial before Judge Edmund M. Moor. Following testimony on engineering, geology, hydrology, and safe yield of Central Basin and arguments on water right entitlement, the case was continued to August 25, 1965. Shortly thereafter, Judge Moor appointed DWR as Watermaster. The final Judgment was signed on October 11, 1965 and became effective on October 1, 1966.<sup>7</sup>

The Judgment was amended on March 21, 1980, to provide for a transition in the administrative year from a water year (October 1 to September 30) to a fiscal year (July 1 to June 30). Under the Judgment, this transition in turn contained a “short” administrative year of nine months (from October 1, 1980 to June 30, 1981). The administrative year starting July 1, 1981 was on a fiscal year basis.

The Judgment was again amended on July 19, 1985, modifying the annual budget (\$20 minimum assessment) and exchange pool provisions. The second amended Judgment of May 6, 1991 modified the carryover and overproduction provisions (to 20 percent of allowed pumping allocation or 20 AF, whichever is greater, from 10 percent of allowed pumping allocation or 10 AF), and defined drought carryover, and provided for exemptions for extractors of contaminated groundwater.

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<sup>7</sup> Central and West Basin Water Replenishment District, etc. v. Charles E. Adams, et al, Los Angeles County Case No. 786,656.



In December 2013, the Central Basin Judgment was amended (“Third Amended” Central Basin Judgment) to confirm the retirement of DWR as the Watermaster of Central Basin. The Judgment established three separate bodies to assist the Court in the administration and enforcement of the provisions and stipulations of the Judgment. The first body is the Administrative Body, which administers Watermaster accounting and financial reporting activities. The Water Replenishment District of Southern California was appointed by the Court for this role. The second body is the Water Rights Panel, which enforces issues related to groundwater production rights as defined by the Judgment. The Water Rights panel comprises of seven elected water rights holders within the Central Basin. The third administrative body is the Storage Panel, which reviews and approves groundwater storage efforts. The Storage Panel is comprised of the Water Rights Panel and the WRD Board of Directors. A copy of the Central Basin Judgment is provided in Appendix I.

The Court approved 2013 Judgment amendments also implemented a water storage program. The amendment states, “...a party may store up to 200 percent of the party’s Allowed Pumping Allocation, if space is available.” In addition, the amendments allow parties to convert unused Allowed Pumping Allocation to stored water and revised the amount of carryover to be equal to 100 percent of the party’s Allowed Pumping Allocation minus the amount of carryover water set aside for storage, as noted above. The purpose of the storage program creates an added reliability in water supply from the Central Basin. In addition, the amendments allow for transfer of water between Central Basin and West Basin by permitting parties with water rights in Central Basin to increase production in Central Basin, while another party decreases production in West Basin by the corresponding amount.

Under the Judgment, water rights are fixed and do not vary year to year. Water producers cannot exceed their water rights by more than 20 percent or 20 AF, whichever is greater, in any year and an adjustment is made the following year. In addition, water producers cannot carry over more than 20 percent or 20 AF, whichever is greater, of their water rights for use in the following year. In addition, the Central Basin Judgment includes an





amendment which implemented a water storage program. A party may store up to 50 percent of the party's Allowed Pumping Allocation in an Individual Storage Account and 150 percent of the party's Allowed Pumping Allocation in a Community Storage Account if space is available. The amendments also allow parties to convert unused Allowed Pumping Allocation to stored water and revised the amount of carryover to be equal to 60 percent of the party's Allowed Pumping Allocation minus the amount of carryover water set aside for storage. The purpose of the storage program creates an added reliability in water supply from the Central Basin.

### **Central Basin - Description**

Central Basin is one of two groundwater basins in the Coastal Plain of Los Angeles County. It is comprised of Quaternary-age sediments (less than 1.8 million years old) of gravel, sand, silt, and clay that were deposited from the erosion of nearby hills and mountains, and from historical beaches and shallow ocean floors that covered the area in the past. Underlying these Quaternary sediments are basement rocks such as the Pliocene Pico Formation that generally do not provide sufficient quantities of groundwater for pumping. Separating the Central Basin from the West Coast Basin is the NIU, a series of discontinuous faults and folds that form a prominent line of northwest trending hills including the Baldwin Hills, Dominguez Hills, and Signal Hill.

Central Basin covers approximately 270 square miles and is bounded on the north by the Hollywood Basin and the Elysian, Repetto, Merced, and Puente Hills, to the east by the Los Angeles County/Orange County line, and to the south and west by the NIU. DWR divided the Central Basin into four sections: the Los Angeles Forebay, the Montebello Forebay, the Whittier Area, and the Pressure Area. Pursuant to DWR Bulletin 118 (for Basin Number 4-11.04), the total storage capacity of the Central Basin is estimated at approximately 13,800,000 AF.



The aquifers of Central Basin received their water supply primarily from the surface and subsurface inflow of water from the San Gabriel Valley. The water originates as rainfall in the San Gabriel Mountains, the runoff from which is conveyed to the Los Angeles River, the Rio Hondo, and the San Gabriel River. The Los Angeles River enters Central Basin through the Los Angeles Narrows, crosses the Los Angeles Forebay Area, and proceeds south across Central Basin, exiting Central Basin through the Dominguez Gap in West Basin. The Rio Hondo enters Central Basin at Whittier Narrows parallel to the San Gabriel River, proceeds southwesterly across the Montebello Forebay Area and joins the Los Angeles River midway across the Basin. The San Gabriel River also enters Central Basin through the Whittier Narrows, crosses the Montebello Forebay, and runs south to the Pacific Ocean near Long Beach at the Orange County line.

As the Rio Hondo and San Gabriel River flow through the Upper San Gabriel Valley toward Whittier Narrows, much of their flow percolates into the Main Basin. This water crosses the Whittier Narrows and enters Central Basin as subsurface flow into the aquifers of Central Basin. At the same time, the surface flows of the Rio Hondo and the San Gabriel River percolate downward into the aquifers of Central Basin in the Montebello Forebay. In the Montebello Forebay, the underground aquifers merge and are unconfined, and thus are capable of receiving large quantities of water from percolation through the sand and gravel surface of the forebay area.

The Los Angeles Forebay area is also favorably situated for percolation from the flows of the Los Angeles River, but the Los Angeles Forebay has been largely eliminated as a source of freshwater replenishment to Central Basin, due to lining of the Los Angeles River channel and the impervious surface in the forebay area. In the Montebello Forebay area, by contrast, flood flows have been largely controlled through the construction of the Whittier Narrows Dam, and the river channels have not been lined in the area, so percolation still occurs.



Groundwater in the Central Basin provides a substantial portion of the water supply needed by residents and industries in the overlying area. Groundwater occurs in the pore spaces of the sediments in the basin. The major aquifers identified in Central Basin include the following, from shallowest to deepest: a) the Gaspar and semi-perched aquifers of the Holocene Alluvium Formation; b) the Exposition, Artesia, Gage, and Gardena aquifers of the Upper Pleistocene Lakewood Formation; c) the Hollydale, Jefferson, Lynwood, and Silverado aquifers of the Lower Pleistocene Upper San Pedro Formation; and d) the Sunnyside Aquifer of the Lower Pleistocene Lower San Pedro Formation.

WRD's Leo J. Vander Lans Advanced Water Treatment Facility (LVL) was built in 2003 and expanded in 2014. The facility is located in the City of Long Beach and currently produces about 8 MGD of advanced treated water for injection at the Alamitos Barrier in Long Beach. The LVL also injects tertiary treated recycled water from LACSD's Long Beach Water Reclamation Plant. By injecting the LVL's advanced treated water and effluent from the Long Beach Water Reclamation Plant, groundwater supply is replenished and seawater intrusion is prevented.

The WRD Board of Directors established the WIN program in 2003 to protect the security of the region's groundwater supplies. The WIN program is comprised of various projects that include expansions to existing water treatment facilities, spreading activities, and stormwater capture. The largest component of the WIN program is the Albert Robles Center for Water Recycling & Environmental Learning (formerly the Groundwater Reliability Improvement Program), which was completed in 2019. The purpose of the Albert Robles Center is to reduce demand for imported water at the Rio Hondo and San Gabriel Coastal Spreading Grounds. The Albert Robles Center includes ultrafiltration, reverse osmosis, and ultraviolet disinfection and advanced oxidation to treat recycled water by significantly reducing the total dissolved solids concentration.



Groundwater quality is monitored by WRD. Groundwater in the Central Basin is currently contaminated with natural metals such as arsenic, iron and manganese, Volatile Organic Chemicals (VOCs), including trichloroethylene (TCE) and perchloroethylene (PCE), 1,4-Dioxane, Perchlorate, and Per- and Poly-Fluoroalkyl Substances (PFAS). In addition, Total Dissolved Solids (TDS) concentrations exceed drinking water quality standards. Wellhead treatment is necessary in these areas to allow delivery of the groundwater for potable purposes.

As previously discussed, DWR divided the Central Basin into four sections: the Los Angeles Forebay, the Montebello Forebay, the Whittier Area, and the Pressure Area. Below is a discussion of groundwater level changes, pursuant to WRD's 2020 Engineering Survey and Report.

- In the Los Angeles Forebay, the water level high was observed in 1938 with an elevation of approximately 70 feet above mean sea level (msl) and by 1962, the water levels had fallen by 180 feet to an elevation of 109 feet below msl due to over pumping and lack of recharge. Water levels have improved since then due to pumping rights adjudication and managed aquifer recharge. In 2019, the groundwater levels were at an elevation of 20.3 feet below msl.
- In the Montebello Forebay, the water level high was observed in 1942 with an elevation of approximately 137.8 feet above mean sea level (msl) and by 1958, the water levels had fallen by 117 feet to an elevation of 20.9 feet above msl due to over pumping and lack of recharge. Water levels have improved since then due to pumping rights adjudication and managed aquifer recharge. In 2019, the groundwater levels were at an elevation of 72.9 feet above msl.



- In the Pressure Area, the water level high was observed in 1935 at about 10 feet above msl when they began to continually decline by over 110 feet until the observed low of about 120 feet below msl in 1961 due to over pumping and lack of recharge. Groundwater levels improved during the early 1960s due to replenishment operations. Between 1995 and 2007, there were 100-foot swings in water levels as a result of seasonal pumping from producers. Water levels have improved since then due to pumping rights adjudication and managed aquifer recharge. In 2019, the groundwater levels were at elevations between 75 and 91.1 feet below msl.
- Long-term hydrographs and records were not maintained for the Whittier Area; however, groundwater levels have been tracked from recently constructed monitoring wells.

### **Central Basin - Historical and Projected Basin Production**

The City currently produces groundwater from three wells in the Central Basin. The total capacity of the City's groundwater wells is approximately 8,300 gallons per minute (GPM). The City's current Allowed Pumping Allocation in the Central Basin is 4,680.03 AFY. As discussed in Section 6.2.7, the City leases Central Basin water rights on an annual basis to allow for additional production above its Allowed Pumping Allocation. The City's production over the past five years has been tabulated in Section 6.1. Over the past five years, the City has produced 7,531 AFY to 8,448 AFY, with an average of 8,119 AFY from the Central Basin. The City's projected production from the Central Basin, over the next 25 years in five-year increments, is provided in Table 6-9.



**Table 6-1 Groundwater Volume Pumped**

Submittal Table 6-1 Retail: Groundwater Volume Pumped						
<input type="checkbox"/>	Supplier does not pump groundwater. The supplier will not complete the table below.					
<input type="checkbox"/>	All or part of the groundwater described below is desalinated.					
Groundwater Type <i>Drop Down List</i> <i>May use each category multiple times</i>	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
<i>Add additional rows as needed</i>						
Alluvial Basin	Central Basin	7,531	8,238	8,382	7,996	8,448
<b>TOTAL</b>		7,531	8,238	8,382	7,996	8,448
<b>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</b>						
NOTES:						

### 6.2.3 SURFACE WATER

The City does not use surface water supplies to meet its water demands.

### 6.2.4 STORMWATER

The City does not use stormwater supplies to meet its water demands. However, the City is reviewing the feasibility of a stormwater capture program. Based on the City’s “*Cerritos Sports Complex Project Preliminary Design Report*”, dated November 2019, the proposed stormwater capture program would capture about 300 AFY of stormwater, provide storage, and provide treated stormwater to the Coyote Creek, San Gabriel River, and the Cerritos Sports Complex site.



## 6.2.5 WASTEWATER AND RECYCLED WATER

### CWC 10633.

*The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:*

*(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*

*(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.*

*(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*

*(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*

*(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*

*(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.*

*(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*

Discussion of wastewater collection, treatment, and recycled water use is included in this chapter. Municipal recycled water is municipal wastewater that has been treated at a municipal wastewater facility in a manner specified by the SWRCB-DDW to a specified quality to enable it to be used again for a beneficial purpose. Municipal wastewater must meet two requirements; it must be reused beneficially pursuant to Title 22 of the California Code of Regulations and it must be reused in accordance with a Regional Water Quality



Control Board permit. Title 22 of the California Code of Regulations defines beneficial reuse of recycled water as "...the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to water of the State..."

The City uses recycled water which is produced by the LACSD from the Los Coyotes Water Reclamation Plant (WRP) located within the City's service area. The City serves recycled water to customers within the City's service area for landscape irrigation at parks, schools, residential developments, public and commercial buildings, Iron-Wood Nine Golf Course, Artesia Cemetery, Cerritos College, medians and parkways, and two nurseries.

#### **6.2.5.1 RECYCLED WATER COORDINATION**

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##### **CWC 10633.**

*The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area...*

---

The City's 2020 UWMP was prepared in coordination with local water, wastewater, groundwater, and planning agencies within its service area to analyze the current and projected wastewater supply for collection, treatment, disposal, and distribution. Wastewater from the City's service area is collected and treated at the Long Beach WRP and Joint Water Pollution Control Plant (JWPCP) which is owned and operated by LACSD. The City then purchases recycled water produced from LACSD's Los Coyotes WRP and distributes it throughout its service area.





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## 6.2.5.2 WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL

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### CWC 10633.

*(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*

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Wastewater generated by the City is treated by LACSD. Wastewater is collected within the City's local sewer collection system. The City's local sewers tie into LACSD's regional trunk sewers at multiple locations within the City's service area. The regional trunk sewer lines deliver wastewater for treatment outside of the City's service area to LACSD's Long Beach WRP and JWPCP.

Municipal wastewater is collected from residential, commercial, and industrial customers within the City's service area. The water reclamation plants serving the City include the Long Beach WRP and JWPCP; however, the percentage breakdown between these two plants in treating the City's wastewater is unknown. LACSD estimates approximately 69 gallons per person per day of wastewater is generated within LACSD's service area. LACSD estimates approximately 60 gallons per person per day of wastewater is generated within LACSD's service area. Based on a CY 2020 population of 50,143 within the City's service area, the estimated amount of wastewater collected by the City is approximately 3.0 million gallons per day (about 3,370 AFY), as shown in Table 6-2.

The Long Beach WRP, located in the City of Long Beach, was completed in 1973 and expanded in 1984 to its current design capacity of 25 MGD. Treatment at the Long Beach WRP includes primary, secondary, and tertiary treatment. Untreated wastewater from the Long Beach WRP is conveyed to JWPCP for further treatment.

JWPCP, which began operation in 1928 in the City of Carson, currently has a treatment capacity of about 300 MGD. The treatment level is primary and secondary treatment with



disinfection. The JWPCP plant serves a population of approximately 3.5 million people. Solids collected in primary and secondary treatment are processed in anaerobic digestion tanks where bacteria break down organic material and produce methane gas. Treated wastewater is ultimately disinfected prior to being discharged to the Pacific Ocean. All water discharged to the ocean is monitored to ensure compliance with applicable local, state, and federal standards for discharge water.

The City's wastewater is treated and disposed of outside of the City's service area as shown in Table 6-3.



Table 6-2 Wastewater Collected Within Area in 2020

Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020						
<input type="checkbox"/> There is no wastewater collection system. The supplier will not complete the table below.						
Percentage of 2020 service area covered by wastewater collection system <i>(optional)</i>						
Percentage of 2020 service area population covered by wastewater collection system <i>(optional)</i>						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? <i>Drop Down List</i>	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? <i>Drop Down List</i>	Is WWTP Operation Contracted to a Third Party? <i>(optional)</i> <i>Drop Down List</i>
Sanitation Districts of Los Angeles County	Estimated	3,370	Sanitation Districts of Los Angeles County	Long Beach WRP and Joint Water Pollution Control Plant	No	No
<b>Total Wastewater Collected from Service Area in 2020:</b>		3,370				
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES:						



**Table 6-3 Wastewater Treatment and Discharge within Service Area in 2020**

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020											
<input checked="" type="checkbox"/> No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.											
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional) <sup>2</sup>	Method of Disposal <i>Drop down list</i>	Does This Plant Treat Wastewater Generated Outside the Service Area? <i>Drop down list</i>	Treatment Level <i>Drop down list</i>	2020 volumes <sup>1</sup>				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
<b>Total</b>							0	0	0	0	0

<sup>1</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.  
<sup>2</sup> If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at <https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility>

NOTES:

**6.2.5.3 RECYCLED WATER SYSTEM DESCRIPTION**

**CWC 10633.**

*(c) A description of the recycled water currently being used in the supplier’s service area, including, but not limited to, the type, place, and quantity of use.*

Wastewater from the City’s service area is collected and treated at the Long Beach WRP and the Joint Water Pollution Control Plant (JWPCP), which are owned and operated by LACSD. The City then purchases recycled water from LACSD’s Los Coyotes WRP and distributes it throughout its service area which includes the City’s service area. A map of the recycled water system is provided in Appendix J.

The Los Coyotes WRP is located within the City’s service area. This treatment facility provides primary, secondary, and tertiary treatment for 37.5 MGD of wastewater and



produces an average of 18 MGD of recycled water. 5 MGD of the total recycled water produced is delivered for use as municipal recycled water in areas including the City's service area.

The City's recycled water distribution system includes 142,600 feet of pipeline. A 14,800 GPM pump station next to Los Coyotes WRP delivers water to reuse sites through 30-inch cement-lined and coated steel line which branches into two 24-inch concrete cylinder pipes serving the north part of the City and the south part of the City.

#### 6.2.5.4 POTENTIAL, CURRENT, AND PROJECTED RECYCLED WATER USES

##### CWC 10633.

*(b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use. A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.*

*(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*

*(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*

This section discusses the potential, current, and projected beneficial use of recycled water within the City. Beneficial use is defined by Title 22 of the California Code of Regulations as "the use of recycled water that has been transported from the point of treatment or production to the point of use without an intervening discharge to the waters of the State."



Currently, the City delivers recycled water provided by and purchased from LACSD. The City uses recycled water for landscape irrigation at parks, schools, golf courses, Artesia Cemetery, Cerritos College, medians and parkways, and a nursery.

Table 6-4 describes the supply currently being used and the supply available for use in a recycled water project. Table 6-5 compares the projected use for 2020 versus actual use of recycled water in 2020.

**Table 6-4 Current and Projected Recycled Water Direct Beneficial Uses Within Service Area**

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area										
<input type="checkbox"/> Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.										
Name of Supplier Producing (Treating) the Recycled Water:		Los Angeles County Sanitation District								
Name of Supplier Operating the Recycled Water Distribution System:		City of Cerritos								
Supplemental Water Added in 2020 (volume) <i>Include units</i>		0								
Source of 2020 Supplemental Water		N/A								
Beneficial Use Type <i>Insert additional rows if needed.</i>	Potential Beneficial Uses of Recycled Water (Describe)	Amount of Potential Uses of Recycled Water (Quantity) <i>Include volume units<sup>1</sup></i>	General Description of 2020 Uses	Level of Treatment <i>Drop down list</i>	2020 <sup>1</sup>	2025 <sup>1</sup>	2030 <sup>1</sup>	2035 <sup>1</sup>	2040 <sup>1</sup>	2045 <sup>1</sup> (opt)
Agricultural irrigation										
Landscape irrigation (excl golf courses)	Schools, Parks, City Landscape		Schools, Parks, City Landscape	Tertiary	1,894	2,193	2,193	2,193	2,193	2,193
Golf course irrigation										
Commercial use				Tertiary	265	307	307	307	307	307
Industrial use										
Geothermal and other energy production										
Seawater intrusion barrier										
Recreational impoundment										
Wetlands or wildlife habitat										
Groundwater recharge (IPR)										
Reservoir water augmentation (IPR)										
Direct potable reuse										
Other (Description Required)										
<b>Total:</b>					2,159	2,500	2,500	2,500	2,500	2,500
2020 Internal Reuse										
<sup>1</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.										
NOTES:										



Table 6-5 2015 Recycled Water Use Projection Compared to 2020 Actual

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual		
<input type="checkbox"/>	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.	
Beneficial Use Type	2015 Projection for 2020 <sup>1</sup>	2020 Actual Use <sup>1</sup>
<i>Insert additional rows as needed.</i>		
Agricultural irrigation		
Landscape irrigation (exc golf courses)	2,200	1,894
Golf course irrigation		
Commercial use	305	265
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
<b>Total</b>	<b>2,505</b>	<b>2,159</b>
<sup>1</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.		
NOTE:		





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### 6.2.5.5 ACTIONS TO ENCOURAGE AND OPTIMIZE FUTURE RECYCLED WATER USE

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**CWC 10633.**

*The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:*

*(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*

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The City provides incentives by setting recycled water rates below potable water rates to encourage recycled water use. There is also no minimum amount of recycled water available for purchase. The City also reserves funds within its budget each year to assist customers in converting their potable water connection to a recycled water system connection. The City continues to support the establishment of funding sources for further planning studies for future projects to increase recycled water demands. The City will also continue to support seeking funding for regional water recycling projects and programs.





**Table 6-6 Methods to Expand Future Recycled Water Use**

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
<input type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6.2.5	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
<i>Add additional rows as needed</i>			
Provide Recycled Water Incentives	Provides financial incentives to encourage recycled water use	Ongoing	350
<b>Total</b>			<b>350</b>
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>			
NOTES:			

**6.2.6 DESALINATED WATER OPPORTUNITIES**

[CWC 10631.](#)

*(g) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.*

Central Basin

The average TDS concentrations for the Central Basin groundwater is less than its secondary MCL of 1,000 mg/l, based on most recent available data in the City’s groundwater wells. Consequently, the City has not needed to investigate the use of desalination to develop or reestablish a new long-term supply. However, there may be opportunities for use of desalinated ocean water as a future potential water supply source,



if needed, through coordination with other agencies that have ocean desalination programs.

## 6.2.7 WATER EXCHANGES AND TRANSFERS

### CWC 10631.

*(c) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.*

#### 6.2.7.1 EXCHANGES

Pursuant to DWR's 2020 Final Guidebook, "*Water exchanges are typically water delivered by one water user to another water user, with the receiving water user providing water in return at a specified time or when the conditions of the parties' agreement are met. Water exchanges can be strictly a return of water on a basis agreed upon by the participants or it can include payment and the return of water.*"

The City is currently not entered into any agreements for the exchange of water.

#### 6.2.7.2 TRANSFERS

Pursuant to DWR's 2020 Final Guidebook, "*The Water Code defines a water transfer as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water or water rights.*"

Pursuant to the Central Basin Judgment (discussed in Section 6.2), parties to the Judgment are allowed to assign, transfer, license, or lease their water rights. The Judgment also allows for the transfer of stored water between parties. The City is able to utilize the transfer opportunities available for Central Basin water when necessary.



As discussed in Section 6.2.2, the City leases Central Basin water rights on an annual basis to allow for additional production above its Allowed Pumping Allocation. The City has consistently leased annual water rights from other parties to the Central Basin Judgment, including the City of Downey (2,000 AF), the City of South Gate (1,000 AF), ABC Unified School District (250 AF), PABCO Building Products (500 AF), and others. Water lease records maintained by WRD are provided in Appendix K.

### **6.2.7.3 EMERGENCY INTERTIES**

Emergency interties (or interconnections) are distribution system interconnections between water agencies for use during critical situations where one system or the other is temporarily unable to provide sufficient potable water to meet its water demands and/or fire protection needs. An emergency interconnection will allow a water system to continue serving water during critical situations such as local water supply shortages as a result of earthquakes, fires, prolonged power outages, and droughts.

The City currently has 7 emergency interconnections with neighboring cities including the Cities of Lakewood, La Palma, Santa Fe Springs, and Norwalk, and private water companies including Golden State Water Company, Suburban Water Systems, and Liberty Utilities.



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## 6.2.8 FUTURE WATER PROJECTS

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### CWC 10631.

*(f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

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Following approval of the City's Fiscal Year 2021-2022 CIP budget, the City will move forward with design and construction of a new groundwater well (Well C-5) within the City's service area. The cost estimate for designed and construction will be determined by yield, water quality, water treatment, security, storage, and automated controls. The well is projected to reduce imported water demands by up to 2,200 GPM if additional groundwater rights can be leased.



**Table 6-7 Expected Future Water Supply Projects or Programs**

Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
<input type="checkbox"/>	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
<input type="checkbox"/>	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
Section 6.2.8	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down List</i>	Expected Increase in Water Supply to Supplier* <i>This may be a range</i>
	<i>Drop Down List (y/n)</i>	<i>If Yes, Supplier Name</i>				
<i>Add additional rows as needed</i>						
New Groundwater Well	No		Design and construct new groundwater well (Well C-5)	2023	All Year Types	3,500
<b>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</b>						
NOTES:						

**6.2.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER**

**CWC 10631.**

*(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following...*

*(b)(2) When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies.*

*(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).*



### 6.2.9.1 DESCRIPTION OF SUPPLIES

As discussed in Section 6.2, the City's water supply sources consist of treated imported water purchased from MWD through CBMWD (see Section 6.2.1), groundwater from the Central Basin (see Section 6.2.2), and recycled water (see Section 6.2.5). The actual quantities of the water supply sources available to the City during CY 2020 are summarized in Table 6-8. The reliable quantities of projected water supply sources available to the City in five-year increments through CY 2045 during normal or average years are summarized in Table 6-9. The reliability of these sources of supply are addressed in Section 7.2.3, including during normal years, single dry years, and five consecutive year droughts.

The order of use of the City's projected reliable water supplies from CY 2020 through CY 2045 in five-year increments is based on historical practices, water supply availability, and the cost of water. It is anticipated the City will initially use groundwater produced from the Central Basin. At the same time, the City will continue to use recycled water for non-potable demands. The City will also use treated imported water. In addition the City will continue to lease water rights from the Central Basin to produce sufficient groundwater supplies (as discussed in Sections 6.2.2 and 6.2.7).

### 6.2.9.2 QUANTIFICATION OF SUPPLIES

The actual quantities of the water supply sources available to the City during CY 2020 are summarized in Table 6-8. The reliable quantities of projected water supply sources available to the City in five-year increments through CY 2045 during average years are summarized in Table 6-9. The reliability of these sources of supply are addressed in Section 7.2.3, including during normal years, single dry years, and five consecutive year droughts.



The City’s projected quantities of treated imported water supplies are based on historical long-term averages and available supplies during previous dry year conditions. The City’s projected quantities of recycled water supplies to meet non-potable demands are based on historical long-term averages. The City’s projected quantities of groundwater supplies from Central Basin are based on meeting the remainder of the City’s total water demands. It is anticipated the City will have sufficient water supplies available to meet projected demands.

**Table 6-8 Water Supplies - Actual**

Submittal Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)	Central Basin	8,448	Drinking Water	
Purchased or Imported Water	Central Basin Municipal Water District	7	Drinking Water	
Recycled Water		2,159	Recycled Water	
<b>Total</b>		<b>10,614</b>		<b>0</b>
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES:				



**Table 6-9 Water Supplies – Projected**

Submittal Table 6-9 Retail: Water Supplies — Projected											
Water Supply  <b>Drop down list</b> May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool	Additional Detail on Water Supply	Projected Water Supply * Report To the Extent Practicable									
		2025		2030		2035		2040		2045 (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Groundwater (not desalinated)	Central Basin	9,847		10,529		10,841		11,054		11,266	
Purchased or Imported Water	Central Basin Municipal Water District	10		10		10		10		10	
Recycled Water	Los Angeles County Sanitation District	2,500		2,500		2,500		2,500		2,500	
<b>Total</b>		<b>12,357</b>	<b>0</b>	<b>13,039</b>	<b>0</b>	<b>13,351</b>	<b>0</b>	<b>13,564</b>	<b>0</b>	<b>13,776</b>	<b>0</b>
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>											
NOTES											

### 6.2.10 SPECIAL CONDITIONS

The City has considered the issues described below when developing its planned source of water supply.

#### 6.2.10.1 CLIMATE CHANGE EFFECTS

Climate change has the possibility of impacting the availability of planned water supplies, particularly during a drought period. Section 4.5 of this Plan provides a discussion regarding climate change effects on the City’s various sources of supply.

#### 6.2.10.2 REGULATORY CONDITIONS AND PROJECT DEVELOPMENT

The City has considered the implications of changing regulatory conditions and project development on the availability of planned water supplies. Section 1.4 provides a discussion regarding the reduced reliance on imported water supplies.





### 6.2.10.3 OTHER LOCALLY APPLICABLE CRITERIA

There are no locally applicable criteria which applies to the City.

## 6.3 SUBMITTAL TABLES COMPLETION USING THE OPTIONAL PLANNING TOOL

As discussed in Section 4.2.5, DWR has created an optional “Planning Tool Worksheet” for water suppliers to review and assess monthly water use trends. However, DWR has deemed the tool as optional and the City is not required by DWR to use the tool. Section 6.1 provides a tabulation of the City’s historical annual water uses for each water supply source. During the past 10 years, the City experienced a five consecutive year drought within its service area from CY 2011 to CY 2015. In addition, historical records indicate the City’s annual water demands typically have been even greater prior to CY 2012. The City has been able to provide sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands. In addition, the City has been able to provide water service to meet maximum day water demands for these years, including during the summer months. A further discussion regarding the reliability of the City’s water supply sources is provided in Chapter 7.

## 6.4 ENERGY USE

### CWC 10631.2.

*(a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:*

- (1) An estimate of the amount of energy used to extract or divert water supplies.*
- (2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.*



- (3) An estimate of the amount of energy used to treat water supplies.*
  - (4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.*
  - (5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.*
  - (6) An estimate of the amount of energy used to place water into or withdraw from storage.*
  - (7) Any other energy-related information the urban water supplier deems appropriate.*
- 

“Energy intensity” is defined as the quantity of energy consumed, measured in kilowatt hours (kWh), divided by the volume of water, measured in AF for a water management process over a one-year period. The information used to calculate the estimated energy intensity associated with the City’s water system is provided below. The energy intensity information is based on readily obtainable energy and water use data for the following water management processes: 1) extraction or diversion of water supplies; 2) placement into storage; 3) conveyance to distribution; 4) treatment; and 5) water system distribution.

The City has tabulated its energy intensity using readily obtainable energy consumption data obtained from monthly electricity bills from Southern California Edison (SCE) for the whole water system and the corresponding water use data obtained from available water meter readings. The City has reported the energy intensity associated with the water management processes which occur within its operational control. Because the City does not track individual energy usage for each water management process identified above, the City has estimated the energy intensity using a “total utility approach” (i.e. sum of all water management processes). The total energy consumed was approximately 13,256,447 kWh during Calendar Year 2020. Although the total energy consumption reported includes electricity usage for general administration (e.g. at the City’s headquarters) which is not associated with any water management processes, the general administration energy usage is considered negligible compared to overall water system use and has not been netted out.



The total volume of water entering the potable water system was approximately 8,455 AF during Calendar Year 2020 and is consistent with the total volume of water provided in Table 4-1 (less recycled water supplies).

The total energy intensity associated with the City's water management processes is estimated at 1,568 kWh/AF. The energy intensity data and calculations based on the "total utility approach" are provided in Table O-1B below.

The City's water management processes include "self-generated energy sources" including solar power through two photovoltaic arrays on top of the City's reservoirs. The estimated annual power generation is approximately 350,000 kWh.

The City's water management processes do not include "consequential hydropower generation" where the energy generation is a direct consequence of water delivery (i.e. all water passing through the energy generation devices is delivered to users). In addition, the City's water management processes do not include "non-consequential hydropower generation" where the energy generation is not a direct consequence of water delivery (i.e. energy could be generated even if no water was being delivered to water users).



Table O-1B. Recommended Energy Reporting — Total Utility Approach

**Urban Water Supplier:**

City of Cerritos

**Water Delivery Product** (If delivering more than one type of product use Table O-1C)

Retail Potable Deliveries

Table O-1B: Recommended Energy Reporting - Total Utility Approach				
Enter Start Date for Reporting Period	1/1/2020	Urban Water Supplier Operational Control		
End Date	12/31/2020			
<input type="checkbox"/> Is upstream embedded in the values reported?		Sum of All Water Management Processes	Non-Consequential Hydropower	
<i>Water Volume Units Used</i>	AF	Total Utility	Hydropower	Net Utility
<i>Volume of Water Entering Process (volume unit)</i>		8,455	0	8455
<i>Energy Consumed (kWh)</i>		13,256,447	0	13256447
<i>Energy Intensity (kWh/volume)</i>		1567.9	0.0	1567.9
<b>Quantity of Self-Generated Renewable Energy</b>				
	350,000	kWh		
<b>Data Quality</b> ( <i>Estimate, Metered Data, Combination of Estimates and Metered Data</i> )				
<i>Combination of Estimates and Metered Data</i>				
<b>Data Quality Narrative:</b>				
<p>The total energy consumed was identified based on Southern California Edison (SCE) billing records. Total energy includes records which are based on therms which have been converted to kilowatt hours. Although the total energy consumed includes electricity usage for general administration (which is not an identified water management process), general administration energy use is considered to be negligible compared to overall water system use and has not been netted out. The City generates renewable energy through solar power sources including through two photovoltaic arrays on top of the City's reservoirs. The estimated annual power generation is approximately 350,000 kWh.</p>				
<b>Narrative:</b>				
<p>The total energy consumption includes energy associated with operating groundwater production wells and booster pumps to deliver water in the distribution system. Energy consumption is also associated with plant lighting and air conditioning, and operating the Supervisory Control and Data Acquisition (SCADA) system and chlorination injection pumps.</p>				



## **CHAPTER 7**

### **WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT**

#### **LAY DESCRIPTION – CHAPTER 7**

#### **WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT**

Chapter 7 (Water Service Reliability and Drought Risk Assessment) of the City's 2020 Plan discusses and provides the following:

- Calendar Year 2018 represents an “average” or “normal” water year for the City in which the total amount of rainfall was similar to the historical average rainfall.
- A “single dry” year for the City was represented in Calendar Year 2017, in which the total amount of rainfall was below the historical average rainfall.
- A “five consecutive year drought” period for the City is represented from Calendar Year 2011 to Calendar Year 2015, where the total amount of rainfall during each of these years was less than the historical average rainfall.
- The City's current and projected water supplies available during normal years in five-year increments over the next 25 years are provided (through Calendar Year 2045) as shown on Table 7-2.
- The City's current and projected water supplies available during single dry years in five-year increments over the next 25 years are provided (through Calendar Year 2045) as shown on Table 7-3.
- The City's current and projected water supplies available during each year of a five consecutive year drought in five-year increments over the next 25 years are provided (through Calendar Year 2045) as shown on Table 7-4.
- The reliability of the City's water supply sources, including a review of water supply constraints, is provided. A single dry year or a five consecutive year drought period



will not compromise the City's ability to provide a reliable supply of water to its customers.

- A Drought Risk Assessment is provided which includes an assessment of the City's water supply reliability over a five consecutive year drought period. The City's DRA assumes a five consecutive year drought from Calendar Year 2021 through Calendar Year 2025 and includes a review of water supplies, water uses, and water supply reliability for each water supply source during this period. The City has the ability to enact varying water shortage levels (see Chapter 8) to help educate its customers and provide an economic incentive for the retail customers to reduce their water consumption.

### 7.1 INTRODUCTION

This section of the City's UWMP describes the City's ability to meet retail customer water demands by analyzing a variety of factors which affect the City's water supply. This section assesses the City's water service reliability during average years, single dry years, and during a five consecutive year drought period to meet the water needs of its customers. This section also includes the discussion of a Drought Risk Assessment which provides a mechanism for the City to evaluate the risk to its water supply under a drought lasting for the next five consecutive years.



## 7.2 WATER SERVICE RELIABILITY ASSESSMENT

### CWC 10635.

*(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.*

Information regarding the reliability of the City's water supplies is based on the historical precipitation data in the Central Basin area. Historical annual precipitation in the Central Basin area is discussed in Section 3.3 and is based on historical data collected from Station 049660 (Whittier City Yard, California). Furthermore, Section 4.5 of this Plan notes that potential future climate change impacts may result in an increase in the average annual precipitation within the City's service area, thus indicating use of historical data is a reasonable and conservative approach. As indicated in Section 3.3, the historical average rainfall in the vicinity of the City's service area is 14.5 inches. Calendar year 2018 represents an average or normal water year for the City in which the total amount of rainfall was similar to the historical average rainfall. A single dry year for the City was represented in CY 2017, in which the total amount of rainfall was below the historical average rainfall. A five consecutive year drought period for the City is represented from CY 2011 to CY 2015, where the total amount of rainfall during each of these years was less than the historical average rainfall. Table 7-1 summarizes these "base years" for average, single dry, and five consecutive year drought and provides the total amount of water supplies available to the City during those base years. The following discussion assesses the water service reliability of the City's water supply source.



### **Water Service Reliability - Imported Water**

The City's treated imported water supplies from MWD, through CBMWD, may be impacted during a multi-year drought or other conditions which limits MWD from delivering sufficient water supplies to all of its member agencies, and consequently to the City. In anticipation of such a reduction in supplies, MWD developed a WSAP which is briefly described below. The WSAP provides a means of equitably providing reduced water supplies to each of MWD's member agencies for up to 10 levels of reduction representing up to a 50 percent reduction.

During CY 2007, critically dry conditions impacted MWD's water supply sources. In addition, a ruling in the Federal Courts in August 2007 provided protective measures for the Delta Smelt (and subsequently other aquatic species) in the Sacramento-San Joaquin River Delta resulting in restrictions on the availability of State Water Project water. As a result, MWD adopted a WSAP in February 2008 to allocate available water supplies to its member agencies. MWD revised the WSAP in December 2014.

The WSAP establishes ten different shortage levels and a corresponding Allocation to each member agency. Based on the shortage levels established by MWD, the WSAP provides a separate reduced Allocation to a member agency for its 1) Municipal and Industrial (M&I) retail demand and 2) replenishment demand. The WSAP formula considers historical local water production, full service treated water deliveries, agricultural deliveries and water conservation efforts when calculating each member agency's Allocation.

In general, the WSAP process calculates total historical member agency demand. That historical demand is then compared to member agency projected local supply for a specific Allocation year. The balance required from MWD, less an Allocation reduction factor, is the member agency's "Water Supply Allocation" of imported water from MWD. When a member agency reduces its local demand through conservation or other means,





the Allocation of imported water will increase. Depending on MWD's available supply, MWD can establish a specific WSAP shortage level. The shortage level causes a regional reduction and calculates an allocation for each of its member agency. Additional information about MWD's WSAP is provided in MWD's Regional 2020 UWMP which is incorporated by reference. The following is a summary of MWD's water shortage levels:

- Level 1 – Regional Percent Reduction of 5%
- Level 2 – Regional Percent Reduction of 10%
- Level 3 – Regional Percent Reduction of 15%
- Level 4 – Regional Percent Reduction of 20%
- Level 5 – Regional Percent Reduction of 25%
- Level 6 – Regional Percent Reduction of 30%
- Level 7 – Regional Percent Reduction of 35%
- Level 8 – Regional Percent Reduction of 40%
- Level 9 – Regional Percent Reduction of 45%
- Level 10 – Regional Percent Reduction of 50%

In response to a fourth consecutive year of below average rainfall and critically dry conditions, MWD declared a WSAP Allocation Level 3 for fiscal year 2015-16, which represented a regional reduction of 15 percent. MWD rescinded the WSAP for fiscal year 2016-17 and has not reinstated the WSAP since that time.

### **Water Service Reliability - Groundwater**

#### **Central Basin**

The Central Basin groundwater supplies are managed by WRD, as discussed in Section 6.2.2. During a normal year (CY 2018), the City met about 77 percent of its total demands with supplies from the Central Basin. During a single dry year (CY 2017), the City met about 79 percent of its total demands with supplies from the Central Basin. During a five



consecutive year drought multiple dry year period (CY 2011 to CY 2015), the City met between 63 and 77 percent of its total demands with supplies from the Central Basin.

### **Water Service Reliability Summary**

Table 7-1 shows the water supplies during the base years (for average year, single dry year and a five consecutive year drought). As a result of the City's diverse water supply portfolio, water supplies may be re-apportioned during a five consecutive year drought to meet the City's water demands.

#### **7.2.1 SERVICE RELIABILITY - CONSTRAINTS ON WATER SOURCES**

##### **CWC 10631.**

*(b)(1) A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.*

The City's sources of supplies consist imported water purchased from MWD through CBMWD, groundwater from the Central Basin, and recycled water as described in Section 6.2. Although all of these supplies are managed, the following constraints may occur which the City has considered in this reliability analysis.

##### **Imported Water**

The City receives treated surface water from MWD through CBMWD. Water quality from MWD relating to supply reliability is addressed separately in MWD's 2020 Regional Urban Water Management Plan.



## Groundwater

The City produces groundwater from the Central Basin. The groundwater has been impacted by contamination, including by manganese. However, the City is considering the development and implementation of appropriate treatment (blending and/or treatment facilities) which will be approved by SWRCB-DDW. These groundwater supplies are considered reliable both from a water quality and quantity standpoint.

### **7.2.2 SERVICE RELIABILITY - YEAR TYPE CHARACTERIZATION**

#### **7.2.2.1 TYPES OF YEARS**

The City's base years for an average year, a single dry year, and a five consecutive year drought are discussed in Section 7.2 and are summarized in Table 7-1. As indicated in Chapter 6, the City's water supplies sources have been sufficient in meeting the City's historical water demands during an average year, a single dry year, and a five consecutive year drought. An average year was based on a historical year during the past 10 years with a total precipitation similar to the historical average precipitation in the vicinity of the City's service area. Because a single dry year or a five consecutive year drought period will not compromise the City's ability to provide a reliable supply of water to its customers, a single dry year in this Plan was selected based on one of the driest years during the past 10 years. The five consecutive year drought period was based on a period of five consecutive dry years during the past 10 years.

As indicated in Section 3.3, the historical average rainfall in the vicinity of the City's service area is 14.5 inches. CY 2018 represents an average or normal water year for the City in which the total amount of rainfall was similar to the historical average rainfall. A single dry year for the City was represented in CY 2017, in which the total amount of rainfall was less than the historical average rainfall. A five consecutive year drought period for the City is represented from CY 2011 to CY 2015, where the total amount of rainfall during each



of these years was less than the historical average rainfall. Table 7-1 summarizes these “base years” for an average year, a single dry year and a five consecutive year drought period and provides the total amount of water supplies available to the City during those base years.

**Table 7-1 Basis of Water Year Data (Reliability Assessment)**

Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	Available Supplies if Year Type Repeats	
		<input type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		<input checked="" type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	% of Average Supply
Average Year	2018	10,895	100%
Single-Dry Year	2017	10,374	95.2%
Consecutive Dry Years 1st Year	2011	11,232	103.1%
Consecutive Dry Years 2nd Year	2012	11,701	107.4%
Consecutive Dry Years 3rd Year	2013	11,910	109.3%
Consecutive Dry Years 4th Year	2014	11,817	108.5%
Consecutive Dry Years 5th Year	2015	9,946	91.3%
<p><i>Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.</i></p>			
<p><b>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</b></p>			
<p>NOTES:</p>			



### 7.2.2.2 SOURCES OF WATER DATA

The monthly historical average temperatures (including minimum and maximum), monthly historical average rainfall, and monthly ETo in the vicinity of the City's service area are discussed in Section 3.3. Historical climate information was obtained from the WRCC and from DWR's CIMIS.

### 7.2.3 WATER SERVICE RELIABILITY – SUPPLY AND DEMAND COMPARISON

#### CWC 10635.

*(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.*

The City primarily obtains its water supplies from three groundwater wells located in the Central Basin. As discussed in Section 7.3 and shown in Table 7-2, Table 7-3, and Table 7-4, each of the City's water supply sources share the same base years. As previously discussed in Section 7.2.1, a single dry year or a five consecutive year drought period will not compromise the City's ability to provide a reliable supply of water to its customers.

As previously discussed in Section 4.2.6, the City's projected normal year water demands over the next 25 years, in five-year increments, were based on the City's 2020 Water Use Target of 142 GPCD for potable water demands. The ratio of total water supplies (including potable and non-potable water supplies) available to the City during a historical average year in CY 2018 (or 10,895 AF) and during a historical single dry year in CY 2017 (or 10,374 AF) was used to estimate the City's projected water demands during single



dry years. The ratio of total water supplies available to the City during a historical average year in CY 2018 (or 10,895 AF) and a historical five consecutive year drought period from CY 2011 to CY 2015 (or 11,232 AF, 11,701 AF, 11,910 AF, 11,817 AF, and 9,946 AF respectively) was used to estimate the City’s projected water demands during a five consecutive year drought period. The City’s projected dry year water supplies over the next 25 years were based on the minimum supplies needed by the City to meet projected single-dry year demands. Table 7-2, Table 7-3, and Table 7-4 summarize the City’s projected water demands and supplies over the next 25 years in five-year increments, including during normal years, single dry years, and a five consecutive year drought periods. These tables indicate the City can meet water demands during normal years, single dry years, and a five consecutive year drought period over the next 25 years.

**7.2.3.1 WATER SERVICE RELIABILITY – NORMAL YEAR**

Table 7-2 summarizes the City’s projected water demands and supplies over the next 25 years in five-year increments during normal years. Table 7-2 indicates the City can meet water demands during normal years over the next 25 years.

**Table 7-2 Normal Year Supply and Demand Comparison**

Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045 (Opt)
Supply totals ( <i>autofill from Table 6-9</i> )	12,357	13,039	13,351	13,564	13,776
Demand totals ( <i>autofill from Table 4-3</i> )	12,357	13,039	13,351	13,564	13,776
Difference	0	0	0	0	0
NOTES:					



**7.2.3.2 WATER SERVICE RELIABILITY – SINGLE DRY YEAR**

Table 7-3 summarizes the City’s projected water demands and supplies over the next 25 years in five-year increments during single dry years. Table 7-3 indicates the City can meet water demands during single dry years over the next 25 years.

**Table 7-3 Single Dry Year Supply and Demand Comparison**

<b>Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison</b>					
	2025	2030	2035	2040	2045 (Opt)
Supply totals*	11,767	12,416	12,713	12,915	13,118
Demand totals*	11,767	12,416	12,713	12,915	13,118
Difference	0	0	0	0	0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>					
NOTES:					

**7.2.3.3 WATER SERVICE RELIABILITY – FIVE CONSECUTIVE DRY YEARS**

Table 7-4 summarizes the City’s projected water demands and supplies over the next 25 years in five-year increments during five consecutive year drought periods. Table 7-4 indicates the City can meet water demands during five consecutive year drought periods over the next 25 years.



Table 7-4 Multiple Dry Years Supply and Demand Comparison

Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	12,740	13,443	13,764	13,983	14,202
	Demand totals	12,740	13,443	13,764	13,983	14,202
	Difference	0	0	0	0	0
Second year	Supply totals	13,272	14,004	14,339	14,567	14,795
	Demand totals	13,272	14,004	14,339	14,567	14,795
	Difference	0	0	0	0	0
Third year	Supply totals	13,509	14,254	14,596	14,828	15,060
	Demand totals	13,509	14,254	14,596	14,828	15,060
	Difference	0	0	0	0	0
Fourth year	Supply totals	13,404	14,143	14,482	14,712	14,942
	Demand totals	13,404	14,143	14,482	14,712	14,942
	Difference	0	0	0	0	0
Fifth year	Supply totals	11,282	11,904	12,189	12,383	12,577
	Demand totals	11,282	11,904	12,189	12,383	12,577
	Difference	0	0	0	0	0
Sixth year (optional)	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
<p><b>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</b></p> <p>NOTES:</p>						





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## 7.2.4 DESCRIPTION OF MANAGEMENT TOOLS AND OPTIONS

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### CWC 10620.

*(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

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As noted in Section 6.2.2, the Central Basin is managed by WRD. During the period of management under the Judgment, significant drought events have occurred. In each drought cycle the Central Basin has been managed to maintain water levels. Therefore, based on historical and on-going management practices, the City will be able to rely on the Central Basin for adequate supply over the next 25 years under single dry years and five consecutive year drought periods.

Section 6.2.2 provides a description of the management of groundwater resources in the Central Basin, as well as information on basin management. Chapter 6 also demonstrates the management structure of the Central Basin provides a reliable source of groundwater supply for the City during a normal year, a single-dry year and a five consecutive year drought. Historical data indicates the Central Basin has been well managed for the full period of the adjudication, resulting in a stable and reliable water supply. Basin management changes are discussed in Section 6.2.2, and include increased direct use of recycled water (see Section 6.2.5) and the current and planned use of treated recycled water for groundwater replenishment in the Central Basin. Therefore, the groundwater supplies in the Central Basin are deemed reliable.



### 7.3 DROUGHT RISK ASSESSMENT

#### CWC 10635.

*(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:*

*(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.*

*(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.*

*(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.*

*(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.*

The City's source of supplies consist of groundwater from the Central Basin (which is managed by WRD), treated imported water purchased through CBMWD and managed by the Metropolitan Water District of Southern California, and recycled water. The following discussion provides a DRA which assesses the City's water supply reliability over a five consecutive year drought period. The City's DRA incorporates a five consecutive year drought from CY 2021 through CY 2025 and includes a review of water supplies, water uses, and water supply reliability.



### 7.3.1 DRA DATA, METHODS, AND BASIS FOR WATER SHORTAGE CONDITION

The City's DRA was prepared using historical production data from the City's water supply sources. The following assumptions were considered during the preparation of the City's DRA for each year of the five consecutive year drought.

- The five consecutive year drought period associated with the 2020 UWMP is based on five consecutive dry years from CY 2021 through CY 2025.
- The projected water supplies available during each year of this five consecutive year drought are assumed to be identical to the water supplies produced during each year between CY 2011 and CY 2015 (which represents the most recent and historical five consecutive year drought).
- The projected demands during this five consecutive year drought are based on water demands from CY 2020 (a normal year) which were adjusted based on projected population over the next five years along with the ratio of the normal year demands to actual demands over each year of the most recent and historical five consecutive year drought period (from CY 2011 and CY 2015).
- The projected demands were compared to the projected supplies to identify potential water supply deficits which may require implementation of the Water Shortage Contingency Plan (discussed further in Chapter 8).

The following methodologies were considered during the preparation of the City's DRA during for each year of the five consecutive year drought:

- Drought Year 1: The region had experienced an average to above average year of precipitation in the prior year. Water use in the prior year had been below average due to a reduced need for outdoor water use, the groundwater basin had been replenished from above average local stormwater runoff, and imported water supplies were not restricted.



- Drought Year 2: The region experienced a second year of below average precipitation and runoff. Retail customers increase water use for outdoor irrigation to compensate for lack of precipitation. Groundwater and imported water supplies have not been impacted.
- Drought Year 3: The region experienced a third year of below average precipitation and runoff. Retail customers increase water use for outdoor irrigation to compensate for lack of precipitation. Groundwater and imported water supplies have not been impacted. However, there is an increased demand on both groundwater and treated imported water.
- Drought Year 4: The region experienced a fourth year of below average precipitation and runoff. Groundwater supplies have not been impacted. However, there is an increased demand on groundwater.
- Drought Year 5: Fifth year of below average precipitation and runoff. Groundwater supplies have not been impacted. However, there is an increased demand on groundwater.

### **7.3.2 DRA INDIVIDUAL WATER SOURCE RELIABILITY**

The City's DRA incorporates a five consecutive year drought based on five consecutive dry years commencing in CY 2021. The quantity of water supplies available for each year during this five consecutive year drought period included in the City's DRA is assumed to be the same as the quantity of water supplies produced by the City (i.e. demands) during the most recent and historical five consecutive year drought which occurred from CY 2011 through CY 2015. Production data for those years have been tabulated in Section 6.1. The following describes the anticipated reliability of its water source for each year of the five consecutive year drought based on recent experience.



### Groundwater

The City receives water supplies from the Central Basin which is actively managed by WRD, as described in Section 6.2.2. The Central Basin is adjudicated; however, the City's water rights are fixed each year. Consequently, the City cannot produce in excess of its own water rights or rights it may have leased from others. The quantity of groundwater used (and reliably available) during the most recent and historical five consecutive year drought period have been tabulated in Section 6.1. The City manages its water supply portfolio to optimize the water supplies available each year and to avoid a water supply shortage. The City also had the ability to systematically implement aspects of its Water Shortage Contingency Plan (see Chapter 8). As a result of these collective actions (and experience during prior five consecutive year droughts), the City does not anticipate a water supply shortage.

### Imported Water

The City obtains imported water from the Metropolitan Water District of Southern California through Three Valleys Municipal Water District. Section 6.2.1 describes the planning conducted by the Metropolitan Water District of Southern California regarding treated imported water supplies available to the City. The reliability of MWD's supplies is also discussed in its 2020 Regional UWMP and is incorporated by reference. The City purchases treated imported water which is delivered directly within its distribution system. The City's purchases of treated, imported water over the past ten years have been tabulated in Section 6.1. In the event of a drought which limits imported water supplies, the City will rely on its groundwater production.

The imported water purchases by the City during the most recent and historical five consecutive year drought period have been tabulated in Section 6.1. Because the City's DRA assumes the most recent and historical five consecutive year drought scenario will be repeated over the next five years, it is assumed the quantity of treated imported water



supplies purchased during the most recent and historical five consecutive year drought scenario will be available. Furthermore, this constitutes the minimum amount of treated imported water which may be available in a future five consecutive year drought absent MWD's programs which it has since implemented.

### Recycled Water

The City has a recycled water distribution system which it has developed over the years to reduced demands on its potable water supplies as described in Section 6.2.5. The availability of recycled water supplies is not adversely impacted by drought conditions and are locally available.

The quantity of recycled water used during the most recent and historical five consecutive year drought period have been tabulated in Section 6.1. The quantity of recycled water available during each year of the most recent and historical five consecutive year drought is expected to be available during a future five consecutive year drought.

### Summary

The City's water system has experienced a prior five consecutive year drought with no limitation to its collective water supplies. However, the cost of those water supplies may have increased based on the mix of supplies which are used. Consequently, the City has the ability to enact varying water shortage levels (see Chapter 8) to help educate its customers and provide an economic incentive for the retail customers to reduce their water consumption.



### 7.3.3 DRA TOTAL WATER SUPPLY AND USE COMPARISON

Gross water use for the projected five consecutive year drought is shown on Table 7-5. Section 7.3.2 describes the water source reliability for each source of supply the City will rely on during a five consecutive year drought. The annual quantities are the summed and are also provided on Table 7-5. For the purposes of the City's DRA, as a worst-case scenario, the City has considered no water supply augmentation (as indicated in Table 7-5) from its groundwater supplies. When necessary, the City can implement various water shortage levels of its Water Shortage Contingency Plan (as discussed in Chapter 8) in order to reduce its water demands. The total water supplies available to the City in Table 7-5 are based on the quantity of supplies available to the City (i.e. demands) during the most recent historical five consecutive year drought period (from CY 2011 through CY 2015). As shown in Table 7-5, assuming no additional water supply benefits will be available from groundwater supplies, the City will implement various stages of its Water Shortage Contingency Plan to balance water demands with available supplies during years 1, 2, 3, 4, and 5 of the projected five consecutive year drought.



**Table 7-5 Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b)**

<b>2021</b>		<b>Total</b>
Total Water Use		11,302
Total Supplies		11,232
Surplus/Shortfall w/o WSCP Action		(70)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)		
WSCP - supply augmentation benefit		0
WSCP - use reduction savings benefit		70
Revised Surplus/(shortfall)		0
Resulting % Use Reduction from WSCP action		1%
<b>2022</b>		<b>Total</b>
Total Water Use		12,148
Total Supplies		11,701
Surplus/Shortfall w/o WSCP Action		(447)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)		
WSCP - supply augmentation benefit		0
WSCP - use reduction savings benefit		447
Revised Surplus/(shortfall)		0
Resulting % Use Reduction from WSCP action		4%
<b>2023</b>		<b>Total</b>
Total Water Use		12,747
Total Supplies		11,910
Surplus/Shortfall w/o WSCP Action		(837)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)		
WSCP - supply augmentation benefit		0
WSCP - use reduction savings benefit		837
Revised Surplus/(shortfall)		0
Resulting % Use Reduction from WSCP action		7%
<b>2024</b>		<b>Total</b>
Total Water Use		13,025
Total Supplies		11,817
Surplus/Shortfall w/o WSCP Action		(1,208)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)		
WSCP - supply augmentation benefit		0
WSCP - use reduction savings benefit		1,208
Revised Surplus/(shortfall)		0
Resulting % Use Reduction from WSCP action		9%
<b>2025</b>		<b>Total</b>
Total Water Use		11,282
Total Supplies		9,946
Surplus/Shortfall w/o WSCP Action		(1,336)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)		
WSCP - supply augmentation benefit		0
WSCP - use reduction savings benefit		1,336
Revised Surplus/(shortfall)		0
Resulting % Use Reduction from WSCP action		12%





#### 7.3.4 OPTIONAL PLANNING TOOL WORKBOOK

DWR has deemed the “Planning Tool Worksheet” as optional and the City is not required by DWR to use the tool. The City has provided sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands. The City has also been able to provide water service to meet maximum day water demands for these years, including during the summer months. The City obtains the majority of its water supplies from a managed groundwater basin which is not subject to seasonal fluctuation. Consequently, an evaluation regarding water supplies on a monthly basis was not considered.



## **CHAPTER 8**

### **WATER SHORTAGE CONTINGENCY PLAN**

#### **LAY DESCRIPTION – CHAPTER 8**

#### **WATER SHORTAGE CONTINGENCY PLAN**

Chapter 8 (Water Shortage Contingency Plan) of the City's 2020 Plan discusses and provides the following:

- The City's Water Shortage Contingency Plan is a detailed approach which presents how the City intends to act, or respond, in the case of an actual water shortage contingency.
- Preparation of the City's "Annual Water Supply and Demand Assessment" (or Annual Assessment) is discussed. Commencing July 1, 2022, the City is required to submit the Annual Assessment. The Annual Assessment will include a review of the City's "unconstrained" water demands for the current year and for a potential upcoming single dry year. Unconstrained water demands represent the City's water demands prior to any "response actions" the City may invoke pursuant to the City's Water Shortage Contingency Plan.
- The City will manage water supplies to minimize the adverse impacts of water shortages. The City's plan for water usage during periods of shortage is designed to incorporate six standard water shortage levels corresponding to progressive ranges from up to a 10, 20, 30, 40, and 50 percent shortage, and greater than a 50 percent shortage.
- For each declared water supply shortage level, customers will be required to reduce their consumption by the percentage specified in the corresponding water supply shortage level.



- For each declared water supply shortage level, the City has established response actions to reduce demand on water supplies and to reduce any shortage gaps in water supplies. These demand reduction actions include irrigation and other outdoor use restrictions, rate structure changes, and other water use prohibitions.
- The operational changes the City will consider in addressing water shortages on a short-term basis are discussed and include improved monitoring, analysis, and tracking of customer water usage to enforce demand reduction measures.
- The City's Emergency Response Plan is summarized. The Emergency Response Plan provides the management, procedures, and designated actions the City and its employees will implement during emergency situations (including catastrophic water shortages) resulting from natural disasters, system failures, and other unforeseen circumstances.
- The preparation of the City's seismic risk assessment and mitigation plan is discussed. The locations of earthquake faults in the vicinity of the City's water service area are provided.
- The effectiveness of the shortage response actions for each of the City's standard water shortage levels is presented. The City has been able to provide sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands.
- The communication protocols implemented by the City when it declares any water shortage level are presented.
- The compliance and enforcement procedures associated with the City's standard water shortage levels are presented.
- The legal authorities associated with the City's standard water shortage levels are presented.
- The financial consequences associated with the City's standard water shortage levels are presented.
- The City will evaluate the need for revising the Water Shortage Contingency Plan in order to resolve any water shortage gaps, as necessary. The steps necessary



for the City to adopt and amend its Water Shortage Contingency Plan are presented.

The following Water Shortage Contingency Plan includes references to Chapters and Sections from the City of Cerritos' 2020 Urban Water Management Plan:

## 8.1 WATER SUPPLY RELIABILITY ANALYSIS

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### [CWC 10632.](#)

[\(a\)\(1\) The analysis of water supply reliability conducted pursuant to Section 10635.](#)

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The City's sources of supply were discussed in Section 6.2 of the 2020 UWMP and consist of groundwater from the Central Basin and treated imported water purchased from CBMWD. In addition, the City provides recycled water for irrigation instead of potable supplies. The Central Basin is adjudicated, and groundwater supplies are managed. The reliability of the various sources of supply are discussed in Chapter 7 of the 2020 UWMP. Imported water supplies may be impacted in the event MWD implements its WSAP due to a water supply shortage. Finally, recycled water is locally generated and is not impacted by drought conditions.



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## 8.2 ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT PROCEDURES

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### CWC 10632.

*(a)(2) The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:*

*(A) The written decision-making process that an urban water supplier will use each year to determine its water supply reliability.*

*(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:*

*(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.*

*(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.*

*(iii) Existing infrastructure capabilities and plausible constraints.*

*(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.*

*(v) A description and quantification of each source of water supply.*

### CWC 10632.1.

*An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.*

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Commencing July 1, 2022, the City is required to submit an “Annual Water Supply and Demand Assessment” (Annual Assessment) in accordance with DWR’s guidance and requirements. The Annual Assessment will include a review of the City’s unconstrained water demands (i.e. water demands prior to any projected response actions the City may



trigger under this WSCP) for the current year and the upcoming (potential single dry) year. The City will also include information regarding anticipated shortages, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the City's WSCP.

For each Annual Assessment, the City plans to prepare a preliminary assessment which evaluates the adequacy of its water supplies for the current and upcoming years by April of each year. The preliminary assessment will include a review of water supplies for at least a single dry year.

The components of an Annual Assessment consist of the following:

- A written decision-making process
- Key data inputs and assessment methodology

### **8.2.1 DECISION MAKING PROCESS**

The City produces groundwater from the Central Basin as its primary source of water supply and this basin is managed on a fiscal year basis. Consequently, during the third quarter of each fiscal year the City will review its water demands from the initial six months along with the current groundwater basin conditions and local hydrology. This information will be used to help develop the Annual Assessment. A draft of the Annual Assessment will be circulated internally within the City for peer review and comment. Based on comments received, a redraft will be prepared and provided to the City managers during the Spring of each year. The draft subsequently will be provided to the City Manager for final review. Subsequently, a final draft of the Annual Assessment will be provided to the City Council for review and included in the agenda as part of a City Council meeting such that it can be approved and any recommended specific shortage response actions may be enacted. The final Annual Assessment will be provided to DWR no later than July 1 of each year.



The Annual Assessments will be instrumental in providing guidance to the City for decisions regarding potential declarations of a water supply shortage and implementation of water reduction stages, instituting mandatory water restrictions, promoting water use efficiency and conservation programs, water rates and drought rate surcharges, and the necessity of pursuing alternative water supplies. This process will help ensure adequate water supplies resources are available to the City.

### **8.2.2 DATA AND METHODOLOGIES**

The key data inputs and methodologies which will be evaluated by the City during the preparation of the preliminary assessment will include the following:

- 1) Evaluation Criteria: The locally applicable evaluation criteria used to prepare the Annual Assessment will be identified. The evaluation criteria will include, but is not limited to, an analysis of current local hydrology (including rainfall and groundwater levels), current water demands, a review of water system improvement plans which may impact infrastructure availability, and water quality regulations which may impact groundwater availability.
- 2) Water Supply: A description of each available water supply source will be provided. The descriptions will include a quantification of each available water supply source and will be based on review of current production capacities, historical production, UWMPs, and prior water supply studies (including Water Supply Assessments and/or Master Plans).



- 3) Unconstrained Water Demand: The potential unconstrained water demands during the current year and the upcoming (potential single dry) year, prior to any special shortage response actions, will be reviewed. The review will include factors such as weather, existing and projected land uses and populations, actual customer consumption and water use factors, monthly Urban Water Supplier Monthly Reports, existing water shortage levels (see Section 8.3), and existing water conservation resolutions (see Section 9.2.1).
- 4) Planned Water Use for Current Year Considering Dry Subsequent Year: The water supplies available to meet the demands during the current year and the upcoming (potential single dry) year will be considered and identified by each type of supply. The evaluation will include factors such as estimated water demands, weather, groundwater basin operating safe yields, water quality results, existing available pumping capacities, imported water allocations, contractual obligations, regulatory issues, use of emergency interconnections, and the costs associated with producing each water supply source.
- 5) Infrastructure Considerations: The capabilities of the water distribution system infrastructure to meet the water demands during the current year and the upcoming (potential single dry) year will be considered. Available production capacities (e.g. groundwater well capacities) and distribution system water losses (see Section 4.2.4) will be reviewed. In addition, capital improvement and replacement projects, as well as potential projects which may increase water system and production capacities (see Section 6.2.8), will be considered.
- 6) Other Factors: Additional local considerations, if any, which can affect the availability of water supplies will be described.





### 8.3 SIX STANDARD WATER SHORTAGE LEVELS

#### CWC 10632.

*(a)(3)(A) Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.*

*(a)(3)(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may comply with the requirement in subparagraph (A) by developing and including a cross reference relating its existing categories to the six standard water shortage levels.*

The City will manage water supplies prudently to minimize the adverse impacts of water shortages. The City's plan for water usage during periods of shortage is designed to incorporate six standard water shortage levels corresponding to progressive ranges from up to 10, 20, 30, 40, and 50 percent shortages, and greater than 50 percent shortage.

For each declared water supply shortage level, customers will be required to reduce their consumption by the percentage specified in the corresponding water supply shortage level. The required percentage reduction for each customer will be based on water usage during the same billing period in the last calendar year during which there were no declared water shortages.

The City previously established two (2) stages of water shortages and corresponding water conservation measures pursuant to Resolution No. 91-6. The City Council expanded these measures by adopting Resolution No. 2015-16 in June 2015. A copy of the City's resolutions are provided in Appendix L. In accordance with CWC in which urban water suppliers are required to define six (6) standard water shortage levels, the City has



developed the crosswalk illustrated below that translates the City’s previously established shortage levels to the mandated standard shortage levels.

**Corresponding Relationships Between Supplier’s 2015 Shortage Levels and the 2020 WSCP Mandated Shortage Levels**

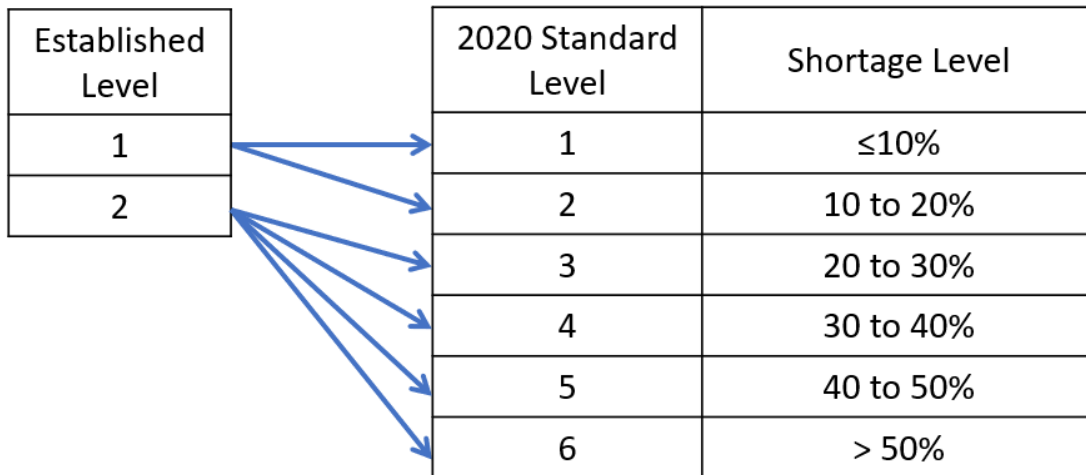


Table 8-1 provides a description of the six water shortage levels, which may be triggered by a shortage in the City’s water supply source, depending on the severity of the shortage and its anticipated duration.



Table 8-1 Water Shortage Contingency Planning Levels

Submittal Table 8-1 Water Shortage Contingency Plan Levels		
Shortage Level	Percent Shortage Range	Shortage Response Actions <i>(Narrative description)</i>
1	Up to 10%	Washing of walkways, driveways, or parking areas with a hose. Using water to clean, fill, or maintain levels in decorative fountains unless a recycling system is used. Serving drinking water to any customer in a restaurant or other public place where food is served, sold, or offered for sale unless expressly requested by the customer. Watering or irrigating lawns, turf, or landscape areas between hours of 10:00 A.M. and 4:00 P.M., beyond saturation causing runoff. Allowing a hose to run continuously while washing vehicles. Allowing sprinklers to direct water to areas other than landscape causing runoff. Failing to repair all water leaks as soon as possible.
2	Up to 20%	Additional demand reduction actions deemed necessary by the City.
3	Up to 30%	Bimonthly, each 5/8" x 3/4" or 1" water meter shall be billed at base consumption of 30 units, under the current water rate structure. All billing units used over the base consumption will be billed at one and one half times the quantity rate in existence in the current rate structure; each 1-1/2" water meter shall be billed at a base consumption of 119 units under the current water rate structure; Bimonthly, each 2" water meter shall be billed at a base consumption of 277 units under the current water rate structure; Bimonthly, each 3" water meter shall be billed at a base consumption of 511 units under the current water rate structure; Bimonthly, each 4" water meter shall be billed at a base consumption of 1080 units under the current water rate structure.
4	Up to 40%	Additional demand reduction actions deemed necessary by the City.
5	Up to 50%	Additional demand reduction actions deemed necessary by the City.
6	>50%	Additional demand reduction actions deemed necessary by the City.

NOTES:



## 8.4 SHORTAGE RESPONSE ACTIONS

### CWC 10632.

*(a)(4) Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:*

*(A) Locally appropriate supply augmentation actions.*

*(B) Locally appropriate demand reduction actions to adequately respond to shortages.*

*(C) Locally appropriate operational changes.*

*(D) Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.*

*(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.*

Shortage response actions are dependent on the severity of a declared shortage level. Response actions implement varying improvements and regulations of system infrastructure and operations, water supply augmentation, demand reduction initiatives and other water use functions to conserve water supplies.

### 8.4.1 DEMAND REDUCTION

The City may establish water shortage response actions to reduce demand on water supplies. These demand reduction actions include irrigation and other outdoor use restrictions, rate structure changes, and other water use prohibitions. Depending on the percent reduction in the City's water supply and corresponding water shortage level, regulations are made to conserve water and reduce the shortage gap in normal supply levels. The structure of water shortage levels are designed to strongly encourage customers with high per capita usage to achieve proportionally greater reduction than those with low usage. Violations of these demand reduction actions will be considered waste and an unreasonable use of water. The following stages will be implemented as



needed to achieve reduction in the shortage gap. Table 8-2 describes each demand reduction action and its effect on reducing the shortage gap.

The following water use actions are prohibited at all times:

- The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways/ roadways, parking lots or structures. Water runoff is defined as water accumulation sufficient to cause a flow of water off of landscaped areas.
- Use of potable water for irrigation during and 48 hours following measurable precipitation.
- Use of potable water for more than minimal landscaping.
- The use of potable water in a fountain or other decorative water feature, unless the water is part of a recirculating system.
- Residential and commercial landscape areas shall be watered between the hours of 5 p.m. and 9 a.m. for no more than ten (10) minutes per station. Watering shall be limited to two (2) times per week during the months of June through September, and one (1) time per week during the months of October through May. Landscape irrigation for commercial nurseries and growers, fire and erosion protection, the protection of endangered species, environmental mitigation projects, and properties using reclaimed water are exempt from this provision. Watering using a handheld container; a hose equipped with a shut off nozzle; or the use of an irrigation system for short durations to make repairs are also exempt from the provision;



### Water Supply Shortage Level 1

The following restrictions are in effect during Water Supply Shortage Level 1:

- Washing of walkways, driveways, or parking areas with a hose.
- Using water to clean, fill, or maintain levels in decorative fountains unless a recycling system is used.
- Serving drinking water to any customer in a restaurant or other public place where food is served, sold, or offered for sale unless expressly requested by the customer.
- Failing to repair all water leaks as soon as possible.
- Watering or irrigating lawns, turf, or landscape areas between hours of 10:00 A.M. and 4:00 P.M.
- Watering or irrigating lawns, turf, or landscape areas beyond saturation causing runoff.
- Allowing a hose to run continuously while washing vehicles.
- Allowing sprinklers to direct water to areas other than landscape causing runoff.

### Water Supply Shortage Level 2

In addition to the restrictions identified in Water Supply Shortage Level 1, the following allocations and drought emergency surcharges are in effect during Water Supply Shortage Level 2:

- Additional demand reduction actions deemed necessary by the City.

### Water Supply Shortage Level 3

In addition to the restrictions identified in Water Supply Shortage Level 2, the following allocations and drought emergency surcharges are in effect during Water Supply Shortage Level 3:

- Bimonthly, each 5/8" x 3/4" or 1" water meter shall be billed at base consumption of 30 units, under the current water rate structure. All billing units used over the



base consumption will be billed at one and one half times the quantity rate in existence in the current rate structure.

- Bimonthly, each 1-1/2" water meter shall be billed at a base consumption of 119 units under the current water rate structure.
- Bimonthly, each 2" water meter shall be billed at a base consumption of 277 units under the current water rate structure.
- Bimonthly, each 3" water meter shall be billed at a base consumption of 511 units under the current water rate structure.
- Bimonthly, each 4" water meter shall be billed at a base consumption of 1080 units under the current water rate structure.

#### Water Supply Shortage Level 4

In addition to the restrictions identified in Water Supply Shortage Level 3, the following allocations and drought emergency surcharges are in effect during Water Supply Shortage Level 4:

Additional demand reduction actions deemed necessary by the City.

#### Water Supply Shortage Level 5

In addition to the restrictions identified in Water Supply Shortage Level 4, the following allocations and drought emergency surcharges are in effect during Water Supply Shortage Level 5:

- Additional demand reduction actions deemed necessary by the City.

#### Water Supply Shortage Level 6

In addition to the restrictions identified in Water Supply Shortage Level 5, the following allocations and drought emergency surcharges are in effect during Water Supply Shortage Level 6:

- Additional demand reduction actions deemed necessary by the City.



**Table 8-2 Demand Reduction Actions**

Submittal Table 8-2: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? Include units used (volume type or percentage)	Additional Explanation or Reference (optional)	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only</i> <i>Drop Down List</i>
<i>Add additional rows as needed</i>				
1	Other - Prohibit use of potable water for washing hard surfaces	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	CII - Restaurants may only serve water upon request	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Landscape - Limit landscape irrigation to specific times	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Landscape - Restrict or prohibit runoff from landscape irrigation	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Other	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Other	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
2	Other	Collective reduction from Shortage Level 1 plus all Shortage Level 2 actions is up to 1,568 AFY		Yes
3	Other	Collective reduction from Shortage Level 2 plus all Shortage Level 3 actions is up to 2,352 AFY		Yes
3	Implement or Modify Drought Rate Structure or Surcharge	Collective reduction from all Shortage Level 3 actions is up to 2,352 AFY		Yes
4	Other	Collective reduction from Shortage Level 3 plus all Shortage Level 4 actions is up to 3,136 AFY		Yes
5	Other	Collective reduction from Shortage Level 4 plus all Shortage Level 5 actions is up to 3,920 AFY		Yes
6	Other	Collective reduction from Shortage Level 5 plus all Shortage Level 6 actions is greater than 3,920 AFY		Yes
NOTES:				





**8.4.2 SUPPLY AUGMENTATION**

The City does not plan to add a new source of water supply to address customer demands, but instead will consider increased supplies from existing sources. Table 8-3 reflects this approach and does not identify any new supplies. Instead, the City will focus on demand reduction measures in the event existing source of supply are not sufficient to meet customer demands. As discussed in Chapter 6, the City’s source of water supply is groundwater produced from the Central Basin, imported surface water purchased from MWD through CBMWD, and recycled water supplies. As noted in Section 8.2, beginning July 1, 2022, the City will prepare and submit an Annual Assessment which will include a review of water supplies available to meet water demands for the current and upcoming years. If the City is currently in, or considers entering into, one of the standard water shortage levels identified in Section 8.3, the City will consider the water supply (augmentation) actions described below.

**Table 8-3 Supply Augmentation and Other Actions**

Submittal Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUdata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
<i>Add additional rows as needed</i>			
1	Transfers	Not applicable (see Notes)	
2	Transfers	Not applicable (see Notes)	
3	Transfers	Not applicable (see Notes)	
4	Transfers	Not applicable (see Notes)	
5	Transfers	Not applicable (see Notes)	
6	Transfers	Not applicable (see Notes)	

NOTES: The City will consider increased production from the Central Basin using existing facilities to address increased demands. As noted on Table 8-2, the City plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.



### 8.4.3 OPERATIONAL CHANGES

During a water supply shortage situation, the City will manage its water supply resources to provide sufficient water supplies capable of meeting the demands of its customers. Section 8.4.2 describes the City's water supply source and water supply augmentation actions available. Section 8.4.1 describes the City's standard water shortage levels and associated demand reduction measures. The supply augmentation actions and demand reduction measures, when implemented, may potentially result in short-term operational changes which are necessary to allow the City's to utilize all available water supply sources in response to water shortage situations.

As noted in Section 8.2, beginning July 1, 2022, the City will prepare and submit an Annual Assessment which will include a review of the water supplies available to meet water demands for the current and upcoming years. Preparation of the Annual Assessment will assist the City in determining any potential operational changes. In addition, the City's standard water shortage levels and the associated demand reduction measures, in conjunction with the City's existing Demand Management Measures (DMM) (discussed in Chapter 9), will be essential to the City in reducing water demands during any water shortage period. The operational changes the City will consider in addressing non-catastrophic water shortages on a short-term basis include the following:

- Improved monitoring, analysis, and tracking of customer water usage to enforce demand reduction measures.
- Optimized production from existing available water supply sources.
- Potential use of emergency supply sources, including emergency interconnections.
- Potential blending of water supply resources.
- Improved monitoring, maintenance, and repairs to reduce water distribution system losses.



#### **8.4.4 ADDITIONAL MANDATORY RESTRICTIONS**

The mandatory restrictions which are implemented by the City to reduce customer demands are discussed in Section 8.4.1. There are no additional mandatory restrictions planned at this time.

#### **8.4.5 EMERGENCY RESPONSE PLAN**

Catastrophic water shortages are incorporated in the City's standard water shortage levels (identified in Section 8.3) and the associated demand reduction measures (described in Section 8.4.1). In addition to the water supply augmentation actions (Section 8.4.2) and potential operational changes (Section 8.4.3) which the City may consider in order to continue providing sufficient water supplies, the City will review and implement any necessary steps included in its "Emergency Response Plan".

As part of the "America's Water Infrastructure Act of 2018", community water systems serving a population greater than 3,300 people, including the City, are required to review and update their "Risk and Resilience Assessment" (RRA) and the associated "Emergency Response Plan" (ERP) every five (5) years. However, due to security concerns regarding the submitting of these reports, water systems are required to submit certifications to the United States Environment Protection Agency (USEPA), from March 31, 2020 and December 30, 2021, confirming the current RRA and ERP have been reviewed and updated.

The City's RRA, prepared in 2021, evaluates the vulnerabilities, threats, and consequences from potential hazards to the City's water system. The City's RRA is being prepared by evaluating the following items:



- Natural hazards and malevolent acts (i.e., all hazards);
- Resilience of water facility infrastructure (including pipes, physical barriers, water sources and collection, treatment, storage and distribution facilities, and electronic, computer and other automated systems);
- Monitoring practices;
- Financial systems (e.g., billing systems);
- Chemical storage and handling; and
- Operation and maintenance.

The City's RRA evaluates a series of potential malevolent acts, natural hazards, and other threats in order to estimate the potential "monetized risks" (i.e. associated economic consequences to both the water system and surrounding region, and the likelihood of occurrence) associated with the City's water facility assets. The cost-effectiveness of implementing potential countermeasures to reduce risks is also under review.

The City's ERP, prepared in 2021, provides the management, procedures, and designated actions the City and its employees will implement during emergency situations (including catastrophic water shortages) resulting from natural disasters, system failures, and other unforeseen circumstances. The City's ERP provides the guidelines for evaluating an emergency situation, procedures for activating an emergency response, and details of the different response phases in order to ensure that customers receive a reliable and adequate supply of potable water. The scope of the ERP includes emergencies which directly affect the water system and the ability to maintain safe operations (such as a chlorine release, and earthquake, or a threat of contamination). The ERP also incorporates the results of the City RRA and includes the following:

- Strategies and resources to improve resilience, including physical and cybersecurity.
- Plans and procedures for responding to a natural hazard or malevolent act.



- Actions and equipment to lessen the impact of a natural hazard or malevolent act.
- Strategies to detect natural hazards or malevolent act.

The City will review the ERP for procedures regarding the utilization of alternative water supply sources in response to water supply shortages, including during the standard water shortage levels. The City will also review applicable procedures described in the ERP regarding any necessary temporary shutdown of water supply facilities, including appropriate regulatory and public notifications.

### 8.4.6 SEISMIC RISK ASSESSMENT AND MITIGATION PLAN

#### CWC 10632.5.

*(a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.*

*(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.*

*(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.*

The City prepared a “Hazard Mitigation Plan” in 2016 which identified methods to assess significant natural hazards (including earthquakes) affecting areas throughout the City, and the mitigation strategies necessary to reduce risks, including seismic risk. The City’s Hazard Mitigation Plan is provided in Appendix M.

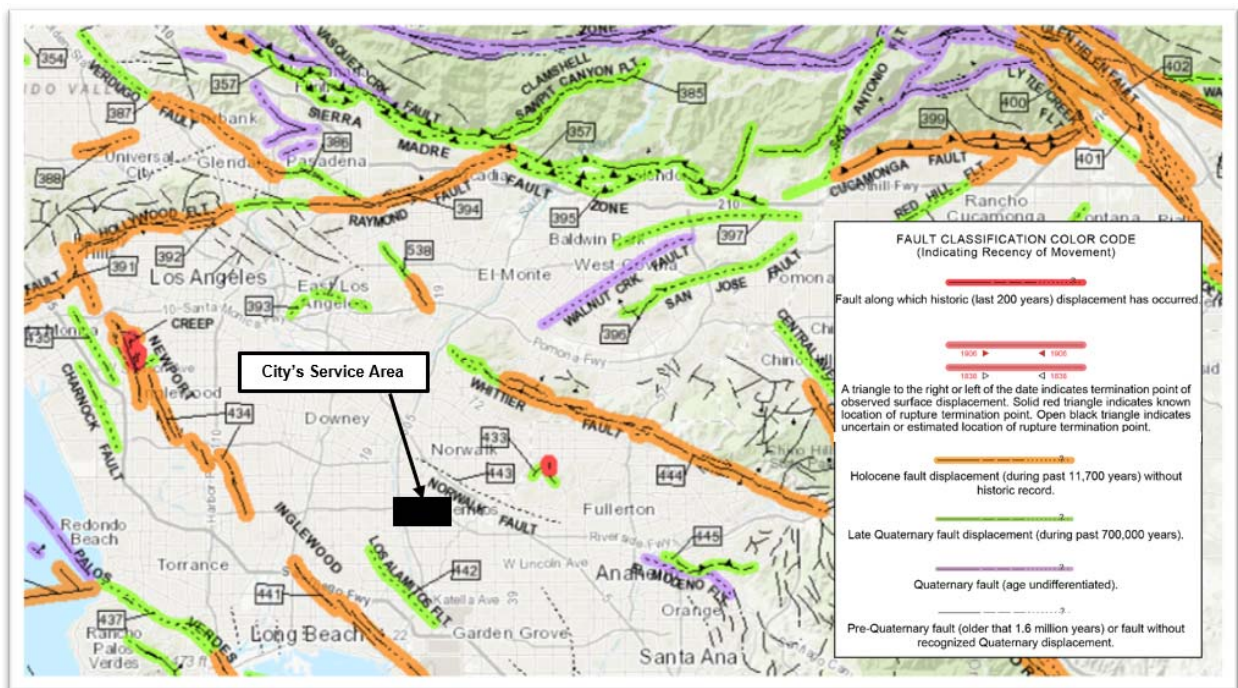
The County of Los Angeles prepared an “All-Hazards Mitigation Plan” in 2019 which identified methods to assess significant natural hazards (including earthquakes) affecting areas throughout Los Angeles County, and the mitigation strategies necessary to reduce



risks, including seismic risk. The County’s All-Hazards Mitigation Plan is provided in Appendix N.

The California Geological Survey has published the locations of numerous faults which have been mapped in the Southern California region. Although the San Andreas fault is the most recognized and is capable of producing an earthquake with a magnitude greater than 8 on the Richter scale, some of the lesser-known faults have the potential to cause significant damage. The locations of these earthquake faults in the vicinity of the City’s water service area are provided in the figure below. The faults that are located in close proximity to and could potentially cause significant shaking in the City’s water service area include the San Andreas fault, the Whittier fault, the Los Alamitos Fault, the Norwalk Fault, the Inglewood Fault, and the Newport Fault.

**Location of Earthquake Faults**



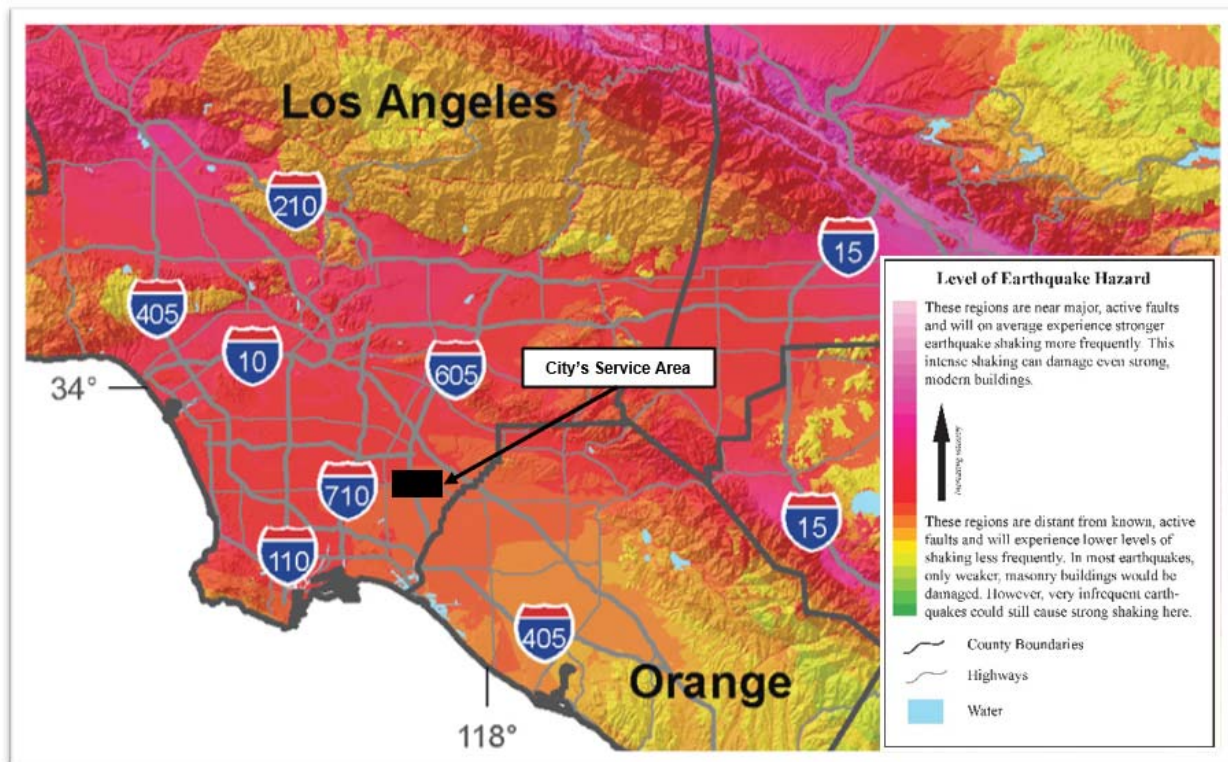
Source: <https://maps.conservation.ca.gov/cgs/fam/App/>





The following figure provides the relative intensity of ground shaking in the vicinity of the City's service area from anticipated future earthquakes. The locations of relatively long-period (1.0 second) earthquake shaking, including the City's service area, are provided. Long-period shaking affects tall, relatively flexible buildings, but also correlates with earthquake damage. The shaking potential is calculated based on the level of ground motion that has a 2 percent chance of being exceeded in 50 years (or the level of ground-shaking with an approximate 2,500-year average repeat time). As discussed in Section 8.4.5, the City prepared an Emergency Response Plan in 2021 which provides the management, procedures, and designated actions the City and its employees will implement during emergency situations resulting from natural disasters, including during earthquakes, to ensure that customers receive a reliable and adequate supply of potable water. The City's ERP is incorporated by reference.

**Earthquake Shaking Potential**



Source: "Earthquake Shaking Potential for California", 2016, California Geological Survey and United States Geological Survey



#### 8.4.7 SHORTAGE RESPONSE ACTION EFFECTIVENESS

The effectiveness of the shortage response actions for each of the standard water shortage levels identified in Section 8.3 is evident in the City's historical ability to meet its customer's water demands in response to a water supply shortage. In addition, the City imposes water consumption regulations and restrictions, and supports local agencies in efforts to enforce regulations and prohibitions on water use. The effectiveness of each of the City's shortage response actions, in order to reduce any potential gaps between supply and demand, has been quantified in the expected demand reduction provided in Table 8-2 and Table 8-3.

Section 6.1 provides a tabulation of the City's historical annual water demands for its water supply source. During the past 10 years, the City experienced a five consecutive year drought within its service area from CY 2011 to CY 2015. Throughout this extended dry year period, the City's annual water production ranged from 9,946 AF to 11,910 AF, with an average of approximately 11,321 AF. In addition, historical records indicate the City previously produced a maximum of up to 11,910 AF during CY 2013. The City has been able to provide sufficient water supplies to its customers, including during long-term droughts and years with historically high water demands. In addition, the City has been able to provide water service to meet maximum day water demands for these years, including during the summer months.

The City's water demands during the most recent five years (from CY 2016 to CY 2020) averaged approximately 10,466 AFY. Due to conservation efforts and demand management measures (discussed in Chapter 9), the City's recent water demands have been less than its historical water demands, including during long-term droughts. The City's projected water demands (during a normal year, a single dry year, and a five consecutive year drought conditions) are provided in Section 7.2.3 and are anticipated to incorporate similar reductions in water use rates as a result of the shortage response actions, ongoing conservation efforts, and demand management measures. Because the





City's projected water demands are similar to, it is anticipated the City will be able to continue providing sufficient water supplies to its customers to meet projected water demands, including during long-term droughts. In addition, as discussed in Section 8.4.2, based on historical and on-going management practices, the City will be able to continue relying on its water supply source from the Central Basin for adequate supply augmentation in response to each of the standard water shortage levels identified in Section 8.3.

Based on the City's demonstrated ability to meet water demands during past water supply shortages, the adopted water shortage levels, the adjusted operating safe yields, and water supplies during long-term droughts, it is anticipated that the City will be able to provide sufficient water supplies to its customers during each of its standard water shortage levels. Although adequate supplies are anticipated, the cost of those water supplies may become incrementally more expensive. The City will enact varying levels of its WSCP to encourage retail customers to reduce water consumption and at the same time reduce the need to use the more expensive water supplies. Notwithstanding, the effectiveness of each of the City's shortage response actions, in order to reduce any potential gaps between supply and demand, has been quantified in the expected demand reduction section provided in Table 8-2 and Table 8-3. The effectiveness of the City's shortage response actions is based on the City's water demands prior to 2015 (unconstrained demands). The City's reduced its water demands in 2015 in response to the Governor's April 1, 2015 Executive Order B-29-15 which mandated statewide reduction in water use of 25 percent. The City's actual water demand reduction during this period was used to estimate the extent of water use reductions for the City's Water Shortage Levels. The City's Water Shortage Levels 1, 2, 3, 4, 5, and 6 are expected to reduce water demands by up to 10%, 20%, 30%, 40%, 50%, and greater than 50%, respectively.



## 8.5 COMMUNICATION PROTOCOLS

### CWC 10632.

*(a)(5) Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding, at a minimum, all of the following:*

*(A) Any current or predicted shortages as determined by the annual water supply and demand assessment described pursuant to Section 10632.1.*

*(B) Any shortage response actions triggered or anticipated to be triggered by the annual water supply and demand assessment described pursuant to Section 10632.1.*

*(C) Any other relevant communications.*

Commencing July 1, 2022, the City is required to submit an Annual Assessment in accordance with DWR's guidance and requirements. The Annual Assessment will include a review of the City's unconstrained water demands (i.e. water demands prior to any projected response actions the City may trigger under this WSCP) for the current year and the upcoming (potential single dry) year. The City will also include information regarding anticipated shortages, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the City's WSCP. Please see Section 8.2 for further discussion the Annual Assessment.

The implementation of water shortage levels and corresponding water conservation measures may be adopted by a resolution by the City Council.

For each occurrence of improper water use, the City shall send to the customer where the improper water use occurred a notice of improper water use specifying the subsection or subsections of this WSCP that apply. Where possible, a copy of said notice shall be given to that individual who has improperly used water in writing and personally served or deposited in the U.S. Postal Service, first class, postage prepaid, addressed to the



billing address of the Customer and to the City of Cerritos, P.O. Box 3130, Cerritos, CA 90703, Attn: Water Superintendent.

## 8.6 COMPLIANCE AND ENFORCEMENT

### CWC 10632.

*(a)(6) For an urban retail water supplier, customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions as determined pursuant to Section 10632.2.*

Any violation of this WSCP is considered a waste and an improper use of water. For each occurrence of improper water use, the City shall send to the customer where the improper water use occurred a notice of improper water use specifying the subsection or subsections of this WSCP that apply.

- First Violation: The City shall issue a written notice of the improper water use to the customer.
- Second Violation: For a second violation during any water shortage level, the City shall impose a twenty-five dollar (\$25) penalty, payable with the next subsequent water bill.
- Third and Subsequent Violations: Third and subsequent violation during any water shortage level, the City shall install a flow restricting device of one (1) GPM capacity for services up to one and on-half inch size, and comparatively sized for larger services, on the service of the customer at the premises at which the violation occurred for a period of not less than forty-eight (48) hours. The customer in violation will be responsible for paying the costs associated with the installation of said flow restricting device and for the restoration of normal service.
- Failure to pay the penalties will result in discontinuation of water service until all previous penalties are paid in full. A reactivation fee will also be imposed.



A customer shall have the right to a hearing to obtain relief from compliance with the WSCP by filing a written request for hearing within fifteen (15) days after receipt of a Notice of Improper Water User or receipt of a bill whichever is later. To the extent possible, the hearing shall be held by the Water Superintendent or designee within fifteen (15) days after receipt of the request. In determining whether or not relief shall be granted, the Water Superintendent shall consider all relevant factors including but not limited to:

- The fact that reduction in water consumption will result in unemployment;
- Increased number of employees in commercial or industrial business, and governmental offices;
- The existing of emergency health of safety hazards;
- The existence of family health problems;
- The fact that the current customer was not a customer at the water service address during the base period and the nature of the current customer's water use is substantially different from the use during the base period;
- Special needs of medical care facilities or schools.

A customer shall have the right to appeal the decision of the Water Superintendent or designee to the City Council by filing a written request for appeal within fifteen (15) days after receipt of said decision. To the extent possible, the City Council shall hear the appeal at its first regular meeting occurring after the expiration of fifteen (15) days of receipt of the request for appeal. The decision of the City Council shall be final.



## 8.7 LEGAL AUTHORITIES

### CWC 10632.

*(a)(7)(A) A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions specified in paragraph (4) that may include, but are not limited to, statutory authorities, ordinances, resolutions, and contract provisions.*

*(B) A statement that an urban water supplier shall declare a water shortage emergency in accordance with Chapter 3 (commencing with Section 350) of Division 1.*

*(C) A statement that an urban water supplier shall 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.*

### CWC Division 1, Section 350

*The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.*

The City Council is authorized to declare adoption of water shortage levels and implementation of water conservation measures by resolution.

The City may declare a water shortage emergency and implement any shortage response action deemed necessary. Upon declaration of a water shortage emergency, the City shall coordinate with the local cities and counties within their service area for the possible proclamation of a local emergency.



## 8.8 FINANCIAL CONSEQUENCES OF WSCP

### CWC 10632.

*(a)(8) A description of the financial consequences of, and responses for, drought conditions, including, but not limited to, all of the following:*

*(A) A description of potential revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).*

*(B) A description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).*

*(C) A description of the cost of compliance with Chapter 3.3 (commencing with Section 365) of Division 1.*

During a catastrophic interruption of water supplies, prolonged drought, or water shortage of any kind, the City will experience a reduction in revenue due to reduced water sales. Throughout this period of time, expenditures may increase or decrease with varying circumstances. Expenditures may increase in the event of significant damage to the water system, resulting in emergency repairs. Expenditures may also decrease as less water is pumped through the system, resulting in lower power costs.

The City receives water revenue from a service charge and a commodity charge based on consumption. The service charge recovers costs associated with providing water to the serviced property. The service charge does not vary with consumption and the commodity charge is based on water usage. Rates have been designed to recover the full cost of water service in the charges. Therefore, the total cost of purchasing water would decrease as the usage or sale of water decreases.

However, there are significant fixed costs associated with maintaining a minimal level of service. The City will monitor projected revenues and expenditures should an extreme shortage and a large reduction in water sales occur for an extended period of time. To overcome these potential revenue losses and/or expenditure impacts, the City may use



reserves. If necessary, the City may reduce expenditures by delaying implementation of its Capital Improvement Program and equipment purchases, and/or adjust the work force, implement a drought surcharge as discussed in Section 8.1, and/or make adjustments to its water rate structure.

## 8.9 MONITORING AND REPORTING

### CWC 10632.

*(a)(9) For an urban retail water supplier, monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.*

Commencing July 1, 2022, the City is required to submit an Annual Assessment in accordance with DWR's guidance and requirements. The Annual Assessment will include a review of the City's unconstrained water demands (i.e. water demands prior to any projected response actions the City may trigger under this WSCP) for the current year and the upcoming (potential single dry) year. The City will also include information regarding anticipated shortages, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the City's WSCP. Please see Section 8.2 for further discussion the Annual Assessment.

In normal water supply conditions, production figures are recorded daily and are incorporated into the water production report. During rationing conditions, water shortages will continue to be closely monitored on a daily or hourly basis depending on the severity of the drought. Production data from the City's MWD connection and wells can be retrieved on an hourly basis. This will allow City staff to determine the effects of a reduction on water production within the system. During a disaster shortage, production figures will be monitored on an ongoing basis. The City's SCADA system will warn of any critical conditions instantly. Once a shortage stage is implemented, actual reductions in water supply will be determined based on the SCADA system, which will allow monitoring



on a daily basis. Reports will be provided on a daily basis to the City's Water Superintendent

## 8.10 WSCP REFINEMENT PROCEDURES

### CWC 10632.

*(a)(10) Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the water shortage contingency plan in order to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.*

The City's WSCP has been prepared as an adaptive management plan. As discussed in Section 8.9, the City will monitor and report on the implementation of the WSCP. The City will review the implementation results for any current or potential shortage gaps between water supplies and demands. The City will evaluate the need for revising the WSCP in order to resolve any shortage gaps, as necessary. The City will consider the following potential revisions in the event of a potential shortage gap:

- Implementation of additional public outreach, education, and communication programs (in addition to the programs discussed in Chapter 9).
- Implementation of more stringent water use restrictions under the standard water shortage levels (discussed in Section 8.4.1).
- Implementation of stricter enforcement actions and penalties (discussed in Section 8.6).
- Improvements to the water supply augmentation responses (discussed in Section 8.4.2), as well as any associated operational changes (discussed in Section 8.4.3) which may be required.
- Incorporation of additional actions recommended by the City staff or other interested parties.





The City will use the monitoring and reporting data to evaluate the ability for these potential revisions to resolve any shortage gaps which may occur within the standard water shortage levels.

This WSCP is adopted as part of the City's 2020 UWMP adoption process discussed in Section 10.3. It is anticipated the City will review, revise, and adopt an updated WSCP as part of preparing its 2025 UWMP as necessary. However, the City will continue to review the monitoring and reporting data, and if needed, update the WSCP more frequently. Any updates to the City's WSCP will include a public hearing and adoption process by the City Council (see Section 8.12).

### 8.11 SPECIAL WATER FEATURE DISTINCTION

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#### CWC 10632.

*(b) For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.*

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The City's WSCP defines "decorative water features" as water features which are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, but excluding pools and spas. In general, there are additional health and safety considerations in the water supplied to pools and spas compared to decorative water features. As a result, the City's WSCP has reviewed the response actions, enforcement actions, and monitoring and reporting programs separately for decorative water features and for pools and spas, as applicable.

Please see Section 8.4.1. for demand reduction actions in relation to special water features.



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## 8.12 PLAN ADOPTION, SUBMITTAL, AND AVAILABILITY

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### [CWC 10632.](#)

*(c) The urban water supplier shall make available the water shortage contingency plan prepared pursuant to this article to its customers and any city or county within which it provides water supplies no later than 30 days after adoption of the water shortage contingency plan.*

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The City's WSCP is adopted as part of the City's 2020 UWMP adoption process discussed in Chapter 10. The process for adopting the City's WSCP includes the following:

- The City will conduct a public hearing and make the WSCP available for public inspection.
- The City will provide notification of the time and place of the public hearing to any city or county in which water is provided.
- The City will publish notice of public hearing in a newspaper once a week, for two successive weeks (with at least five days between publication dates).
- The City's Board will adopt the 2020 UWMP and the WSCP.
- As part of submitting the 2020 UWMP to DWR, the City will also submit the WSCP (electronically through DWR's online submittal tool) within 30 days of adoption and by July 1, 2021. The City will submit a copy of the WSCP to the California State Library and to any city or county in which water is provided within 30 days of adoption. In addition, the City will make the WSCP available for public review within 30 days of adoption.



If there are any subsequent amendments required, the process for adopting an amended WSCP includes the following:

- The City will conduct a public hearing and make the amended WSCP available for public inspection.
- The City's Board will adopt the amended WSCP.
- The City will submit the amended WSCP to DWR (electronically through DWR's online submittal tool) within 30 days of adoption.

Additional information regarding the adoption, submittal, and availability of the City's WSCP (and 2020 UWMP) is provided in Chapter 10



## **CHAPTER 9**

### **DEMAND MANAGEMENT MEASURES**

#### **LAY DESCRIPTION – CHAPTER 9**

#### **DEMAND MANAGEMENT MEASURES**

Chapter 9 (Demand Management Measures) of the City’s 2020 Plan discusses and provides the following:

- The City has implemented “Demand Management Measures” to reduce its water demands and achieve its water use targets (discussed in Chapter 5)
- The City’s Demand Management Measures include metering of all its water supply connections with its retail member agencies.
- The City’s Demand Management Measures include public education and outreach programs regarding water conservation.
- The City’s Demand Management Measures include staffing of its water conservation program.
- Additional Demand Management Measures including rebate, conservation, asset management, and wholesale supplier assistance programs are discussed.
- A summary of the Demand Management Measures the City has implemented over the past five (5) years is provided.
- The City’s Demand Management Measures include adoption of resolutions to prevent water waste.
- The City’s Demand Management Measures include metering of all customer connections, including separate metering for residential, fire service, reclaimed water service, and construction water service.



- The City's Demand Management Measures include conservation pricing. The City's current water rate structure is tiered to promote water conservation by customers.
- The City's Demand Management Measures include public education and outreach programs regarding water conservation.
- The City's Demand Management Measures include various actions to assess and manage water distribution system losses.
- Additional Demand Management Measures including rebate, conservation, and educational programs are discussed.
- A summary of the Demand Management Measures the City has implemented over the past five (5) years is provided. The City met the 2020 Water Use Target (discussed in Chapter 5) through the implementation of these Demand Management Measures.

## 9.1 DEMAND MANAGEMENT MEASURES FOR WHOLESALE SUPPLIERS

### CWC 10631.

*(e) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1)(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:*

*(ii) Metering.*

*(iv) Public education and outreach.*

*(vi) Water conservation program coordination and staffing support.*

*(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.*

*(2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (B) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.*



The City is not a wholesale agency and is not required by DWR to complete Section 9.1.

## 9.2 EXISTING DEMAND MANAGEMENT MEASURES FOR RETAIL SUPPLIERS

### CWC 10631.

*(e) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1)(A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.*

*(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:*

*(i) Water waste prevention ordinances.*

*(ii) Metering.*

*(iii) Conservation pricing.*

*(iv) Public education and outreach.*

*(v) Programs to assess and manage distribution system real loss.*

*(vi) Water conservation program coordination and staffing support.*

*(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.*

### 9.2.1 WATER WASTE PREVENTION ORDINANCES

The City implements Resolution No. 2015-16 ("A Resolution of the City Council of the City of Cerritos Implementing Emergency Water Conservation Regulations") which prohibits water waste. This resolution was adopted pursuant to Resolution No. 91-6 which authorized the City Council to declare the implementation of water conservation measures by resolution and previously established two (2) stages of water shortages and



corresponding water conservation measures. Copies of these resolutions are attached as Appendix L.

Resolution No. 91-6, when in effect, sets forth the procedures to implement water conservation measures during varying stages of drought conditions.

Resolution No. 2015-16, when in effect, sets forth the following water use actions which are prohibited at all times:

- Use of potable water for more than minimal landscaping.
- Use through a broken or defective water meter.
- Use of potable water which results in flooding or runoff in gutters or streets.
- Use of potable water for washing private cars or commercial aircrafts, cars, buses, boats, or trailers, except at a fixed location where water is properly maintained to avoid wasteful use.
- Use of potable water for washing buildings, structures, driveways, street cleaning, or other hard-surfaced areas.
- Use of potable water to irrigate turf, lawns, gardens, or ornamental landscaping.

### 9.2.2 METERING

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#### CWC 526.

*(a) Notwithstanding any other provision of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract... shall do both of the following:*

*(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings... located within its service area.*



**CWC 527.**

*(a) An urban water supplier that is not subject to Section 526 shall do both of the following:*

*(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.*

The City meters all customer connections, including separate metering for single-family residential, commercial, industrial, and landscape customers. Furthermore, if there is new development within the City, each facility is individually metered.

Service charges for the City are based on the customers' connection size. Further information regarding the City's service fees and conservation pricing is provided in Section 9.2.3.

### **9.2.3 CONSERVATION PRICING**

The City implements a tiered conservation pricing rate structure for residential and non-residential customers. The City's current water rates structure is tiered to promote water conservation by customers. Residential customers are billed on an inclining block rate structure, with a fixed service charge based on meter size to encourage water conservation and discourage waste. The City's current rate structure showing conservation pricing is provided in Appendix O. The City also has an inclining drought emergency surcharge pursuant to the City's Resolution No. 91-6, provided in Appendix L.

### **9.2.4 PUBLIC EDUCATION AND OUTREACH**

The City offers public information programs for its customers. The City provides marketing and outreach materials to its customers by issuing press releases, newsletters, and bill





inserts. Customers learn about rebates and additional programs through the City's website.

The City promotes water conservation through public information programs that offer brochures, posters, activity booklets, public outreach displays, oral presentations, and workshops to inform the public of conservation efforts. The City raises awareness through paid advertising, press releases, news ads, media events, and through the Speaker's Bureau.

In coordination with MWD and CBMWD, a variety of water conservation public information programs are available to the public within the City. MWD's water education programs provide free teacher workshops, classroom materials, field trips, and class instruction to schools, including water conservation related education programs. CBMWD's school educational program includes a variety of elementary and high school programs within its service area, including the City. Schools located within CBMWD's service area can receive educational materials and handouts about water conservation and water awareness. CBMWD also provides information on its school education programs through its website links. More information about CBMWD's school education programs is provided in its 2020 Plan, which is incorporated by reference.

### **9.2.5 PROGRAMS TO ASSESS AND MANAGE DISTRIBUTION SYSTEM REAL LOSS**

The City's system is comprised mainly of single-family and multi-family dwellings. The City estimates water system losses at approximately 6.1 percent, as discussed in Section 4.2.4. The City has water conservation literature that alerts customers to be on the lookout for water system leaks and to correct them promptly. The City is available to assist customers in answering questions regarding system leaks or higher than expected water usage and also offers free water audits for customers.



The City's annual water loss audits identify real water losses (e.g. leaks and main failures) and apparent water losses (e.g. customer meter inaccuracies, systematic data handling errors in customer billing systems, and unauthorized consumption). The City also implements an AMR system which supports conservation efforts through improved meter reading accuracy and allows the City to effectively monitor and manage water supplies.

### **9.2.6 WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT**

The City's water conservation program coordination and staffing support are provided by the CBMWD Conservation Coordinator. The CBMWD Conservation Coordinator investigates Federal, State, and local funding to develop new programs throughout CBMWD's service area, benefiting the City's service area through program implementation.

### **9.2.7 OTHER DEMAND MANAGEMENT MEASURES**

The City implements additional DMM programs using both the City -only programs and programs in collaboration with regional partners.

MWD provides funding to its member agencies for locally administered conservation programs including rain barrel distribution, turf replacement programs, sustainable landscape irrigation programs, customer water use messaging, as well as residential water surveys. The City also provides information to its customers about various programs available from CBMWD and MWD.

The City participates in CBMWD's high-efficiency toilet, and high-efficiency clothes washer rebate programs and will continue to do so in the future. Residents in the City's service area can participate in CBMWD's Landscape Rotating Nozzles, Weather Based Irrigation Controller, and Soil Moisture Sensor System program that offers rebates



through MWD's regional rebate program. In addition, CBMWD's Turf program offers rebates through MWD's program for replacement of the irrigated area with drought tolerant landscaping.

CBMWD also offers landscape classes to residences within its service area, including the City, to teach residents about water conservation and to reduce urban runoff. Additional information on CBMWD's water conservation programs is available in CBMWD's 2020 Plan, which is incorporated by reference.

The City plans to continue implementation of the programs described above to promote water conservation.

### 9.3 REPORTING IMPLEMENTATION

#### 9.3.1 IMPLEMENTATION OVER THE PAST FIVE YEARS

##### CWC 10631.

*(e) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1) (A) ...a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years.*

The City is committed to implementing water conservation programs and works collaboratively with regional partners to provide water conservation programs for its customers. The highlights of DMM implementation over the past five years are described below.

As discussed in Section 9.2.1, Resolution No. 91-6, when in effect, sets forth the procedures to implement water conservation measures during varying stages of drought



conditions. Resolution No. 2015-16, when in effect, establishes water use restrictions which are designed to prevent water waste at all times. These water use restrictions have been in effect within the last five years.

As discussed in Section 9.2.2, the City meters all customer connections, including separate metering for single-family residential, commercial, industrial, and landscape customers. Furthermore, if there is new development within the City, each facility is individually metered. The City implements an AMR system which supports conservation efforts through improved meter reading accuracy and allows the City to effectively monitor and manage water supplies.

As discussed in Section 9.2.3, the City implements a tiered conservation pricing rate structure for residential, commercial, fire service, reclaimed water service, and construction water service. The City's current water rates structure is tiered to promote water conservation by customers. Residential customers are billed on an inclining block rate structure, with a fixed service charge based on meter size to encourage water conservation and discourage waste.

As discussed in Section 9.2.4, the City offers public information programs for its customers. The City provides marketing and outreach materials to its customers by issuing press releases, newsletters, and bill inserts. Customers learn about rebates and additional programs through the City's website. The City promotes water conservation through public information programs that offer brochures, posters, activity booklets, public outreach displays, oral presentations, and workshops to inform the public of conservation efforts. The City offers education and outreach programs directly to its customers. In coordination with MWD and CBMWD, a variety of water conservation public information programs are available to the public within the City. MWD's water education programs provide free teacher workshops, classroom materials, field trips, and class instruction to schools, including water conservation related education programs. CBMWD's school



educational program includes a variety of elementary and high school programs within its service area, including the City.

As discussed in Section 9.2.5, the City's annual water loss audits identify real water losses (e.g. leaks and main failures) and apparent water losses (e.g. customer meter inaccuracies, systematic data handling errors in customer billing systems, and unauthorized consumption). The City also implements an AMR system which supports conservation efforts through improved meter reading accuracy and allows the City to effectively monitor and manage water supplies.

As described in Section 9.2.6, the City's water conservation program coordination and staffing support are provided by the CBMWD Conservation Coordinator. The CBMWD Conservation Coordinator investigates Federal, State, and local funding to develop new programs throughout CBMWD's service area, benefiting the City's service area through program implementation.

In addition to the above DMMs, the City also provides information to its customers about various programs available from CBMWD and MWD. MWD provides funding to its member agencies for locally administered conservation programs including rain barrel distribution, turf replacement programs, sustainable landscape irrigation programs, customer water use messaging, as well as residential water surveys. The City participates in CBMWD's high-efficiency toilet and high-efficiency clothes washer rebate programs and will continue to do so in the future. Residents in the City's service area can participate in CBMWD's Landscape Rotating Nozzles, Weather Based Irrigation Controller, and Soil Moisture Sensor System program that offers rebates through MWD's regional rebate program. In addition, CBMWD's Turf program offers rebates through MWD's program for replacement of the irrigated area with drought tolerant landscaping. CBMWD also offers landscape classes to residences within its service area, including the City, to teach residents about water conservation and to reduce urban runoff.



### 9.3.2 IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

#### CWC 10631.

*(F)(1)(A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.*

The Demand Management Measures implemented by the City are discussed in Section 9.2. Descriptions regarding the nature and extent of these Demand Management Measures implemented by the City over the past five years are discussed in Section 9.3. The City will continue to implement these Demand Management Measures and other water conservation programs and work collaboratively with CBMWD to provide water conservation programs for its residents.

As discussed in Section 5.5, the City's per-capita water use during CY 2020 was 129 GPCD. The City's confirmed 2020 Water Use Target is 142 GPCD. The City's per-capita water use during CY 2020 meets the 2020 Water Use Target and is in compliance. The City met the 2020 Water Use Target through the implementation of the Demand Management Measures discussed in Section 9.2. Continued implementation of these Demand Management Measures will assist the City in meeting water use targets and objectives.

### 9.4 WATER USE OBJECTIVES (FUTURE REQUIREMENTS)

The City is currently working with DWR to develop Water Use Objectives pursuant to AB 1668 and SB 606. Beginning in 2024, water agencies, including the City, are required to begin reporting compliance of their Water Use Objectives consisting of indoor residential



water use, outdoor residential water use, commercial, industrial and institutional, irrigation with dedicated meters, water loss, and other unique local uses. The City plans to meet its Water Use Objectives through continued implementation of the Demand Management Measures discussed in Section 9.2.



## **CHAPTER 10**

### **PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION**

#### **LAY DESCRIPTION – CHAPTER 10**

#### **PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION**

Chapter 10 (Plan Adoption, Submittal, and Implementation) of the City's 2020 Plan discusses and provides the following:

- The steps the City has performed to adopt and submit its 2020 Plan are detailed.
- The steps the City has performed to adopt and submit its Water Shortage Contingency Plan are detailed.
- The City coordinated the preparation of its 2020 Plan with the Cities of La Palma, Norwalk, and Santa Fe Springs, and the County of Los Angeles, and other agencies. The City notified these agencies at least sixty (60) days prior to the public hearing of the preparation of the 2020 Plan and invited these agencies to participate in the development of the 2020 Plan.
- The City provided public hearing notices to the same agencies regarding the time, date, and place of the public hearing.
- The City published newspaper notifications of the public hearing, once a week for two successive weeks
- The City conducted public hearings to discuss and adopt the City's 2020 Plan and the City's Water Shortage Contingency Plan.
- Within 30 days of adoption, the City submitted the 2020 Plan and Water Shortage Contingency Plan to the California Department of Water Resources.
- Within 30 days of adoption, the City submitted all data tables associated with the 2020 Plan to the California Department of Water Resources.





- Within 30 days of adoption, the City submitted a copy of the 2020 Plan to the State of California Library.
- Within 30 days of adoption, the City submitted a copy of the 2020 Plan (and Water Shortage Contingency Plan) to the Los Angeles Registrar / Recorder's office and the City Clerk's Office.
- Within 30 days after submittal of the 2020 Plan to the California Department of Water Resources, the City made the 2020 Plan (including the Water Shortage Contingency Plan) available on the City's website and the City Clerk's office.
- The steps the City will perform to amend the 2020 Plan and/or the Water Shortage Contingency Plan, if necessary, are provided.

### **10.1 INCLUSION OF ALL 2020 DATA**

The data provided in the City's 2020 Plan is provided on a CY basis through December 31, 2020 (as discussed in Section 2.4.2).

### **10.2 NOTICE OF PUBLIC HEARING**

The City's public hearing notification process for its 2020 Plan and the WSCP is discussed below.



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## 10.2.1 NOTICE TO CITIES AND COUNTIES

### CWC 10621.

*(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.*

### CWC 10642.

*...The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area...*

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### 10.2.1.1 60 DAY NOTIFICATION

As discussed in Section 2.6.2., the City coordinated the preparation of the 2020 Plan with the Metropolitan Water District of Southern California, Central Basin Municipal Water District, Golden State Water Company, and the Water Replenishment District of Southern California. The City notified these agencies, as well as the cities and county within which the City provides water supplies, at least sixty (60) days prior to the public hearing of the preparation of the 2020 Plan and invited them to participate in the development of the Plan. A copy of the notification letters sent to these agencies is provided in Appendix D.

### 10.2.1.2 NOTICE OF PUBLIC HEARING

The City provided notices of the public hearings to the Los Angeles County, Metropolitan Water District of Southern California, Central Basin Municipal Water District, Golden State Water Company, the Water Replenishment District of Southern California, and the Cities of La Palma, Santa Fe Springs, and Norwalk. The notices included the time and place of the public hearings. To ensure the Plan and the WSCP were available for review, the City placed a copy of the draft 2020 Plan and the draft WSCP at the City Clerk's office and



made a copy available for review on its website. Copies of the public hearing notices are provided in Appendix D.

**10.2.1.3 SUBMITTAL TABLES**

Table 10-1 summarizes the agencies which were provided notifications by the City.

**Table 10-1 Notification to Cities and Counties**

Submittal Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
La Palma	Yes	Yes
Norwalk	Yes	Yes
Santa Fe Springs	Yes	Yes
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
Los Angeles County	Yes	Yes
NOTES:		



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## 10.2.2 NOTICE TO THE PUBLIC

### CWC 10642.

*...Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies.*

### Government Code 6066.

*Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day.*

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The City encouraged the active involvement of the population within its service area prior to and during the preparation of the Plan. Pursuant to Section 6066 of the Government Code, the City published a notice of public hearing in the newspaper during the weeks of June 11, 2021 and June 18, 2021. The City also published a notice of public hearing in the newspaper during the weeks of December 31, 2021 and January 7, 2022. A notice of public hearing was also provided to the City's customers and on the City's website. Copies of the published notices are provided in Appendix D. To ensure the draft 2020 Plan and the draft WSCP were available for review, the City placed a copy at the City Clerk's office and made a copy available for review on its website.



## 10.3 PUBLIC HEARING AND ADOPTION

### CWC 10642.

*...Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon.*

### CWC 10608.26.

*(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:*

*(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.*

*(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.*

*(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.*

### 10.3.1 PUBLIC HEARING

Prior to adopting the draft 2020 Plan and the draft WSCP, the City held public hearings on June 24, 2021 and on January 13, 2022, which included input from the community regarding the City's draft 2020 Plan and the draft WSCP. As part of the public hearings, the City adopted a method to determine its water use targets through selection of Target Method 3 (see Section 5.2.1 and Appendix G). In addition, the City considered the economic impacts of meeting these water use targets; including measures described in Section 8.8.

### 10.3.2 ADOPTION

### CWC 10642.

*... After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.*



Following the public hearings, the City adopted both the draft 2020 Plan and the draft WSCP (included in Chapter 8). A copy of the resolution adopting the 2020 Plan and the WSCP is provided in Appendix P.

### 10.4 PLAN SUBMITTAL

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#### CWC 10621.

*(e) Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.*

#### CWC 10644.

*(a) (1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption.*

#### CWC 10635.

*(c) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.*

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The City's submittal process for its 2020 Plan and the WSCP is discussed below.

#### 10.4.1 SUBMITTING A UWMP AND WATER SHORTAGE CONTINGENCY PLAN TO DWR

The City Council adopted the draft 2020 Plan and within 30 days of adoption, the City submitted the adopted 2020 Plan (including the WSCP) to DWR. The 2020 Plan and WSCP were submitted through DWR's "Water Use Efficiency (WUE) Data Portal" website.



DWR developed a checklist which was used by the City to assist DWR with its determination that the City's 2020 Plan has addressed the requirements of the CWC. The City has completed the DWR checklist by indicating where the required CWC elements can be found within the City's 2020 Plan (See Appendix C).

#### **10.4.2 ELECTRONIC DATA SUBMITTAL**

##### **CWC 10644.**

*(a)(2) The plan, or amendments to the plan, submitted to the department ...shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.*

Within 30 days of adoption of the 2020 Plan, the City submitted all data tables associated with the 2020 Plan through DWR's "Water Use Efficiency Data Portal" website.

#### **10.4.3 SUBMITTING A UWMP, INCLUDING WSCP, TO THE CALIFORNIA STATE LIBRARY**

Within 30 days of adoption of the 2020 Plan by the City Council, a copy (CD or hardcopy) of the 2020 Plan was submitted to the State of California Library. A copy of the letter to the State Library will be maintained in the City's file. The 2020 Plan will be mailed to the following address if sent by regular mail:

California State Library  
Government Publications Section  
Attention: Coordinator, Urban Water Management Plans  
P.O. Box 942837  
Sacramento, CA 94237-0001



The 2020 Plan will be mailed to the following address if sent by courier or overnight carrier:

California State Library  
Government Publications Section  
Attention: Coordinator, Urban Water Management Plans  
900 N Street  
Sacramento, CA 95814

#### 10.4.4 SUBMITTING A UWMP TO CITIES AND COUNTIES

Within 30 days of adoption of the 2020 Plan (including the WSCP) by the City Council, a copy of the 2020 Plan was submitted to the County of Los Angeles Registrar / Recorder's office and the City Clerk's office. A copy of the letter to the Los Angeles Registrar / Recorder's office will be maintained in the City's file.

### 10.5 PUBLIC AVAILABILITY

#### CWC 10645.

*(a) Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

*(b) Not later than 30 days after filing a copy of its water shortage contingency plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

Within 30 days after submittal of the 2020 Plan to DWR, the City made the 2020 Plan (including the WSCP) available at the City Clerk's office during normal business hours and on the City's website.





## 10.6 NOTIFICATION TO PUBLIC UTILITIES COMMISSION

### CWC 10621.

*(c) An urban water supplier regulated by the Public Utilities Commission shall include its most recent plan and water shortage contingency plan as part of the supplier's general rate case filings.*

The City is not regulated by the California Public Utilities Commission.

## 10.7 AMENDING AN ADOPTED UWMP OR WATER SHORTAGE CONTINGENCY PLAN

### CWC 10621.

*(d) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).*

### CWC 10644.

*(a)(1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.*

The City amendment process for its 2020 Plan is discussed below.

### 10.7.1 AMENDING A UWMP

If the City amends the adopted 2020 Plan, the amended Plan will undergo adoption by the City's governing board. Within 30 days of adoption, the amended Plan will then be



submitted to DWR, the State of California Library, the Los Angeles Registrar / Recorder's office, and the City Clerk's office.

### **10.7.2 AMENDING A WATER SHORTAGE CONTINGENCY PLAN**

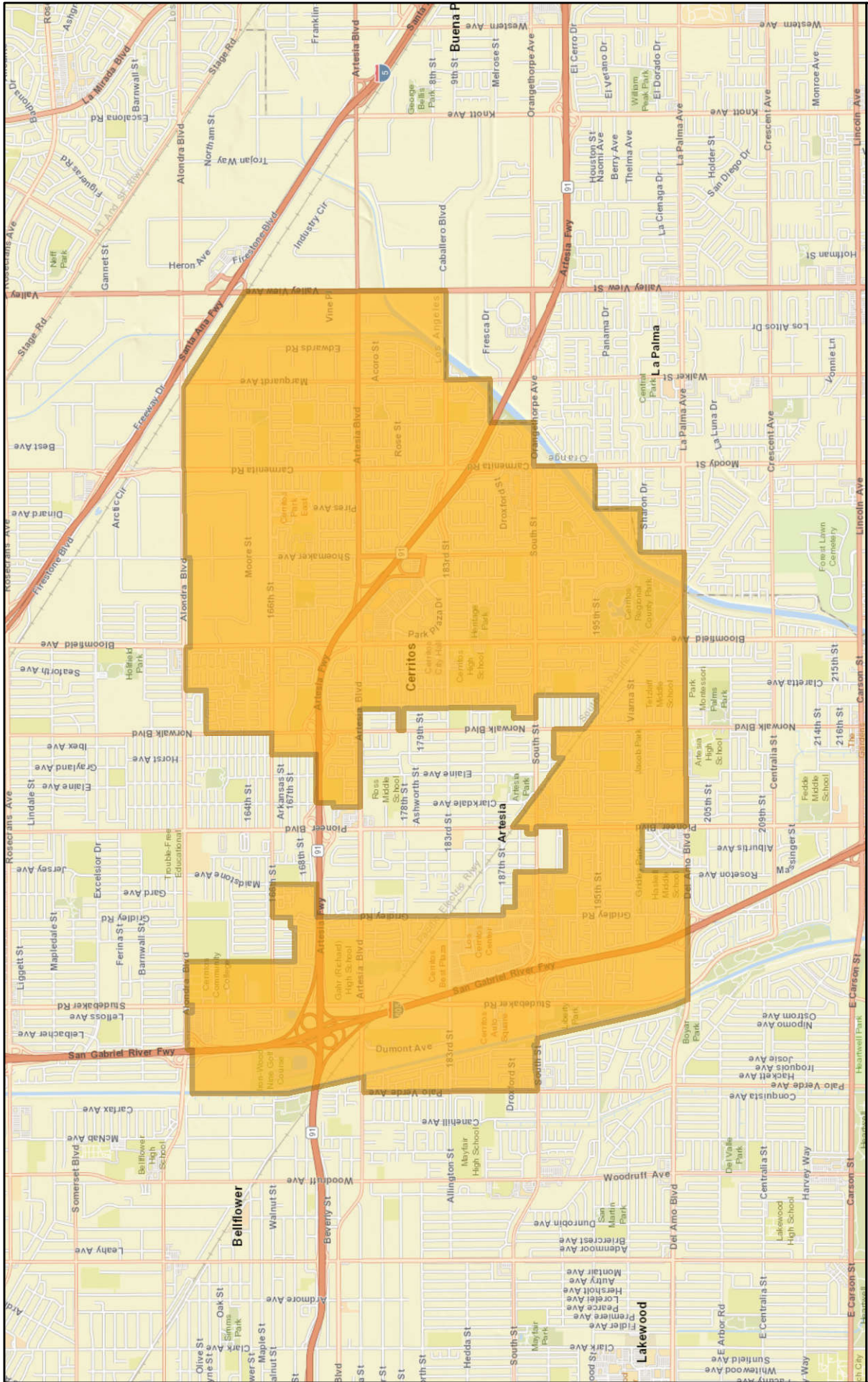
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#### **CWC 10644.**

*(b) If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.*

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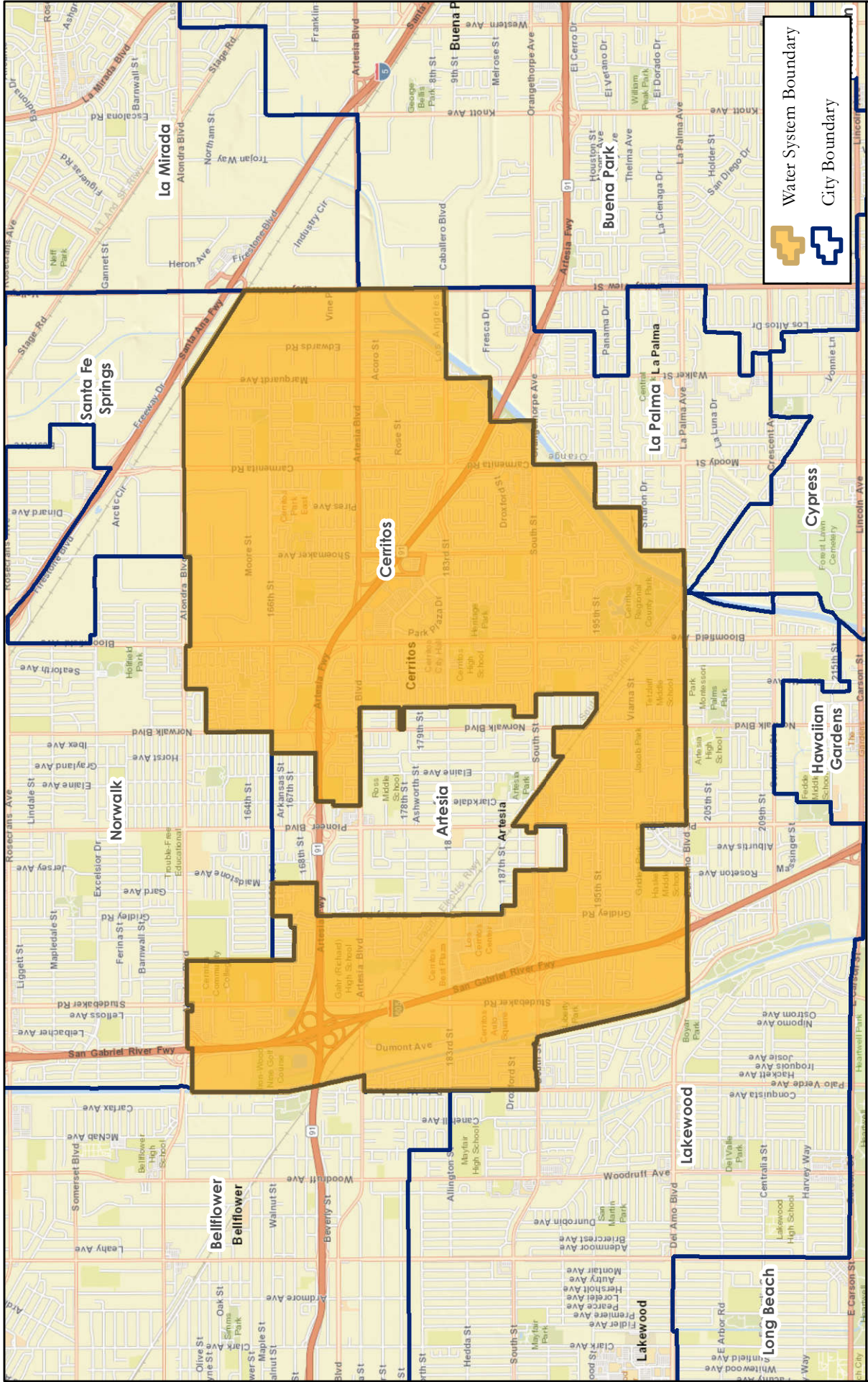
If the City amends the adopted 2020 Plan (including the WSCP), the amended Plan (and WSCP) will undergo adoption by the City Council. Within 30 days of adoption, the amended Plan (and WSCP) will then be submitted to DWR, the State of California Library, the Los Angeles Registrar / Recorder's office, and the City Clerk's office.



**CITY OF CERRITOS  
WATER SERVICE AREA**



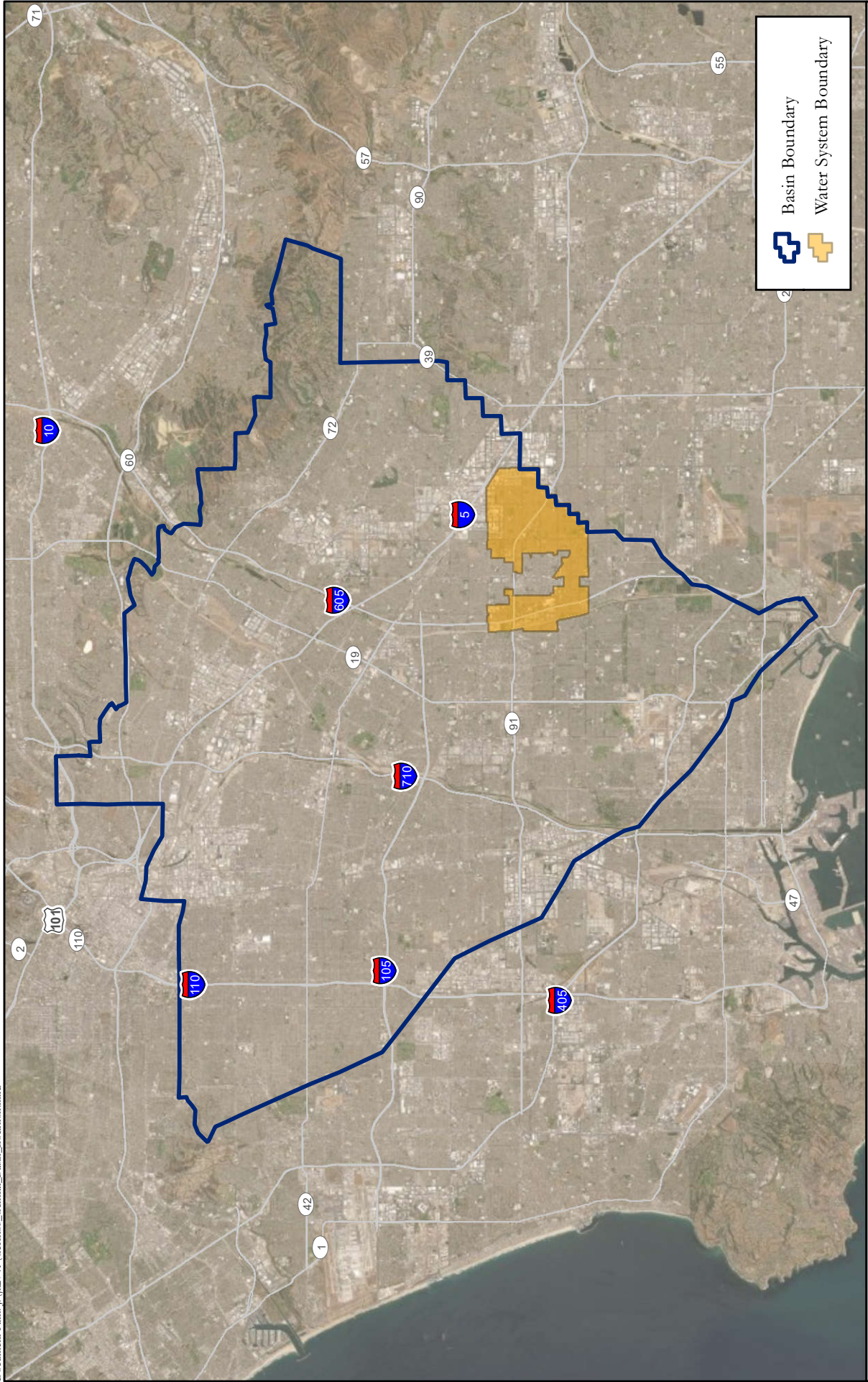




**CITY OF CERRITOS  
WATER SERVICE AREA  
AND CITY BOUNDARIES**







CITY OF CERRITOS  
CENTRAL BASIN LOCATION

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STETSON  
ENGINEERS INC.

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX A**

**DWR STANDARDIZED TABLES**

Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 *
<i>Add additional rows as needed</i>			
CA1910019	City of Cerritos	15,743	10,614
<b>TOTAL</b>		<b>15,743</b>	<b>10,614</b>
* <b>Units of measure (AF, CCF, MG)</b> must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES: The "Volume of Water Supplied 2020" includes recycled water supplies of 2,159 AF. Source for "Number of Municipal Connections 2020": <a href="https://sdwis.waterboards.ca.gov/PDWW/">https://sdwis.waterboards.ca.gov/PDWW/</a>			

**Submittal Table 2-2: Plan Identification**

<b>Select Only One</b>	<b>Type of Plan</b>	<b>Name of RUWMP or Regional Alliance</b> <i>if applicable</i> (select from drop down list)
<input checked="" type="checkbox"/>	<b>Individual UWMP</b>	
	<input type="checkbox"/>	Water Supplier is also a member of a RUWMP
	<input type="checkbox"/>	Water Supplier is also a member of a Regional Alliance
<input type="checkbox"/>	<b>Regional Urban Water Management Plan (RUWMP)</b>	

NOTES:



Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
<input type="checkbox"/>	Supplier is a wholesaler
<input checked="" type="checkbox"/>	Supplier is a retailer
Fiscal or Calendar Year (select one)	
<input checked="" type="checkbox"/>	UWMP Tables are in calendar years
<input type="checkbox"/>	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
01/01	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
<i>* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>	
NOTES:	

**Submittal Table 2-4 Retail: Water Supplier Information Exchange**

The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.

Wholesale Water Supplier Name

*Add additional rows as needed*

Central Basin Municipal Water District

NOTES:

**Submittal Table 3-1 Retail: Population - Current and Projected**

Population Served	2020	2025	2030	2035	2040	2045(opt)
	50,143	53,172	56,199	56,276	56,354	56,433

NOTES: 2020 population was obtained from the California Census 2020 and from the United States Census Bureau's American Community Survey. 2025 and 2030 populations are based on housing unit allocations identified in SCAG's Regional Housing Needs Assessment. Growth rates obtained from SCAG data were applied to the 2030 population and projected through 2045. (See Section 3.4.1).

### Submittal Table 4-1 Retail: Demands for Potable and Non-Potable<sup>1</sup> Water - Actual

Use Type	2020 Actual		
<b>Drop down list</b> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume <sup>2</sup>
Add additional rows as needed			
Single Family		Drinking Water	4,520
Multi-Family		Drinking Water	481
Commercial		Drinking Water	1,352
Landscape		Drinking Water	464
Sales/Transfers/Exchanges to other agencies	City of Norwalk and Golden State Water Company	Drinking Water	1,228
Losses		Drinking Water	410
<b>TOTAL</b>			8,455

<sup>1</sup> Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.

<sup>2</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: Recycled water demands are provided in Table 4-3 and Table 6-4.

**Submittal Table 4-2 Retail: Use for Potable and Non-Potable<sup>1</sup> Water - Projected**

Use Type	Additional Description (as needed)	Projected Water Use <sup>2</sup> <i>Report To the Extent that Records are Available</i>				
		2025	2030	2035	2040	2045 (opt)
<p><b>Drop down list</b> May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool</p>						
Add additional rows as needed						
Single Family		5,301	5,564	5,477	5,422	5,366
Multi-Family		561	600	617	629	641
Commercial		1,576	1,685	1,735	1,769	1,803
Landscape		541	578	595	607	619
Sales/Transfers/Exchanges to other agencies		1,400	1,600	1,900	2,100	2,300
Losses		478	512	527	537	547
<b>TOTAL</b>		9,857	10,539	10,851	11,064	11,276

<sup>1</sup> Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.  
Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES:

**Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)**

	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable <i>From Tables 4-1R and 4-2 R</i>	8,455	9,857	10,539	10,851	11,064	11,276
Recycled Water Demand <sup>1</sup> <i>From Table 6-4</i>	2,159	2,500	2,500	2,500	2,500	2,500
Optional Deduction of Recycled Water Put Into Long-Term Storage <sup>2</sup>						
<b>TOTAL WATER USE</b>	10,614	12,357	13,039	13,351	13,564	13,776

<sup>1</sup> Recycled water demand fields will be blank until Table 6-4 is complete

<sup>2</sup> Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier *may* deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.

NOTES:

## Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss <sup>1,2</sup>
01/2016	420
01/2017	736
01/2018	459
01/2019	460
01/2020	410

<sup>1</sup> Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.

<sup>2</sup> **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES: The "Volume of Water Loss" quantities for CY 2016 through CY 2019 were obtained from the annual AWWA Water Loss Audits (and based on the combination of apparent losses and real losses). The AWWA Water Loss Audits were reported on a calendar year basis. The AWWA Water Loss Audit for calendar year 2020 will be prepared by October 2021. The "Volume of Water Loss" quantity for for CY 2020 was estimated based on metered water production less metered water deliveries to customers.

<b>Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections</b>	
<p style="text-align: center;"><b>Are Future Water Savings Included in Projections?</b>            (Refer to Appendix K of UWMP Guidebook)  <i>Drop down list (y/n)</i></p>	Yes
<p>If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.</p>	Section 4.2.6 and Chapter 8
<p style="text-align: center;"><b>Are Lower Income Residential Demands Included In Projections?</b>  <i>Drop down list (y/n)</i></p>	Yes
<p>NOTES:</p>	



**Submittal Table 5-1 Baselines and Targets Summary****From SB X7-7 Verification Form***Retail Supplier or Regional Alliance Only*

Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	1997	2010	164	142
5 Year	2004	2008	161	

*\*All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

**Submittal Table 5-2: 2020 Compliance**  
**From SB X7-7 2020 Compliance Form**  
*Retail Supplier or Regional Alliance Only*

2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* <i>(Adjusted if applicable)</i>		
129	0	129	142	Y

*\*All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*

NOTES:

**Submittal Table 6-1 Retail: Groundwater Volume Pumped**

Supplier does not pump groundwater.  
The supplier will not complete the table below.

All or part of the groundwater described below is desalinated.

Groundwater Type <i>Drop Down List</i> <i>May use each category multiple times</i>	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
--	------------------------	-------	-------	-------	-------	-------

*Add additional rows as needed*

Alluvial Basin	Central Basin	7,531	8,238	8,382	7,996	8,448
<b>TOTAL</b>		7,531	8,238	8,382	7,996	8,448

**\* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES:

**Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020**

<input type="checkbox"/>	There is no wastewater collection system. The supplier will not complete the table below.
	Percentage of 2020 service area covered by wastewater collection system <i>(optional)</i>
	Percentage of 2020 service area population covered by wastewater collection system <i>(optional)</i>

Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? <i>Drop Down List</i>	Volume of Wastewater Collected from UWMP Service Area 2020 *	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? <i>Drop Down List</i>	Is WWTP Operation Contracted to a Third Party? <i>(optional)</i> <i>Drop Down List</i>
Sanitation Districts of Los Angeles County	Estimated	3,370	Sanitation Districts of Los Angeles County	Long Beach WRP and Joint Water Pollution Control Plant	No	No
<b>Total Wastewater Collected from Service Area in 2020:</b>		3,370				

*\* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020



No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (optional) <sup>2</sup>	Method of Disposal <i>Drop down list</i>	Does This Plant Treat Wastewater Generated Outside the Service Area? <i>Drop down list</i>	Treatment Level <i>Drop down list</i>	2020 volumes <sup>1</sup>				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
<b>Total</b>							0	0	0	0	0

<sup>1</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.  
<sup>2</sup> If the Wastewater Discharge ID Number is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at <https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility>

NOTES:

**Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area**

Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.

Name of Supplier Producing (Treating) the Recycled Water: Los Angeles County Sanitation District

Name of Supplier Operating the Recycled Water Distribution System: City of Cerritos

Supplemental Water Added in 2020 (volume) *Include units*: 0

Source of 2020 Supplemental Water: N/A

Beneficial Use Type <i>Insert additional rows if needed.</i>	Potential Beneficial Uses of Recycled Water (Describe)	Amount of Potential Uses of Recycled Water (Quantity) <i>Include volume units<sup>1</sup></i>	General Description of 2020 Uses	Level of Treatment <i>Drop down list</i>	2020 <sup>1</sup>	2025 <sup>1</sup>	2030 <sup>1</sup>	2035 <sup>1</sup>	2040 <sup>1</sup>	2045 <sup>1</sup> (opt)
Agricultural irrigation										
Landscape irrigation (exc golf courses)	Schools, Parks, City Landscape		Schools, Parks, City Landscape	Tertiary	1,894	2,193	2,193	2,193	2,193	2,193
Golf course irrigation										
Commercial use				Tertiary	265	307	307	307	307	307
Industrial use										
Geothermal and other energy production										
Seawater intrusion barrier										
Recreational impoundment										
Wetlands or wildlife habitat										
Groundwater recharge (IPR)										
Reservoir water augmentation (IPR)										
Direct potable reuse										
Other (Description Required)										
<b>Total:</b>					2,159	2,500	2,500	2,500	2,500	2,500
<b>2020 Internal Reuse</b>										

<sup>1</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES:

**Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual**

Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.

Beneficial Use Type	2015 Projection for 2020 <sup>1</sup>	2020 Actual Use <sup>1</sup>
<i>Insert additional rows as needed.</i>		
Agricultural irrigation		
Landscape irrigation (exc golf courses)	2,200	1,894
Golf course irrigation		
Commercial use	305	265
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
<b>Total</b>	2,505	2,159

<sup>1</sup> Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTE:

**Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use**

<input type="checkbox"/>	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.
--------------------------	---

Section 6.2.5	Provide page location of narrative in UWMP
---------------	--

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
----------------	-------------	-----------------------------	---

*Add additional rows as needed*

Provide Recycled Water Incentives	Provides financial incentives to encourage recycled water use	Ongoing	350
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<b>Total</b>			<b>350</b>
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**\*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES:



**Submittal Table 6-7 Retail: Expected Future Water Supply Projects or Programs**

No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.

Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.

**Section 6.2.8** Provide page location of narrative in the UWMP

Name of Future Projects or Programs	Joint Project with other suppliers?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down List</i>	Expected Increase in Water Supply to Supplier* <i>This may be a range</i>
	<i>Drop Down List (y/n)</i>	<i>If Yes, Supplier Name</i>				

*Add additional rows as needed*

New Groundwater Well	No		Design and construct new groundwater well (Well C-5)	2023	All Year Types	3,500

**\*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES:

**Submittal Table 6-8 Retail: Water Supplies — Actual**

Water Supply	Additional Detail on Water Supply	2020		
<b>Drop down list</b> May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Groundwater (not desalinated)	Central Basin	8,448	Drinking Water	
Purchased or Imported Water	Central Basin Municipal Water District	7	Drinking Water	
Recycled Water		2,159	Recycled Water	
<b>Total</b>		10,614		0
<i>*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.</i>				
NOTES:				

**Submittal Table 6-9 Retail: Water Supplies — Projected**

Water Supply	Additional Detail on Water Supply	Projected Water Supply * Report To the Extent Practicable									
		2025		2030		2035		2040		2045 (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Groundwater (not desalinated)	Central Basin	9,847		10,529		10,841		11,054		11,266	
Purchased or Imported Water	Central Basin Municipal Water District	10		10		10		10		10	
Recycled Water	Los Angeles County Sanitation District	2,500		2,500		2,500		2,500		2,500	
<b>Total</b>		<b>12,357</b>	<b>0</b>	<b>13,039</b>	<b>0</b>	<b>13,351</b>	<b>0</b>	<b>13,564</b>	<b>0</b>	<b>13,776</b>	<b>0</b>

\*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.

NOTES

**Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)**

Year Type	Base Year If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	Available Supplies if Year Type Repeats	
		<input type="checkbox"/>	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		<input checked="" type="checkbox"/>	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available *	% of Average Supply
Average Year	2018	10,895	100%
Single-Dry Year	2017	10,374	95.2%
Consecutive Dry Years 1st Year	2011	11,232	103.1%
Consecutive Dry Years 2nd Year	2012	11,701	107.4%
Consecutive Dry Years 3rd Year	2013	11,910	109.3%
Consecutive Dry Years 4th Year	2014	11,817	108.5%
Consecutive Dry Years 5th Year	2015	9,946	91.3%

*Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.*

**\*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES:

**Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison**

	2025	2030	2035	2040	2045 (Opt)
Supply totals ( <i>autofill from Table 6-9</i> )	12,357	13,039	13,351	13,564	13,776
Demand totals ( <i>autofill from Table 4-3</i> )	12,357	13,039	13,351	13,564	13,776
Difference	0	0	0	0	0

NOTES:

**Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison**

	2025	2030	2035	2040	2045 (Opt)
Supply totals*	11,767	12,416	12,713	12,915	13,118
Demand totals*	11,767	12,416	12,713	12,915	13,118
Difference	0	0	0	0	0

*\*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

**Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison**

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	12,740	13,443	13,764	13,983	14,202
	Demand totals	12,740	13,443	13,764	13,983	14,202
	Difference	0	0	0	0	0
Second year	Supply totals	13,272	14,004	14,339	14,567	14,795
	Demand totals	13,272	14,004	14,339	14,567	14,795
	Difference	0	0	0	0	0
Third year	Supply totals	13,509	14,254	14,596	14,828	15,060
	Demand totals	13,509	14,254	14,596	14,828	15,060
	Difference	0	0	0	0	0
Fourth year	Supply totals	13,404	14,143	14,482	14,712	14,942
	Demand totals	13,404	14,143	14,482	14,712	14,942
	Difference	0	0	0	0	0
Fifth year	Supply totals	11,282	11,904	12,189	12,383	12,577
	Demand totals	11,282	11,904	12,189	12,383	12,577
	Difference	0	0	0	0	0
Sixth year (optional)	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0

**\*Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.**

NOTES:

**Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)**

<b>2021</b>	<b>Total</b>
Total Water Use	11,302
Total Supplies	11,232
Surplus/Shortfall w/o WSCP Action	(70)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	70
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	1%

<b>2022</b>	<b>Total</b>
Total Water Use	12,148
Total Supplies	11,701
Surplus/Shortfall w/o WSCP Action	(447)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	447
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	4%

<b>2023</b>	<b>Total</b>
Total Water Use	12,747
Total Supplies	11,910
Surplus/Shortfall w/o WSCP Action	(837)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	837
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	7%

<b>2024</b>	<b>Total</b>
Total Water Use	13,025
Total Supplies	11,817
Surplus/Shortfall w/o WSCP Action	(1,208)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	1,208
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	9%

<b>2025</b>	<b>Total</b>
Total Water Use	11,282
Total Supplies	9,946
Surplus/Shortfall w/o WSCP Action	(1,336)
<b>Planned WSCP Actions</b> (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	1,336
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	12%



**Submittal Table 8-1  
Water Shortage Contingency Plan Levels**

Shortage Level	Percent Shortage Range	Shortage Response Actions <i>(Narrative description)</i>
1	Up to 10%	Washing of walkways, driveways, or parking areas with a hose. Using water to clean, fill, or maintain levels in decorative fountains unless a recycling system is used. Serving drinking water to any customer in a restaurant or other public place where food is served, sold, or offered for sale unless expressly requested by the customer. Watering or irrigating lawns, turf, or landscape areas between hours of 10:00 A.M. and 4:00 P.M., beyond saturation causing runoff. Allowing a hose to run continuously while washing vehicles. Allowing sprinklers to direct water to areas other than landscape causing runoff. Failing to repair all water leaks as soon as possible.
2	Up to 20%	Additional demand reduction actions deemed necessary by the City.
3	Up to 30%	Bimonthly, each 5/8" x 3/4" or 1" water meter shall be billed at base consumption of 30 units, under the current water rate structure. All billing units used over the base consumption will be billed at one and one half times the quantity rate in existence in the current rate structure; each 1-1/2" water meter shall be billed at a base consumption of 119 units under the current water rate structure; Bimonthly, each 2" water meter shall be billed at a base consumption of 277 units under the current water rate structure; Bimonthly, each 3" water meter shall be billed at a base consumption of 511 units under the current water rate structure; Bimonthly, each 4" water meter shall be billed at a base consumption of 1080 units under the current water rate structure.
4	Up to 40%	Additional demand reduction actions deemed necessary by the City.
5	Up to 50%	Additional demand reduction actions deemed necessary by the City.
6	>50%	Additional demand reduction actions deemed necessary by the City.

NOTES:

**Submittal Table 8-2: Demand Reduction Actions**

Shortage Level	Demand Reduction Actions <i><b>Drop down list</b></i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>For Retail Suppliers Only</i> <i>Drop Down List</i>
<i>Add additional rows as needed</i>				
1	Other - Prohibit use of potable water for washing hard surfaces	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	CII - Restaurants may only serve water upon request	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Landscape - Limit landscape irrigation to specific times	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Landscape - Restrict or prohibit runoff from landscape irrigation	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Other	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
1	Other	Collective reduction from all Shortage Level 1 actions is up to 784 AFY		Yes
2	Other	Collective reduction from Shortage Level 1 plus all Shortage Level 2 actions is up to 1,568 AFY		Yes
3	Other	Collective reduction from Shortage Level 2 plus all Shortage Level 3 actions is up to 2,352 AFY		Yes
3	Implement or Modify Drought Rate Structure or Surcharge	Collective reduction from all Shortage Level 3 actions is up to 2,352 AFY		Yes
4	Other	Collective reduction from Shortage Level 3 plus all Shortage Level 4 actions is up to 3,136 AFY		Yes
5	Other	Collective reduction from Shortage Level 4 plus all Shortage Level 5 actions is up to 3,920 AFY		Yes
6	Other	Collective reduction from Shortage Level 5 plus all Shortage Level 6 actions is greater than 3,920 AFY		Yes
NOTES:				

**Submittal Table 8-3: Supply Augmentation and Other Actions**

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	How much is this going to reduce the shortage gap? <i>Include units used (volume type or percentage)</i>	Additional Explanation or Reference <i>(optional)</i>
<i>Add additional rows as needed</i>			
1	Transfers	Not applicable (see Notes)	
2	Transfers	Not applicable (see Notes)	
3	Transfers	Not applicable (see Notes)	
4	Transfers	Not applicable (see Notes)	
5	Transfers	Not applicable (see Notes)	
6	Transfers	Not applicable (see Notes)	

NOTES: The City will consider increased production from the Central Basin using existing facilities to address increased demands. As noted on Table 8-2, the City plans to implement demand reduction measures in the event water supplies from existing sources are not sufficient to meet anticipated demands.

**Submittal Table 10-1 Retail: Notification to Cities and Counties**

City Name	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
La Palma	Yes	Yes
Norwalk	Yes	Yes
Santa Fe Springs	Yes	Yes
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
Los Angeles County	Yes	Yes
NOTES:		

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX B**

**DEMONSTRATION OF REDUCED IMPORTED WATER RELIANCE**

**DEMONSTRATION OF CONSISTENCY WITH THE DELTA PLAN FOR  
PARTICIPANTS IN COVERED ACTIONS  
(CY 2015 THROUGH CY 2045)  
CITY OF CERRITOS**

**Introduction**

Pursuant to the California Department of Water Resources (DWR), an urban water supplier that anticipates participating in or receiving water from a proposed project (or “covered action”) such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta) should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs) for use in demonstrating consistency with Delta Plan Policy WR P1, “*Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance*”. In addition, pursuant to California Code of Regulations, Title 23, § 5003:

*(c)(1) Water suppliers that have done all of the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:*

*(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;*

*(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and*

*(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code section 1011(a).*

The City of Cerritos (the City) is sub-agency of the Central Basin Municipal Water District, which in turn is a member agency of the Metropolitan Water District of Southern California (MWD). As noted in MWD's document entitled "*Infeasibility of Accounting Supplies from the Delta Watershed for Metropolitan's Member Agencies and their Customers*" (which is included in MWD's Regional 2020 UWMP and is provided as Attachment 1 below), "... Metropolitan's service area, as a whole, reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. Metropolitan's member agencies coordinate reliance on the Delta through their membership in Metropolitan, a regional cooperative providing wholesale water service to its 26 member agencies. Accordingly, regional reliance on the Delta can only be measured regionally—not by individual Metropolitan member agencies and not by the customers of those member agencies...."

In addition, MWD's 2020 Regional UWMP indicates "...in accordance with UMWP requirements, Metropolitan's member agencies and their customers (many of them, retail agencies) also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in Metropolitan's UWMP; rather, their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta...While the demands that Metropolitan's member agencies and their customers report in their UWMPs are a good reflection of the demands in their respective service areas, they do not adequately represent each water supplier's contributions to reduced reliance on the Delta. In order to calculate and report their reliance on water supplies from the Delta watershed, water suppliers that receive water from the Delta through other regional or wholesale water suppliers would need to determine the amount of Delta water that they receive from the regional or wholesale supplier. Two specific pieces of information are needed to accomplish this: first is the quantity of demands on the regional or wholesale water supplier that accurately reflect a supplier's contributions to reduced reliance on the Delta, and second is the quantity of a supplier's demands on the regional or wholesale water supplier that are met by supplies from the Delta

watershed...For water suppliers that make investments in regional projects or programs it may be infeasible to quantify their demands on the regional or wholesale water supplier in a way that accurately reflects their individual contributions to reduced reliance on the Delta.” Nonetheless, the City has taken proactive measures to help reduce regional reliance on imported water supplies and is discussed in the following sections.

### **Reduced Reliance Calculation Tables**

Pursuant to DWR guidance, Tables C-1 through C-4 were prepared to show the potential reduction of reliance on imported supply for the City. The City has used these tables to demonstrate its reduced regional reliance on imported water supplies, but not specifically Delta Watershed supplies. For each of the tables, a “Baseline year” was selected. Water demands during subsequent years (from 2015 through 2045 in five-year increments) were compared to water demands during the Baseline year. Table C-1 considers the population and service area water demands, and a demand in gallons per capita per day (GPCD) water use rate was calculated for each of the years following the Baseline year. The calculated reduction in GPCD from the Baseline year was then translated to an estimated amount of water saved as a result of water conservation measures. Table C-2 references the estimated amount of water saved from Table C-1 and shows the City’s water demand without water use efficiency in effect.

A method of showing reduced regional reliance on imported water supplies is to show increased regional self-reliance. Table C-3 lists water supply sources that contribute to regional self-reliance, including water use efficiency (from Table C-1 and C-2) and groundwater recharge activities. Regional self-reliance is expressed both in terms of acre feet (AF) and as a percentage.

The calculation of reduced regional reliance on imported water supplies is shown on Table C-4. Table C-4 also shows the percent change in imported water supplies relative to the City’s total supply. A negative percent change of imported water supplies indicates the City has reduced regional reliance on imported water supplies.



Since the Baseline year, the City has decreased its reduced regional reliance on imported water supplies in 2015, 2020, and anticipates doing so through 2045.

The City has reduced its reliance on imported water supply in up to three separate categories, as follows:

- The demand in GPCD for the "Baseline year" was compared to the GPCDs in subsequent years (from 2015 through 2045, in five-year increments). The reduced GPCD multiplied by the population in these subsequent years is indicative of the potential reduced regional reliance on imported water supplies and is included in Table C-1.
- The recycled water use from 2015 through 2045, in five-year increments, also demonstrates reduced regional reliance on imported water supplies and included in Table C-1
- To the extent the Water Replenishment District of Southern California (WRD) has, or plans to, use recycled water to replenish the Central Basin, the City's proportional share (up to the total replenishment water obligation) will be included on Table C-1.

These categories of reduced imported water reliance are discussed below. The sum of the increased regional self-reliance and the sum of the reduced regional reliance imported water demand resulting from these categories is reflected on Table C-3 and Table C-4, respectively, and is reflective of the City's overall reduced reliance.

### Reduced GPCD

Section 6.2.2 of the 2020 UWMP describes the management of the Central Basin. The City produces groundwater from the Central Basin, which is adjudicated and managed by the WRD. The City's current Allowed Pumping Allocation in the Central Basin is 4,680.03 AFY. As discussed in Section 6.2.7 of the 2020 UWMP, the City leases Central Basin

water rights on an annual basis to allow for additional production above its Allowed Pumping Allocation. In addition, the City can purchase treated imported water from Central Basin Municipal Water District which is ultimately provided by the Metropolitan Water District of Southern California. The City regularly sells potable water to the City of Norwalk and Golden State Water Company. A portion of these sales include treated imported water, while the balance is groundwater.

Chapter 9 of the 2020 UWMP describes the Demand Management Measures which the City has implemented to reduce the amount water used by its customers. In addition, Chapter 6 of the 2020 UWMP describes the groundwater basin management measures implemented by WRD. Collectively these actions translate to a reduction in the GPCD usage rate which is described further in Chapter 5 of the 2020 UWMP. These actions directly impact total water demands, and consequently, the quantity of imported water which may be required. Absent the proactive measures taken by the City, it is anticipated there may have been a greater demand on imported water.

Pursuant to DWR guidance, reduced reliance on imported water supplies can be demonstrated by first selecting a “Baseline” water demand, represented by total potable water demands during CY 2008. Table C-1 summarizes the “Baseline” water usage by the City in CY 2008 (assuming demand reduction efforts had not been implemented); actual water usage in 2015 and 2020; and projected water usage through 2045 in five-year increments. Table C-2 demonstrates that, but for the water conservation efforts implemented by the City, there may have been a greater reliance on untreated imported water supplies during the Baseline year as compared to subsequent years. The reduction is considered the reduced imported water reliance.

The City’s potable water demand of 10,752 AF during CY 2008, along with the corresponding service area population of approximately 54,167, were used to determine the Baseline GPCD. Subsequently, the actual demands for CY 2015 and CY 2020 were compared to the calculated population to obtain the recent GPCD which includes the water conservations measures which have been implemented (those demand

management measures are described in Chapter 9 of the 2020 UWMP). The “Water Supplies Contributing to Regional Self-Reliance” are also provided in Table C-1. The differences between the Baseline GPCD and the 2015 and 2020 GPCDs are effectively considered a demonstration of the reduced regional reliance on imported water supplies with the understanding that any potential increased demand by the City resulting from increased population could have been required, absent the City’s new water supplies which contribute to self-reliance. A similar methodology is used for the projected potable water demands (2020 UWMP Table 4-3) and populations (2020 UWMP Table 3-1).

### Recycled Water Use

The City has also constructed infrastructure to deliver recycled water to its customers instead of continuing to use its potable water supplies. The historical recycled water demands for CY 2015 and CY 2020, along with the projected recycled water demands (from Table 4-3) are incorporated in Table C-1. These quantities are in addition to the reduced demand resulting from decreased GPCD.

### Recycled Water for Groundwater Replenishment

MWD is currently partnering with LACSD to investigate the viability of providing up to 150 million gallons per day (MGD) (approximately 168,000 AFY) of advanced treated wastewater from LACSD’s Joint Water Pollution Control Plant located in Carson, California (Carson Plant)<sup>1</sup>. The “Regional Recycled Water Program” (RRWP) would deliver purified water from the Carson Plant in up to 60 miles of transmission pipelines to groundwater basins within MWD’s service area, including the Central, West Coast, Main San Gabriel, and Orange County Basins. The purified water would be used for groundwater recharge, groundwater storage, and industrial facilities. In addition, purified water could potentially be treated further at two of MWD’s existing water treatment plants for direct potable reuse. The locations of the proposed pipeline alignments are provided in the figure below.

## Regional Recycled Water Program Location



Source: <http://www.mwdh2o.com/DocSvcsPubs/rrwp/index.html>

MWD began construction of a \$17 million small-scale demonstration plant (0.5 MGD) in late 2017 which was completed in October 2019. The results of the demonstration plant will allow MWD and others to determine if expansion to a full-scale plant is beneficial. The full-scale plant would take approximately 11 years to construct once approved (with a cost of over \$3 billion).

Pursuant to MWD's "Regional Recycled Water Program Conceptual Planning Studies Report", February 2019, the proposed RRWP would potentially deliver up to 9 MGD (about 10,000 AFY) of purified water for injection at the Montebello Forebay or for spreading at the Rio Hondo Spreading Grounds in Pico Rivera for Central Basin replenishment purposes. Water produced from the proposed RRWP would offset an equal amount of untreated imported water from the State Water Project and/or the Colorado River, which otherwise historically may have been used for groundwater replenishment (including in the Central Basin). As noted in Section 6.2.2 of the 2020 UWMP, all producers in Central Basin are levied a "Replenishment Assessment" to replenish Central

Basin on each acre-foot of groundwater produced. Therefore, the benefit to each producer in this Plan is based on the proportional share of its anticipated production to the total Central Basin production.

WRD has developed the “Water Independence Now” (WIN) Project, formerly referred to as the Groundwater Reliability Improvement Program (GRIP), which consists of about 10,500 AFY of highly treated recycled water blended with an additional 10,500 AFY of recycled water, for a total of 21,000 AFY. This recycled water is produced from LACSD’s San Jose Creek Water Reclamation Plant and is used to replenish the Central Basin. The WIN Project will offset an equal amount of SWP water. As noted in Section 6.2.2 of the 2020 UWMP, all producers in Central Basin are levied a “Replenishment Assessment” to replenish Central Basin on each acre-foot of groundwater produced. Therefore, the benefit to each producer in this Plan is based on the proportional share of its anticipated production to the total Central Basin production. The recharged water hypothetically assigned to the City is based on the City’s share (2.15305%) of the Central Basin’s total Allowable Pumping Allocation (217,367 AFY) multiplied by the amount of recycled water replenished and is shown on Table C-3.

The decrease in GPCD, increase in recycled water use, and enhanced groundwater recharge programs compared to the Baseline year has resulted in an overall decrease in reliance on imported water supplies. As shown in Table C-4, the percentage of imported water supplies relative to the City’s total supply has decreased, and is projected to decrease, from the percentage in the Baseline year.

#### Metropolitan Water District of Southern California

In addition, as the wholesale provider, the Metropolitan Water District of Southern California has included a detailed discussion regarding measurable reduction in Delta reliance in Appendix 11 of its 2020 Regional Urban Water Management Plan. That discussion is included by reference and also included in Attachment 1 of this Plan.

## Reduced Reliance Calculation - City of Cerritos

**Table C-1: Optional Calculation of Water Use Efficiency - To be completed if Water Supplier does not specifically estimate Water Use Efficiency as a supply**

Service Area	Water Use Efficiency Demands (Acre-Feet)	Baseline (2008)	Water Use Efficiency						
			2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For <sup>1</sup>		12,916	9,220	9,387	10,957	11,439	11,451	11,464	11,476
Non-Potable Water Demands		2,164	2,221	2,159	2,500	2,500	2,500	2,500	2,500
Potable Service Area Demands with Water Use Efficiency Accounted For		10,752	7,000	7,228	8,457	8,939	8,951	8,964	8,976
<b>Total Service Area Population</b>									
Service Area Population		54,167	49,091	50,143	53,172	56,199	56,276	56,354	56,433
<b>Water Use Efficiency Since Baseline</b>									
Water Use Efficiency Since Baseline (Acre-Feet)		Baseline (2008)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Per Capita Water Use (GPCD)		177	127	129	142	142	142	142	142
Change in Per Capita Water Use from Baseline (GPCD)			(50)	(49)	(35)	(35)	(35)	(35)	(35)
Estimated Water Use Efficiency Since Baseline			2,745	2,726	2,097	2,216	2,219	2,222	2,226

**Table C-2: Calculation of Service Area Water Demands Without Water Use Efficiency**

Service Area	Water Demands (Acre-Feet)	Baseline (2008)	Water Demands						
			2015	2020	2025	2030	2035	2040	2045 (Optional)
Total Service Area Water Demands		12,916	9,220	9,387	10,957	11,439	11,451	11,464	11,476
Service Area Water Demands with Water Use Efficiency Accounted For		-	2,745	2,726	2,097	2,216	2,219	2,222	2,226
Reported Water Use Efficiency or Estimated Water Use Efficiency Since Baseline			11,965	12,112	13,054	13,655	13,671	13,686	13,702
Service Area Water Demands without Water Use Efficiency Accounted For		12,916							

Table C-3: Calculation of Supplies Contributing to Regional Self-Reliance

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	2015	2020	2025	2030	2035	2040	2045 (Optional)	Baseline (2008)
Water Use Efficiency	2,745	2,726	2,097	2,216	2,219	2,222	2,226	-
Water Recycling	2,221	2,159	2,500	2,500	2,500	2,500	2,500	2,164
Stormwater Capture and Use	-	399	399	399	399	399	399	-
Advanced Water Technologies (WIN Project) <sup>2</sup>	-	-	-	-	215	215	215	-
Advanced Water Technologies (RRWP - Central Basin) <sup>3</sup>	-	-	-	-	-	-	-	-
Conjunctive Use Projects	-	-	-	-	-	-	-	-
Local and Regional Water Supply and Storage Projects	-	-	-	-	-	-	-	-
Other Programs and Projects the Contribute to Regional Self-Reliance	-	-	-	-	-	-	-	-
<b>Water Supplies Contributing to Regional Self-Reliance</b>	<b>4,965</b>	<b>5,283</b>	<b>4,995</b>	<b>5,115</b>	<b>5,333</b>	<b>5,336</b>	<b>5,339</b>	<b>2,164</b>

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	2015	2020	2025	2030	2035	2040	2045 (Optional)	Baseline (2008)
Service Area Water Demands without Water Use Efficiency Accounted For	11,965	12,112	13,054	13,655	13,671	13,686	13,702	12,916

Change in Regional Self Reliance (Acre-Feet)	2015	2020	2025	2030	2035	2040	2045 (Optional)	Baseline (2008)
Water Supplies Contributing to Regional Self-Reliance	4,965	5,283	4,995	5,115	5,333	5,336	5,339	2,164
Change in Water Supplies Contributing to Regional Self-Reliance	2,801	3,119	2,831	2,951	3,169	3,172	3,175	-

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	2015	2020	2025	2030	2035	2040	2045 (Optional)	Baseline (2008)
Percent of Water Supplies Contributing to Regional Self-Reliance	41.5%	43.6%	38.3%	37.5%	39.0%	39.0%	39.0%	16.8%
Change in Percent of Water Supplies Contributing to Regional Self-Reliance	24.7%	26.9%	21.5%	20.7%	22.3%	22.2%	22.2%	-

**Table C-4: Calculation of Reliance on Water Supplies from the Delta Watershed**

Water Supplies from the Delta Watershed (Acre-Feet)	2015	2020	2025	2030	2035	2040	2045 (Optional)
<b>Water Supplies from the Delta Watershed (Acre-Feet)</b>							
CVP/SWP Contract Supplies							
Delta/Delta Tributary Diversions							
Transfers and Exchanges							
Other Water Supplies from the Delta Watershed (Untreated) <sup>4</sup>	399	-	-	-	-	-	-
Other Water Supplies from the Delta Watershed (Treated) <sup>5</sup>	1,451	7	10	10	10	10	10
<b>Total Water Supplies from the Delta Watershed</b>	<b>1,850</b>	<b>7</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>
<b>Baseline (2008)</b>							
Service Area Water Demands without Water Use Efficiency							
Service Area Water Demands without Water Use Efficiency Accounted For	11,965	12,112	13,054	13,655	13,671	13,686	13,702
<b>Baseline (2008)</b>							
<b>Service Area Water Demands without Water Use Efficiency</b>							
<b>Change in Supplies from the Delta Watershed (Acre-Feet)</b>							
Water Supplies from the Delta Watershed	1,850	7	10	10	10	10	10
Change in Water Supplies from the Delta Watershed	(743)	(2,586)	(2,583)	(2,583)	(2,583)	(2,583)	(2,583)
<b>Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)</b>							
Percent of Water Supplies from the Delta Watershed	15.5%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Change in Percent of Water Supplies from the Delta Watershed	-4.6%	-20.0%	-20.0%	-20.0%	-20.0%	-20.0%	-20.0%

<sup>1</sup> Does not include water deliveries made to the City of Norwalk or Golden State Water Company.

<sup>2</sup> As part of the Water Independence Now Project, the Albert Robles Center was completed in 2019 and supplies about 21,000 AFY to Central Basin for replenishment purposes. The projected amount available to the City is based on the City's share of the total Allowable Pumping Allocation (2.15305%) and recent historical replenishment.

<sup>3</sup> The RRWP is anticipated to result in 10,000 AFY for the Central Basin starting in 2035. The projected amount available to the City is based on the share of Central Basin's total Allowable Pumping Allocation (2.15305%).

<sup>4</sup> Represents imported water for replenishment purposes by the Water Replenishment District of Southern California in the Central Basin.

<sup>5</sup> Represents treated imported water supplies from Central Basin Municipal Water District, a member agency of Metropolitan Water District.



**APPENDIX B**  
**ATTACHMENT 1**

- **Infeasibility of Accounting Supplies from the Delta Watershed for Metropolitan’s Member Agencies and their Customers**
  
- **Appendix 11 Addendum to the Metropolitan Water District of Southern California’s 2015 Urban Water Management Plan**
  
- **Appendix 11 “Quantifying Regional Self-Reliance and Reliance on Water Supplies from the Delta Watershed”, Metropolitan Water District of Southern California’s 2020 Urban Water Management Plan**

# Infeasibility of Accounting Supplies from the Delta Watershed for Metropolitan's Member Agencies and their Customers

Metropolitan's service area, as a whole, reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. Metropolitan's member agencies coordinate reliance on the Delta through their membership in Metropolitan, a regional cooperative providing wholesale water service to its 26 member agencies. Accordingly, regional reliance on the Delta can only be measured regionally—not by individual Metropolitan member agencies and not by the customers of those member agencies.

Metropolitan's member agencies, and those agencies' customers, indirectly reduce reliance on the Delta through their collective efforts as a cooperative. Metropolitan's member agencies do not control the amount of Delta water they receive from Metropolitan. Metropolitan manages a statewide integrated conveyance system consisting of its participation in the State Water Project (SWP), its Colorado River Aqueduct (CRA) including Colorado River water resources, programs and water exchanges, and its regional storage portfolio. Along with the SWP, CRA, storage programs, and Metropolitan's conveyance and distribution facilities, demand management programs increase the future reliability of water resources for the region. In addition, demand management programs provide system-wide benefits by decreasing the demand for imported water, which helps to decrease the burden on the district's infrastructure and reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

Metropolitan's costs are funded almost entirely from its service area, with the exception of grants and other assistance from government programs. Most of Metropolitan's revenues are collected directly from its member agencies. Properties within Metropolitan's service area pay a property tax that currently provides approximately 8 percent of the fiscal year 2021 annual budgeted revenues. The rest of Metropolitan's costs are funded through rates and charges paid by Metropolitan's member agencies for the wholesale services it provides to them.<sup>1</sup> Thus, Metropolitan's member agencies fund nearly all operations Metropolitan undertakes to reduce reliance on the Delta, including Colorado River Programs, storage facilities, Local Resources Programs and Conservation Programs within Metropolitan's service area.

Because of the integrated nature of Metropolitan's systems and operations, and the collective nature of Metropolitan's regional efforts, it is infeasible to quantify each of Metropolitan member agencies' individual reliance on the Delta. It is infeasible to attempt to segregate an entity and a system that were designed to work as an integrated regional cooperative.

In addition to the member agencies funding Metropolitan's regional efforts, they also invest in their own local programs to reduce their reliance on any imported water. Moreover, the customers of those member agencies may also invest in their own local programs to reduce water demand. However, to the extent those efforts result in reduction of demands on Metropolitan, that reduction does not equate to a like reduction of reliance on the Delta. Demands on Metropolitan are not commensurate with demands on the Delta because most of Metropolitan member agencies receive blended resources from

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<sup>1</sup> A standby charge is collected from properties within the service areas of 21 of Metropolitan's 26 member agencies, ranging from \$5 to \$14.20 per acre annually, or per parcel if smaller than an acre. Standby charges go towards those member agencies' obligations to Metropolitan for the Readiness-to-Serve Charge. The total amount collected annually is approximately \$43.8 million, approximately 2 percent of Metropolitan's fiscal year 2021 annual budgeted revenues.

Metropolitan as determined by Metropolitan—not the individual member agency—and for most member agencies, the blend varies from month-to-month and year-to-year due to hydrology, operational constraints, use of storage and other factors.

### Colorado River Programs

As a regional cooperative of member agencies, Metropolitan invests in programs to ensure the continued reliability and sustainability of Colorado River supplies. Metropolitan was established to obtain an allotment of Colorado River water, and its first mission was to construct and operate the CRA. The CRA consists of five pumping plants, 450 miles of high voltage power lines, one electric substation, four regulating reservoirs, and 242 miles of aqueducts, siphons, canals, conduits and pipelines terminating at Lake Mathews in Riverside County. Metropolitan owns, operates, and manages the CRA. Metropolitan is responsible for operating, maintaining, rehabilitating, and repairing the CRA, and is responsible for obtaining and scheduling energy resources adequate to power pumps at the CRA's five pumping stations.

Colorado River supplies include Metropolitan's basic Colorado River apportionment, along with supplies that result from existing and committed programs, including supplies from the Imperial Irrigation District (IID)-Metropolitan Conservation Program, the implementation of the Quantification Settlement Agreement (QSA) and related agreements, and the exchange agreement with San Diego County Water Authority (SDCWA). The QSA established the baseline water use for each of the agreement parties and facilitates the transfer of water from agricultural agencies to urban uses. Since the QSA, additional programs have been implemented to increase Metropolitan's CRA supplies. These include the PVID Land Management, Crop Rotation, and Water Supply Program, as well as the Lower Colorado River Water Supply Project. The 2007 Interim Guidelines provided for the coordinated operation of Lake Powell and Lake Mead, as well as the Intentionally Created Surplus (ICS) program that allows Metropolitan to store water in Lake Mead.

### Storage Investments/Facilities

Surface and groundwater storage are critical elements of Southern California's water resources strategy and help Metropolitan reduce its reliance on the Delta. Because California experiences dramatic swings in weather and hydrology, storage is important to regulate those swings and mitigate possible supply shortages. Surface and groundwater storage provide a means of storing water during normal and wet years for later use during dry years, when imported supplies are limited. The Metropolitan system, for purposes of meeting demands during times of shortage, regulating system flows, and ensuring system reliability in the event of a system outage, provides over 1,000,000 acre-feet of system storage capacity. Diamond Valley Lake provides 810,000 acre-feet of that storage capacity, effectively doubling Southern California's previous surface water storage capacity. Other existing imported water storage available to the region consists of Metropolitan's raw water reservoirs, a share of the SWP's raw water reservoirs in and near the service area, and the portion of the groundwater basins used for conjunctive-use storage.

Since the early twentieth century, DWR and Metropolitan have constructed surface water reservoirs to meet emergency, drought/seasonal, and regulatory water needs for Southern California. These reservoirs include Pyramid Lake, Castaic Lake, Elderberry Forebay, Silverwood Lake, Lake Perris, Lake Skinner, Lake Mathews, Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, Orange County Reservoir, and Metropolitan's Diamond Valley Lake (DVL). Some reservoirs such as Live Oak Reservoir, Garvey Reservoir, Palos Verdes Reservoir, and Orange County Reservoir, which have a total combined capacity of about 3,500 AF, are used solely for regulating purposes. The total gross storage capacity for

the larger remaining reservoirs is 1,757,600 AF. However, not all of the gross storage capacity is available to Metropolitan; dead storage and storage allocated to others reduce the amount of storage that is available to Metropolitan to 1,665,200 AF.

Conjunctive use of the aquifers offers another important source of dry year supplies. Unused storage in Southern California groundwater basins can be used to optimize imported water supplies, and the development of groundwater storage projects allows effective management and regulation of the region's major imported supplies from the Colorado River and SWP. Over the years, Metropolitan has implemented conjunctive use through various programs in the service area; the following table lists the groundwater conjunctive use programs that have been developed in the region.

Program	Metropolitan Agreement Partners	Program Term	Max Storage AF	Dry-Year Yield AF/Yr
Long Beach Conjunctive Use Storage Project (Central Basin)	Long Beach	June 2002-2027	13,000	4,300
Foothill Area Groundwater Storage Program (Monkhill/ Raymond Basin)	Foothill MWD	February 2003-2028	9,000	3,000
Orange County Groundwater Conjunctive Use Program	MWDOC OCWD	June 2003-2028	66,000+	22,000
Chino Basin Conjunctive Use Programs	IEUA TVMWD Watermaster	June 2003-2028	100,000	33,000
Live Oak Basin Conjunctive Use Project (Six Basins)	TVMWD City of La Verne	October 2002-2027	3,000	1,000
City of Compton Conjunctive Use Project (Central Basin)	Compton	February 2005-2030	2,289	763
Long Beach Conjunctive Use Program Expansion in Lakewood (Central Basin)	Long Beach	July 2005-2030	3,600	1,200
Upper Claremont Basin Groundwater Storage Program (Six Basins)	TVMWD	Sept. 2005- 2030	3,000	1,000
Elsinore Basin Conjunctive Use Storage Program	Western MWD Elsinore Valley MWD	May 2008- 2033	12,000	4,000
<b>TOTAL</b>			<b>211,889</b>	<b>70,263</b>

### Metropolitan Demand Management Programs

Demand management costs are Metropolitan's expenditures for funding local water resource development programs and water conservation programs. These Demand Management Programs incentivize the development of local water supplies and the conservation of water to reduce the need to import water to deliver to Metropolitan's member agencies. These programs are implemented below the delivery points between Metropolitan's and its member agencies' distribution systems and, as such, do not add any water to Metropolitan's supplies. Rather, the effect of these downstream programs is to

produce a local supply of water for the local agencies and to reduce demands by member agencies for water imported through Metropolitan's system. The following discussions outline how Metropolitan funds local resources and conservation programs for the benefit of all of its member agencies and the entire Metropolitan service area. Notably, the history of demand management by Metropolitan's member agencies and the local agencies that purchase water from Metropolitan's members has spanned more than four decades. The significant history of the programs is another reason it would be difficult to attempt to assign a portion of such funding to any one individual member agency.

### Local Resources Programs

In 1982, Metropolitan began providing financial incentives to its member agencies to develop new local supplies to assist in meeting the region's water needs. Because of Metropolitan's regional distribution system, these programs benefit all member agencies regardless of project location because they help to increase regional water supply reliability, reduce demands for imported water supplies, decrease the burden on Metropolitan's infrastructure, reduce system costs and free up conveyance capacity to the benefit of all the agencies that rely on water from Metropolitan.

For example, the Groundwater Replenishment System (GWRS) operated by the Orange County Water District is the world's largest water purification system for indirect potable reuse. It was funded, in part, by Metropolitan's member agencies through the Local Resources Program. Annually, the GWRS produces approximately 103,000 acre-feet of reliable, locally controlled, drought-proof supply of high-quality water to recharge the Orange County Groundwater Basin and protect it from seawater intrusion. The GWRS is a premier example of a regional project that significantly reduced the need to utilize imported water for groundwater replenishment in Metropolitan's service area, increasing regional and local supply reliability and reducing the region's reliance on imported supplies, including supplies from the State Water Project.

Metropolitan's local resource programs have evolved through the years to better assist Metropolitan's member agencies in increasing local supply production. The following is a description and history of the local supply incentive programs.

### Local Projects Program

In 1982, Metropolitan initiated the Local Projects Program (LPP), which provided funding to member agencies to facilitate the development of recycled water projects. Under this approach, Metropolitan contributed a negotiated up-front funding amount to help finance project capital costs. Participating member agencies were obligated to reimburse Metropolitan over time. In 1986, the LPP was revised, changing the up-front funding approach to an incentive-based approach. Metropolitan contributed an amount equal to the avoided State Water Project pumping costs for each acre-foot of recycled water delivered to end-use consumers. This funding incentive was based on the premise that local projects resulted in the reduction of water imported from the Delta and the associated pumping cost. The incentive amount varied from year to year depending on the actual variable power cost paid for State Water Project imports. In 1990, Metropolitan's Board increased the LPP contribution to a fixed rate of \$154 per acre-foot, which was calculated based on Metropolitan's avoided capital and operational costs to convey, treat, and distribute water, and included considerations of reliability and service area demands.

### Groundwater Recovery Program

The drought of the early 1990s sparked the need to develop additional local water resources, aside from recycled water, to meet regional demand and increase regional water supply reliability. In 1991, Metropolitan conducted the Brackish Groundwater Reclamation Study which determined that large

amounts of degraded groundwater in the region were not being utilized. Subsequently, the Groundwater Recovery Program (GRP) was established to assist the recovery of otherwise unusable groundwater degraded by minerals and other contaminants, provide access to the storage assets of the degraded groundwater, and maintain the quality of groundwater resources by reducing the spread of degraded plumes.

#### *Local Resources Program*

In 1995, Metropolitan's Board adopted the Local Resources Program (LRP), which combined the LPP and GRP into one program. The Board allowed for existing LPP agreements with a fixed incentive rate to convert to the sliding scale up to \$250 per acre-foot, similar to GRP incentive terms. Those agreements that were converted to LRP are known as "LRP Conversions."

#### *Competitive Local Projects Program*

In 1998, the Competitive Local Resources Program (Competitive Program) was established. The Competitive Program encouraged the development of recycled water and recovered groundwater through a process that emphasized cost-efficiency to Metropolitan, timing new production according to regional need while minimizing program administration cost. Under the Competitive Program, agencies requested an incentive rate up to \$250 per acre-foot of production over 25 years under a Request for Proposals (RFP) for the development of up to 53,000 acre-feet per year of new water recycling and groundwater recovery projects. In 2003, a second RFP was issued for the development of an additional 65,000 acre-feet of new recycled water and recovered groundwater projects through the LRP.

#### *Seawater Desalination Program*

Metropolitan established the Seawater Desalination Program (SDP) in 2001 to provide financial incentives to member agencies for the development of seawater desalination projects. In 2014, seawater desalination projects became eligible for funding under the LRP, and the SDP was ended.

#### *2007 Local Resources Program*

In 2006, a task force comprised of member agency representatives was formed to identify and recommend program improvements to the LRP. As a result of the task force process, the 2007 LRP was established with a goal of 174,000 acre-feet per year of additional local water resource development. The new program allowed for an open application process and eliminated the previous competitive process. This program offered sliding scale incentives of up to \$250 per acre-foot, calculated annually based on a member agency's actual local resource project costs exceeding Metropolitan's prevailing water rate.

#### *2014 Local Resources Program*

A series of workgroup meetings with member agencies was held to identify the reasons why there was a lack of new LRP applications coming into the program. The main constraint identified by the member agencies was that the \$250 per acre-foot was not providing enough of an incentive for developing new projects due to higher construction costs to meet water quality requirements and to develop the infrastructure to reach end-use consumers located further from treatment plants. As a result, in 2014, the Board authorized an increase in the maximum incentive amount, provided alternative payment structures, included onsite retrofit costs and reimbursable services as part of the LRP, and added eligibility for seawater desalination projects. The current LRP incentive payment options are structured as follows:

- Option 1 – Sliding scale incentive up to \$340/AF for a 25-year agreement term
- Option 2 – Sliding scale incentive up to \$475/AF for a 15-year agreement term
- Option 3 – Fixed incentive up to \$305/AF for a 25-year agreement term

### *On-site Retrofit Programs*

In 2014, Metropolitan's Board also approved the On-site Retrofit Pilot Program which provided financial incentives to public or private entities toward the cost of small-scale improvements to their existing irrigation and industrial systems to allow connection to existing recycled water pipelines. The On-site Retrofit Pilot Program helped reduce recycled water retrofit costs to the end-use consumer which is a key constraint that limited recycled water LRP projects from reaching full production capacity. The program incentive was equal to the actual eligible costs of the on-site retrofit, or \$975 per acre-foot of up-front cost, which equates to \$195 per acre-foot for an estimated five years of water savings (\$195/AF x 5 years) multiplied by the average annual water use in previous three years, whichever is less. The Pilot Program lasted two years and was successful in meeting its goal of accelerating the use of recycled water.

In 2016, Metropolitan's Board authorized the On-site Retrofit Program (ORP), with an additional budget of \$10 million. This program encompassed lessons learned from the Pilot Program and feedback from member agencies to make the program more streamlined and improve its efficiency. As of fiscal year 2019/20, the ORP has successfully converted 440 sites, increasing the use of recycled water by 12,691 acre-feet per year.

### *Stormwater Pilot Programs*

In 2019, Metropolitan's Board authorized both the Stormwater for Direct Use Pilot Program and a Stormwater for Recharge Pilot Program to study the feasibility of reusing stormwater to help meet regional demands in Southern California. These pilot programs are intended to encourage the development, monitoring, and study of new and existing stormwater projects by providing financial incentives for their construction/retrofit and monitoring/reporting costs. These pilot programs will help evaluate the potential benefits delivered by stormwater capture projects and provide a basis for potential future funding approaches. Metropolitan's Board authorized a total of \$12.5 million for the stormwater pilot programs (\$5 million for the District Use Pilot and \$7.5 million for the Recharge Pilot).

### *Current Status and Results of Metropolitan's Local Resource Programs*

Today, nearly one-half of the total recycled water and groundwater recovery production in the region has been developed with an incentive from one or more of Metropolitan's local resource programs. During fiscal year 2020, Metropolitan provided about \$13 million for production of 71,000 acre-feet of recycled water for non-potable and indirect potable uses. Metropolitan provided about \$4 million to support projects that produced about 50,000 acre-feet of recovered groundwater for municipal use. Since 1982, Metropolitan has invested \$680 million to fund 85 recycled water projects and 27 groundwater recovery projects that have produced a cumulative total of about 4 million acre-feet.

### Conservation Programs

Metropolitan's regional conservation programs and approaches have a long history. Decades ago, Metropolitan recognized that demand management at the consumer level would be an important part of balancing regional supplies and demands. Water conservation efforts were seen as a way to reduce the need for imported supplies and offset the need to transport or store additional water into or within the Metropolitan service area. The actual conservation of water takes place at the retail consumer level. Regional conservation approaches have proven to be effective at reaching retail consumers throughout Metropolitan's service area and successfully implementing water saving devices, programs and practices. Through the pooling of funding by Metropolitan's member agencies, Metropolitan is able to engage in regional campaigns with wide-reaching impact. Regional investments in demand management programs, of which conservation is a key part along with local supply programs, benefit all member agencies regardless of project location. These programs help to increase regional water supply



reliability, reduce demands for imported water supplies, decrease the burden on Metropolitan's infrastructure, reduce system costs, and free up conveyance capacity to the benefit of all member agencies.

### *Incentive-Based Conservation Programs*

#### *Conservation Credits Program*

In 1988, Metropolitan's Board approved the Water Conservation Credits Program (Credits Program). The Credits Program is similar in concept to the Local Projects Program (LPP). The purpose of the Credits Program is to encourage local water agencies to implement effective water conservation projects through the use of financial incentives. The Credits Program provides financial assistance for water conservation projects that reduce demands on Metropolitan's imported water supplies and require Metropolitan's assistance to be financially feasible.

Initially, the Credits Program provided 50 percent of a member agency's program cost, up to a maximum of \$75 per acre-foot of estimated water savings. The \$75 Base Conservation Rate was established based Metropolitan's avoided cost of pumping SWP supplies. The Base Conservation Rate has been revisited by Metropolitan's Board and revised twice since 1988, from \$75 to \$154 per acre-foot in 1990 and from \$154 to \$195 per acre-foot in 2005.

In fiscal year 2020 Metropolitan processed more than 30,400 rebate applications totaling \$18.9 million.

#### *Member Agency Administered Program*

Some member agencies also have unique programs within their service areas that provide local rebates that may differ from Metropolitan's regional program. Metropolitan continues to support these local efforts through a member agency administered funding program that adheres to the same funding guidelines as the Credits Program. The Member Agency Administered Program allows member agencies to receive funding for local conservation efforts that supplement, but do not duplicate, the rebates offered through Metropolitan's regional rebate program.

#### *Water Savings Incentive Program*

There are numerous commercial entities and industries within Metropolitan's service area that pursue unique savings opportunities that do not fall within the general rebate programs that Metropolitan provides. In 2012, Metropolitan designed the Water Savings Incentive Program (WSIP) to target these unique commercial and industrial projects. In addition to rebates for devices, under this program, Metropolitan provides financial incentives to businesses and industries that created their own custom water efficiency projects. Qualifying custom projects can receive funding for permanent water efficiency changes that result in reduced potable demand.

### *Non-Incentive Conservation Programs*

In addition to its incentive-based conservation programs, Metropolitan also undertakes additional efforts throughout its service area that help achieve water savings without the use of rebates.

Metropolitan's non-incentive conservation efforts include:

- residential and professional water efficient landscape training classes
- water audits for large landscapes
- research, development and studies of new water saving technologies
- advertising and outreach campaigns
- community outreach and education programs
- advocacy for legislation, codes, and standards that lead to increased water savings



### *Current Status and Results of Metropolitan's Conservation Programs*

Since 1990, Metropolitan has invested \$824 million in conservation rebates that have resulted in a cumulative savings of 3.27 million acre-feet of water. These investments include \$450 million in turf removal and other rebates during the last drought which resulted in 175 million square feet of lawn turf removed. During fiscal year 2020, 1.06 million acre-feet of water is estimated to have been conserved. This annual total includes Metropolitan's Conservation Credits Program; code-based conservation achieved through Metropolitan-sponsored legislation; building plumbing codes and ordinances; reduced consumption resulting from changes in water pricing; and pre-1990 device retrofits.

### **Infeasibility of Accounting Regional Investments in Reduced Reliance Below the Regional Level**

The accounting of regional investments that contribute to reduced reliance on supplies from the Delta watershed is straightforward to calculate and report at the regional aggregate level. However, any similar accounting is infeasible for the individual member agencies or their customers. As described above, the region (through Metropolitan) makes significant investments in projects, programs and other resources that reduce reliance on the Delta. In fact, all of Metropolitan's investments in Colorado River supplies, groundwater and surface storage, local resources development and demand management measures that reduce reliance on the Delta are collectively funded by revenues generated from the member agencies through rates and charges.

Metropolitan's revenues cannot be matched to the demands or supply production history of an individual agency, or consistently across the agencies within the service area. Each project or program funded by the region has a different online date, useful life, incentive rate and structure, and production schedule. It is infeasible to account for all these things over the life of each project or program and provide a nexus to each member agency's contributions to Metropolitan's revenue stream over time. Accounting at the regional level allows for the incorporation of the local supplies and water use efficiency programs done by member agencies and their customers through both the regional programs and through their own specific local programs. As shown above, despite the infeasibility of accounting reduced Delta reliance below the regional level, Metropolitan's member agencies and their customers have together made substantial contributions to the region's reduced reliance.

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[Link to Metropolitan's 2020 UWMP once final](#)

**Appendix 11**  
Addendum to  
The Metropolitan Water District of Southern California's  
**2015 Urban Water Management Plan**

**Quantifying Regional Self-Reliance and  
Reduced Reliance on Water  
Supplies from the Delta Watershed**  
June 2021

# Appendix 11

## METROPOLITAN'S REDUCED DELTA RELIANCE REPORTING

### Addendum to Metropolitan's 2015 Urban Water Management Plan

#### A.11.1 Background

Under the Sacramento-San Joaquin Delta Reform Act of 2009, state and local public agencies proposing a covered action in the Delta,<sup>1</sup> prior to initiating the implementation of that action, must prepare a written certification of consistency with detailed findings as to whether the covered action is consistent with applicable Delta Plan policies and submit that certification to the Delta Stewardship Council.<sup>2</sup> Anyone may appeal a certification of consistency, and if the Delta Stewardship Council grants the appeal, the covered action may not be implemented until the agency proposing the covered action submits a revised certification of consistency, and either no appeal is filed, or the Delta Stewardship Council denies the subsequent appeal.<sup>3</sup>

An urban water supplier that anticipates participating in or receiving water from a proposed covered action such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs) that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (WR P1).<sup>4</sup>

WR P1 details what is needed for a covered action to demonstrate consistency with reduced reliance on the Delta and improved regional self-reliance. WR P1 subsection (a) states that:

*(a) Water shall not be exported from, transferred through, or used in the Delta if all of the following apply:*

- (1) One or more water suppliers that would receive water as a result of the export, transfer, or use have failed to adequately contribute to reduced reliance on the Delta and improved regional self-reliance consistent with all of the requirements listed in paragraph (1) of subsection (c);*
- (2) That failure has significantly caused the need for the export, transfer, or use; and*
- (3) The export, transfer, or use would have a significant adverse environmental impact in the Delta.*

WR P1 subsection (c)(1) further defines what adequately contributing to reduced reliance on the Delta means in terms of (a)(1) above.

*(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:*

- (A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;*

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<sup>1</sup> Water Code, § 85057.5; Cal. Code Regs. tit. 23, § 5001.

<sup>2</sup> Water Code, § 85225; Delta Plan, App. D.

<sup>3</sup> Water Code, §§ 85225.10-85225.25; Delta Plan, App. D.

<sup>4</sup> Cal. Code Regs., tit. 23, § 5003.

*(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and*

*(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code section 1011(a).*

The analysis and documentation provided below include all of the elements described in WR P1(c)(1) that need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action.

### **A.11.2 Summary of Expected Outcomes for Reduced Reliance on the Delta**

As stated in WR P1(c)(1)(C), the policy requires that, commencing in 2015, UWMPs include expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance. WR P1 further states that those outcomes shall be reported in the UWMP as the reduction in the amount of water used, or in the percentage of water used, from the Delta.

The expected outcomes for Metropolitan's Delta reliance and regional self-reliance were developed using the approach and guidance described in Appendix C of DWR's Urban Water Management Plan Guidebook 2020 (Guidebook Appendix C) issued in March 2021.

The data used in this analysis represent the total regional efforts of Metropolitan and its member agencies and their customers (many of them, retail agencies) and were developed in conjunction with Metropolitan's member agencies as part of the UWMP coordination process as described in Section 5 of Metropolitan's UWMP. In accordance with UWMP requirements, Metropolitan's member agencies and their customers (many of them, retail agencies) also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in Metropolitan's UWMP; rather, their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta.

While the demands that Metropolitan's member agencies and their customers report in their UWMPs are a good reflection of the demands in their respective service areas, they do not adequately represent each water supplier's contributions to reduced reliance on the Delta. In order to calculate and report their reliance on water supplies from the Delta watershed, water suppliers that receive water from the Delta through other regional or wholesale water suppliers would need to determine the amount of Delta water that they receive from the regional or wholesale supplier. Two specific pieces of information are needed to accomplish this: first is the quantity of demands on the regional or wholesale water supplier that accurately reflect a supplier's contributions to reduced reliance on the Delta, and second is the quantity of a supplier's demands on the regional or wholesale water supplier that are met by supplies from the Delta watershed.

For water suppliers that make investments in regional projects or programs it may be infeasible to quantify their demands on the regional or wholesale water supplier in a way that accurately reflects their individual contributions to reduced reliance on the Delta. Due to the extensive, long-standing and successful implementation of regional demand management and local resource

incentive programs in Metropolitan's service area, this infeasibility holds true for Metropolitan's members as well their customers. For Metropolitan's service area, reduced reliance on supplies from the Delta watershed can only be accurately accounted at the regional level, as is demonstrated in this analysis.

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for Metropolitan's Delta reliance and regional self-reliance. The results show that as a region, Metropolitan and its members as well as their customers are measurably reducing reliance on the Delta and improving regional self-reliance, both as an amount of water used and as a percentage of water used.

#### *Expected Outcomes for Regional Self-Reliance*

- Near-term (2025) – Normal water year regional self-reliance is expected to increase by 813 TAF from the 2010 baseline; this represents an increase of almost 25 percent of 2025 normal water year retail demands (Table A.11-2).
- Long-term (2045) – Normal water year regional self-reliance is expected to increase by more than 1.28 MAF from the 2010 baseline, this represents an increase of more than 25 percent of 2045 normal water year retail demands (Table A.11-2).

#### *Expected Outcomes for Reduced Reliance on Supplies from the Delta Watershed*

- Near-term (2025) – Normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline, this represents a decrease of 3 percent of 2025 normal water year retail demands (Table A.11-3).
- Long-term (2045) – Normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline, this represents a decrease of just over 5 percent of 2045 normal water year retail demands (Table A.11-3).

### **A11.3 Demonstration of Reduced Reliance on the Delta**

The methodology used to determine Metropolitan's reduced Delta reliance and improved regional self-reliance is consistent with the approach detailed in DWR's UWMP Guidebook Appendix C, including the use of narrative justifications for the accounting of supplies and the documentation of specific data sources. Some of the key assumptions underlying Metropolitan's demonstration of reduced reliance include:

- All data were obtained from the current 2020 UWMP or previously adopted UWMPs and represent average or normal water year conditions.
- All analyses were conducted at the service area level, and all data reflect the total contributions of Metropolitan and its members as well as their customers.
- No projects or programs that are described in the UWMPs as "Projects Under Development" were included in the accounting of supplies.

#### *Baseline and Expected Outcomes*

In order to calculate the expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance, a baseline is needed to compare against. This analysis uses a normal water year representation of 2010 as the baseline, which is consistent with the approach described in the Guidebook Appendix C. Data for the 2010 baseline were taken from Metropolitan's 2005 UWMP as the UWMPs generally do not provide normal water year data for the year that they are adopted (i.e., 2005 UWMP forecasts begin in 2010, 2010 UWMP forecasts begin in 2015, and so on).

Consistent with the 2010 baseline data approach, the expected outcomes for reduced Delta reliance and improved regional self-reliance for 2015 and 2020 were taken from Metropolitan's 2010 and 2015 UWMPs respectively. Expected outcomes for 2025-2045 are from the current 2020 UWMP. Documentation of the specific data sources and assumptions are included in the discussions below.

*Service Area Demands without Water Use Efficiency*

In alignment with the Guidebook Appendix C, this analysis uses normal water year demands, rather than normal water year supplies to calculate expected outcomes in terms of the percentage of water used. Using normal water year demands serves as a proxy for the amount of supplies that would be used in a normal water year, which helps alleviate issues associated with how supply capability is presented to fulfill requirements of the Act versus how supplies might be accounted for to demonstrate consistency with WR P1.

Because WR P1 considers water use efficiency savings a source of water supply, water suppliers such as Metropolitan that explicitly calculate and report water use efficiency savings in their UWMP will need to make an adjustment to properly reflect normal water year demands in the calculation of reduced reliance. As explained in the Guidebook Appendix C, water use efficiency savings must be added back to the normal year demands to represent demands without water use efficiency savings accounted for; otherwise the effect of water use efficiency savings on regional self-reliance would be overestimated. Table A.11-1 shows the results of this adjustment for Metropolitan. Supporting narratives and documentation for all of the data shown in Table A.11-1 are provided below.

**Table A.11-1  
Demands without Water Use Efficiency Accounted For**

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands with Water Use Efficiency Accounted For	4,628,000	4,563,000	4,163,000	3,763,000	3,821,000	3,893,000	3,936,000	3,985,000
Reported Water Use Efficiency	865,000	936,000	1,056,000	1,162,000	1,211,000	1,263,000	1,325,000	1,389,000
<b>Service Area Demands without Water Use Efficiency Accounted For</b>	<b>5,493,000</b>	<b>5,499,000</b>	<b>5,219,000</b>	<b>4,925,000</b>	<b>5,032,000</b>	<b>5,156,000</b>	<b>5,261,000</b>	<b>5,374,000</b>

*Service Area Demands without Water Use Efficiency*

The service area demands shown in Table A.11-1 represent the total retail water demands for Metropolitan's service area and include municipal and industrial demands, agricultural demands, seawater barrier demands, and storage replenishment demands. These demand types and the modeling methodologies used to calculate them are described in Section 2.2 and Appendix 1 of Metropolitan's UWMP.

*Water Use Efficiency*

The water use efficiency numbers shown in Table A.11-1 represent the total water use efficiency savings (conservation) for Metropolitan's region, including savings from active, code-based, price-effect and pre-1990 sources. These sources of water use efficiency and the methodologies used to calculate them are described in Section 2.2, Section 3.4, Section 3.7 and Appendix 1 of Metropolitan's UWMP.

The demand and water use efficiency data shown in Table A.11-1 were collected from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table 2-6: Metropolitan Regional Water Demand Average Year
- 2015 values – Metropolitan's 2010 UWMP, Table 2-8: Metropolitan Regional Water Demands Average Year
- 2020 values – Metropolitan's 2015 UWMP, Table 2-3: Metropolitan Regional Water Demands Average Year
- 2025-2045 values – Metropolitan's 2020 UWMP, Table 2-3: Metropolitan Regional Water Demands Normal Water Year

### *Supplies Contributing to Regional Self-Reliance*

For a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) states that water suppliers must report the expected outcomes for measurable improvement in regional self-reliance. Table A.11-2 shows expected outcomes for supplies contributing to regional self-reliance both in amount and as a percentage. The numbers shown in Table A.11-2 represent efforts to improve regional self-reliance for Metropolitan's entire service area and include the total contributions of Metropolitan and its members as well as their customers. Supporting narratives and documentation for the all of the data shown in Table A.11-2 are provided below.

The results shown in Table A.11-2 demonstrate that Metropolitan's service area is measurably improving its regional self-reliance. In the near-term (2025), the expected outcome for normal water year regional self-reliance increases by 747 TAF from the 2010 baseline; this represents an increase of about 23 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year regional self-reliance is expected to increase by more than 1.2 MAF from the 2010 baseline; this represents an increase of 25 percent of 2045 normal water year retail demands.

**Table A.11-2  
Supplies Contributing to Regional Self-Reliance**

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Use Efficiency	865,000	936,000	1,056,000	1,162,000	1,211,000	1,263,000	1,325,000	1,389,000
Water Recycling	316,000	348,000	436,000	550,000	613,000	687,000	698,000	706,000
Stormwater Capture and Use	100,000	103,000	110,000	80,000	82,000	82,000	82,000	82,000
Advanced Water Technologies	111,000	101,000	194,000	194,000	208,000	209,000	209,000	210,000
Conjunctive Use Projects	1,416,000	1,429,000	1,303,000	1,255,000	1,273,000	1,296,000	1,311,000	1,326,000
Local and Regional Water Supply and Storage Projects	252,000	224,000	261,000	257,000	257,000	258,000	258,000	258,000
Other Programs and Projects that Contribute to Regional Self-Reliance	875,000	1,250,000	1,200,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
<b>Water Supplies Contributing to Regional Self-Reliance</b>	<b>3,935,000</b>	<b>4,391,000</b>	<b>4,560,000</b>	<b>4,748,000</b>	<b>4,894,000</b>	<b>5,045,000</b>	<b>5,133,000</b>	<b>5,221,000</b>

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies Contributing to Regional Self-Reliance	3,935,000	4,391,000	4,560,000	4,748,000	4,894,000	5,045,000	5,133,000	5,221,000
<b>Change in Supplies Contributing to Regional Self-Reliance</b>	<b>NA</b>	<b>456,000</b>	<b>625,000</b>	<b>813,000</b>	<b>959,000</b>	<b>1,110,000</b>	<b>1,198,000</b>	<b>1,286,000</b>

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Supplies Contributing to Regional Self-Reliance	71.6%	79.9%	87.4%	96.4%	97.3%	97.8%	97.6%	97.2%
<b>Change in Percent of Supplies Contributing to Regional Self-Reliance</b>	<b>NA</b>	<b>8.2%</b>	<b>15.7%</b>	<b>24.8%</b>	<b>25.6%</b>	<b>26.2%</b>	<b>25.9%</b>	<b>25.5%</b>



### Water Use Efficiency

The water use efficiency information shown in Table A.11-2 is taken directly from Table A.11-1 above.

### Water Recycling

The water recycling values shown in Table A.11-2 reflect the total recycled water production in Metropolitan's service area as described in Section 3.5 and Appendix 2 of Metropolitan's UWMP.

### Stormwater Capture and Use

The stormwater capture and use data shown in Table A.11-2 include supplies from local surface water production as described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

These values do not include production from regional storage reservoirs; storage in these reservoirs is comprised of previously stored water from sources already reflected in Tables A.11-2 and A.11-3. These regional storage resources are generally used to provide additional regional self-reliance in dry years, which is not reflected in this normal water year analysis. The regional storage reservoirs and their yields are described in Section 3.6, Appendix 2 and Appendix 3 of Metropolitan's UWMP.

The stormwater capture and use values shown in Table A.11-2 also do not include stormwater capture that is used to recharge local groundwater basins. Stormwater capture for groundwater recharge supports production of groundwater in the region, and for the purposes of this analysis that production is already captured in Table A.11-2 under conjunctive use projects.

### Advanced Water Technologies

The advanced water technologies data shown in Table A.11-2 include total groundwater recovery and seawater desalination production in Metropolitan's service area as described in Section 3.5 and Appendix 2 of Metropolitan's UWMP.

### Conjunctive Use Projects

The values for conjunctive use projects shown in Table A.11-2 represent total groundwater production in the region as described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

The conjunctive use projects numbers shown in Table A.11-2 do not include production from regional groundwater conjunctive use programs. As described in the stormwater capture and use discussion above, these regional storage programs rely on previously stored water from sources already reflected in Tables A.11-2 and A.11-3 and are generally used to provide additional regional self-reliance in dry-years. The regional groundwater conjunctive use programs and their yields are described in Section 3.6 and Appendix 3.

### Local and Regional Water Supply and Storage Programs

The data for local and regional water supply and storage programs shown in Table A.11-2 include supplies from the Los Angeles Aqueduct. This supply is described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

The local and regional supply numbers shown in Table A.11-2, except for "Other Programs and Projects that Contribute to Regional Self-Reliance" which is discussed below, were obtained from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table 2-6: Metropolitan Regional Water Demand Average Year



- 2015 values – Metropolitan's 2010 UWMP, Table 2-8: Metropolitan Regional Water Demands Average Year
- 2020 values – Metropolitan's 2015 UWMP, Table 2-3: Metropolitan Regional Water Demands Average Year
- 2025-2045 values – Metropolitan's 2020 UWMP, Table 2-3: Metropolitan Regional Water Demands Normal Water Year

#### Other Programs and Projects that Contribute to Regional Self-Reliance

Other programs and projects that contribute to regional self-reliance shown in Table A.11-2 include current programs from the Colorado River Aqueduct. Colorado River supplies include Metropolitan's basic Colorado River apportionment, as well as supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA), related agreements, and the exchange agreement with SDCWA. Colorado River Aqueduct supplies and programs are described in Section 3.1 and Appendix 3 of Metropolitan's UWMP.

The values shown in Table A.11-2 for other programs and projects that contribute to regional self-reliance come from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2010 (Average Year)
- 2015 values – Metropolitan's 2010 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2015 (Average Year)
- 2020 values – Metropolitan's 2015 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2020 (Average Year)
- 2025-2045 values – Metropolitan's 2020 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Years 2025, 2030, 2035, 2040, 2045 (Normal Water Year)

#### Reliance on Water Supplies from the Delta Watershed

In order for a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) requires that water suppliers report the expected outcomes for measurable reductions in supplies from the Delta watershed either as an amount or as a percentage. This analysis provides both calculations. Based on the methodology described in Guidebook Appendix C, and consistent with the approach of this analysis in not including projects under development, this accounting does not include any supplies from potential future covered actions. Table A.11-3 shows the expected outcomes for reliance on supplies from the Delta watershed for Metropolitan's service area. Supporting narratives and documentation for the all of the data shown in Table A.11-3 are provided below.

The results shown in Table A.11-3 demonstrate that Metropolitan's service area is measurably reducing its Delta reliance. In the near-term (2025), the expected outcome for normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline; this represents a decrease of 3 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline; this represents a decrease of just over 5 percent of 2045 normal water year retail demands.

**Table A.11-3  
Reliance on Water Supplies from the Delta Watershed**

Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
CVP/SWP Contract Supplies	1,472,000	1,029,000	984,000	1,133,000	1,130,000	1,128,000	1,126,000	1,126,000
Delta/Delta Tributary Diversions	-	-	-	-	-	-	-	-
Transfers and Exchanges of Supplies from the Delta Watershed	20,000	44,000	91,000	58,000	52,000	52,000	52,000	52,000
Other Water Supplies from the Delta Watershed	-	-	-	-	-	-	-	-
<b>Total Water Supplies from the Delta Watershed</b>	<b>1,492,000</b>	<b>1,073,000</b>	<b>1,075,000</b>	<b>1,191,000</b>	<b>1,182,000</b>	<b>1,180,000</b>	<b>1,178,000</b>	<b>1,178,000</b>

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies from the Delta Watershed	1,492,000	1,073,000	1,075,000	1,191,000	1,182,000	1,180,000	1,178,000	1,178,000
<b>Change in Supplies from the Delta Watershed</b>	<b>NA</b>	<b>(419,000)</b>	<b>(417,000)</b>	<b>(301,000)</b>	<b>(310,000)</b>	<b>(312,000)</b>	<b>(314,000)</b>	<b>(314,000)</b>

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Supplies from the Delta Watershed	27.2%	19.5%	20.6%	24.2%	23.5%	22.9%	22.4%	21.9%
<b>Change in Percent of Supplies from the Delta Watershed</b>	<b>NA</b>	<b>-7.6%</b>	<b>-6.6%</b>	<b>-3.0%</b>	<b>-3.7%</b>	<b>-4.3%</b>	<b>-4.8%</b>	<b>-5.2%</b>

CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in Table A.11-3 include Metropolitan's SWP Table A and Article 21 supplies. These supplies are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

The values shown in Table A.11-3 do not include Desert Water Agency/Coachella Valley Water District SWP contract supplies. These supplies are exchanged with Desert Water Agency and Coachella Valley Water District for an equal amount of Colorado River water, which is reflected in the Colorado River Aqueduct supplies shown in Table A.11-2. In addition, Desert Water Agency and Coachella Valley Water District should include their SWP contract supplies in their own accountings of reduced reliance. Additional information on these exchange agreements can be found in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

These values also do not include supplies from San Luis Carryover storage or Central Valley storage programs because storage in these programs comprises previously stored water from sources already reflected in Table A.11-3. These storage programs are generally used to provide additional regional self-reliance in dry years, which is not reflected in this normal water year analysis. The Central Valley storage projects and their yields are described in Section 3.3, and Appendix 3. San Luis Carryover storage is described in Section 3.2 and Appendix 3.

Transfers and Exchanges of Supplies from the Delta Watershed

The transfers and exchanges of supplies from the Delta watershed shown in Table A.11-3 include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

Supplies from the Delta Watershed shown in Table A.11-3 are from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2010 (Average Year)

- 2015 values – Metropolitan's 2010 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2015 (Average Year)
- 2020 values – Metropolitan's 2015 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2020 (Average Year)
- 2025-2045 values – Metropolitan's 2020 UWMP, Table A.3-7: California Aqueduct Program Capabilities Years 2025, 2030, 2035, 2040, 2045 (Normal Water Year)

#### **A.11.4 UWMP Implementation**

In addition to the analysis and documentation described above, WR P1 subsection (c)(1)(B) requires that all programs and projects included in the UWMP that are locally cost-effective and technically feasible, which reduce reliance on the Delta, are identified, evaluated, and implemented consistent with the implementation schedule. WR P1 (c)(1)(B) states that:

*(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta[.]*

In accordance with Water Code Section 10631(f), water suppliers must already include in their UWMP a detailed description of expected future projects and programs that they may implement to increase the amount of water supply available to them in normal and single-dry water years and for a period of drought lasting five consecutive years. The UWMP description must also identify specific projects, include a description of the increase in water supply that is expected to be available from each project, and include an estimate regarding the implementation timeline for each project or program.

Section 3 of Metropolitan's UWMP summarizes the implementation plan and continued progress in developing a diversified water portfolio to meet the region's water needs.

##### Water Use Efficiency

The water use efficiency numbers used in this analysis include the total water use efficiency savings (conservation) for the service area, including savings from active, code-based, price-effect and pre-1990 savings. The specific water use efficiency programs and their implementation are described in Section 3.4 of Metropolitan's UWMP.

##### Water Recycling

The water recycling values used in this analysis reflect the total recycled water production in Metropolitan's service area. Water recycling programs and implementation are discussed in Section 3.5 of Metropolitan's UWMP. In addition, individual project-level details are provided in Appendix 5.

##### Stormwater Capture and Use

The stormwater capture and use data used in this analysis include supplies from local surface water production. Local surface water production and its implementation are discussed in Appendix 2 of Metropolitan's UWMP.

##### Advanced Water Technologies

The advanced water technologies data used in this analysis include total groundwater recovery and seawater desalination production in Metropolitan's service. Groundwater recovery and seawater desalination programs and implementation are described in Section 3.5 of Metropolitan's UWMP. In addition, individual project-level details are provided in Appendix 5.

### Conjunctive Use Projects

The values for conjunctive use projects used in this analysis represent total groundwater production in the region. Groundwater production and its implementation are discussed in Appendix 2 of Metropolitan's UWMP.

### Local and Regional Water Supply and Storage Programs

The data for local and regional water supply and storage programs shown in this analysis include supplies from the Los Angeles Aqueduct. This program and its implementation are described in Appendix 2 of Metropolitan's UWMP.

### Other Programs and Projects that Contribute to Regional Self-Reliance

Other programs and projects that contribute to regional self-reliance used in this analysis include current programs from the Colorado River Aqueduct. Colorado River supplies include Metropolitan's basic Colorado River apportionment, as well as supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA), related agreements, and the exchange agreement with SDCWA. Colorado River Aqueduct programs and their implementation are described in Section 3.1 and Appendix 3 of Metropolitan's UWMP.

### CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in this analysis include Metropolitan's SWP Table A and Article 21 supplies. These supplies and their implementation are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

### Transfers and Exchanges of Supplies from the Delta Watershed

The transfers and exchanges of supplies from the Delta watershed shown in this analysis include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs and their implementation are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

### **A.11.5 2015 UWMP Appendix 11**

The information contained in this Appendix 11 is also intended to be a new Appendix 11 attached to Metropolitan's 2015 UWMP consistent with WR P1 subsection (c)(1)(C) (Cal. Code Regs. tit. 23, § 5003). Metropolitan provided notice of the availability of the draft 2020 UWMP (including this Appendix 11 which will also be a new Appendix 11 to its 2015 UWMP) and WSCP and the public hearing to consider adoption of both plans and Appendix 11 to the 2015 UWMP in accordance with CWC Sections 10621(b) and 10642, and Government Code Section 6066, and Chapter 17.5 (starting with Section 7290) of Division 7 of Title 1 of the Government Code. The public review drafts of the 2020 UWMP, Appendix 11 to the 2015 UWMP, and the WSCP were posted prominently on Metropolitan's website, mwdh2o.com, starting February 1, 2021, more than 60 days in advance of the public hearing on April 12, 2021. The notice of availability of the documents was sent to Metropolitan's member agencies, as well as cities and counties in Metropolitan's service area. In addition, a public notice advertising the public hearing in English and Spanish was published in 12 Southern California newspapers. The notification in English language newspapers was published on February 1 and 8, 2021. The notification was published on January 28-30, 2021 and February 1, 4-6, and 8, 2021 in Spanish language newspapers, satisfying the requirement for non-English language notification. Copies of: (1) the notification letter sent to the member agencies, cities and counties in Metropolitan's service area, and (2) the notice published in the newspapers are included in the 2020 UWMP Section 5. Thus, this Appendix 11 to Metropolitan's 2020 UWMP, which was adopted with Metropolitan's 2020 UWMP, will also be recognized and treated as Appendix 11 to Metropolitan's 2015 UWMP.

Metropolitan held the public hearing for the draft 2020 UWMP, draft Appendix 11 to the 2015 UWMP, and draft WSCP on April 12, 2021, at the Board's Water Planning and Stewardship Committee meeting, held online due to COVID-19 concerns. On May 11, 2021, Metropolitan's Board determined that the 2020 UWMP and the WSCP are consistent with the MWD Act and accurately represent the water resources plan for Metropolitan's service area. In addition, Metropolitan's Board determined that Appendix 11 to both the 2015 UWMP and the 2020 UWMP includes all of the elements described in Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (Cal. Code Regs. tit. 23, § 5003), which need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action. As stated in Resolutions 9279, 9280, and 9281, the Board adopted the 2020 UWMP, Appendix 11 to the 2015 UWMP, and the WSCP and authorized their submittal to the State of California. Copies of Resolutions 9279, 9280, and 9281 are included in the 2020 UWMP Section 5, and Resolution 9281 for the WSCP is attached to the WSCP as Attachment C.

## Appendix 11

# QUANTIFYING REGIONAL SELF-RELIANCE AND REDUCED RELIANCE ON WATER SUPPLIES FROM THE DELTA WATERSHED

# Appendix 11

## METROPOLITAN'S

### REDUCED DELTA RELIANCE REPORTING

#### A.11.1 Background

Under the Sacramento-San Joaquin Delta Reform Act of 2009, state and local public agencies proposing a covered action in the Delta,<sup>1</sup> prior to initiating the implementation of that action, must prepare a written certification of consistency with detailed findings as to whether the covered action is consistent with applicable Delta Plan policies and submit that certification to the Delta Stewardship Council.<sup>2</sup> Anyone may appeal a certification of consistency, and if the Delta Stewardship Council grants the appeal, the covered action may not be implemented until the agency proposing the covered action submits a revised certification of consistency, and either no appeal is filed, or the Delta Stewardship Council denies the subsequent appeal.<sup>3</sup>

An urban water supplier that anticipates participating in or receiving water from a proposed covered action such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs) that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (WR P1).<sup>4</sup>

WR P1 details what is needed for a covered action to demonstrate consistency with reduced reliance on the Delta and improved regional self-reliance. WR P1 subsection (a) states that:

*(a) Water shall not be exported from, transferred through, or used in the Delta if all of the following apply:*

- (1) One or more water suppliers that would receive water as a result of the export, transfer, or use have failed to adequately contribute to reduced reliance on the Delta and improved regional self-reliance consistent with all of the requirements listed in paragraph (1) of subsection (c);*
- (2) That failure has significantly caused the need for the export, transfer, or use; and*
- (3) The export, transfer, or use would have a significant adverse environmental impact in the Delta.*

WR P1 subsection (c)(1) further defines what adequately contributing to reduced reliance on the Delta means in terms of (a)(1) above.

*(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:*

- (A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;*

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<sup>1</sup> Water Code, § 85057.5; Cal. Code Regs. tit. 23, § 5001.

<sup>2</sup> Water Code, § 85225; Delta Plan, App. D.

<sup>3</sup> Water Code, §§ 85225.10-85225.25; Delta Plan, App. D.

<sup>4</sup> Cal. Code Regs., tit. 23, § 5003.



*(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and*

*(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code Section 1011(a).*

The analysis and documentation provided below include all of the elements described in WR P1(c)(1) that need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action.

### **A.11.2 Summary of Expected Outcomes for Reduced Reliance on the Delta**

As stated in WR P1(c)(1)(C), the policy requires that, commencing in 2015, UWMPs include expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance. WR P1 further states that those outcomes shall be reported in the UWMP as the reduction in the amount of water used, or in the percentage of water used, from the Delta.

The expected outcomes for Metropolitan's Delta reliance and regional self-reliance were developed using the approach and guidance described in Appendix C of DWR's Urban Water Management Plan Guidebook 2020 (Guidebook Appendix C) issued in March 2021.

The data used in this analysis represent the total regional efforts of Metropolitan and its member agencies and their customers (many of them, retail agencies) and were developed in conjunction with Metropolitan's member agencies as part of the UWMP coordination process as described in Section 5 of Metropolitan's UWMP. In accordance with UWMP requirements, Metropolitan's member agencies and their customers (many of them, retail agencies) also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in Metropolitan's UWMP; rather, their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta.

While the demands that Metropolitan's member agencies and their customers report in their UWMPs are a good reflection of the demands in their respective service areas, they do not adequately represent each water supplier's contributions to reduced reliance on the Delta. In order to calculate and report their reliance on water supplies from the Delta watershed, water suppliers that receive water from the Delta through other regional or wholesale water suppliers would need to determine the amount of Delta water that they receive from the regional or wholesale supplier. Two specific pieces of information are needed to accomplish this: first is the quantity of demands on the regional or wholesale water supplier that accurately reflect a supplier's contributions to reduced reliance on the Delta, and second is the quantity of a supplier's demands on the regional or wholesale water supplier that are met by supplies from the Delta watershed.

For water suppliers that make investments in regional projects or programs it may be infeasible to quantify their demands on the regional or wholesale water supplier in a way that accurately reflects their individual contributions to reduced reliance on the Delta. Due to the extensive, long-



standing and successful implementation of regional demand management and local resource incentive programs in Metropolitan's service area, this infeasibility holds true for Metropolitan's members as well their customers. For Metropolitan's service area, reduced reliance on supplies from the Delta watershed can only be accurately accounted at the regional level, as is demonstrated in this analysis.

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for Metropolitan's Delta reliance and regional self-reliance. The results show that as a region, Metropolitan and its members as well as their customers are measurably reducing reliance on the Delta and improving regional self-reliance, both as an amount of water used and as a percentage of water used.

#### *Expected Outcomes for Regional Self-Reliance*

- Near-term (2025) – Normal water year regional self-reliance is expected to increase by 813 TAF from the 2010 baseline; this represents an increase of almost 25 percent of 2025 normal water year retail demands (Table A.11-2).
- Long-term (2045) – Normal water year regional self-reliance is expected to increase by more than 1.28 MAF from the 2010 baseline, this represents an increase of more than 25 percent of 2045 normal water year retail demands (Table A.11-2).

#### *Expected Outcomes for Reduced Reliance on Supplies from the Delta Watershed*

- Near-term (2025) – Normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline, this represents a decrease of 3 percent of 2025 normal water year retail demands (Table A.11-3).
- Long-term (2045) – Normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline, this represents a decrease of just over 5 percent of 2045 normal water year retail demands (Table A.11-3).

### **A11.3 Demonstration of Reduced Reliance on the Delta**

The methodology used to determine Metropolitan's reduced Delta reliance and improved regional self-reliance is consistent with the approach detailed in DWR's UWMP Guidebook Appendix C, including the use of narrative justifications for the accounting of supplies and the documentation of specific data sources. Some of the key assumptions underlying Metropolitan's demonstration of reduced reliance include:

- All data were obtained from the current 2020 UWMP or previously adopted UWMPs and represent average or normal water year conditions.
- All analyses were conducted at the service area level, and all data reflect the total contributions of Metropolitan and its members as well as their customers.
- No projects or programs that are described in the UWMPs as "Projects Under Development" were included in the accounting of supplies.

#### *Baseline and Expected Outcomes*

In order to calculate the expected outcomes for measurable reduction in Delta reliance and improved regional self-reliance, a baseline is needed to compare against. This analysis uses a normal water year representation of 2010 as the baseline, which is consistent with the approach described in the Guidebook Appendix C. Data for the 2010 baseline were taken from Metropolitan's 2005 UWMP as the UWMPs generally do not provide normal water year data for

the year that they are adopted (i.e., 2005 UWMP forecasts begin in 2010, 2010 UWMP forecasts begin in 2015, and so on).

Consistent with the 2010 baseline data approach, the expected outcomes for reduced Delta reliance and improved regional self-reliance for 2015 and 2020 were taken from Metropolitan's 2010 and 2015 UWMPs respectively. Expected outcomes for 2025-2045 are from the current 2020 UWMP. Documentation of the specific data sources and assumptions are included in the discussions below.

*Service Area Demands without Water Use Efficiency*

In alignment with the Guidebook Appendix C, this analysis uses normal water year demands, rather than normal water year supplies to calculate expected outcomes in terms of the percentage of water used. Using normal water year demands serves as a proxy for the amount of supplies that would be used in a normal water year, which helps alleviate issues associated with how supply capability is presented to fulfill requirements of the Act versus how supplies might be accounted for to demonstrate consistency with WR P1.

Because WR P1 considers water use efficiency savings a source of water supply, water suppliers such as Metropolitan that explicitly calculate and report water use efficiency savings in their UWMP will need to make an adjustment to properly reflect normal water year demands in the calculation of reduced reliance. As explained in the Guidebook Appendix C, water use efficiency savings must be added back to the normal year demands to represent demands without water use efficiency savings accounted for; otherwise the effect of water use efficiency savings on regional self-reliance would be overestimated. Table A.11-1 shows the results of this adjustment for Metropolitan. Supporting narratives and documentation for all of the data shown in Table A.11-1 are provided below.

**Table A.11-1  
Demands without Water Use Efficiency Accounted For**

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands with Water Use Efficiency Accounted For	4,628,000	4,563,000	4,163,000	3,763,000	3,821,000	3,893,000	3,936,000	3,985,000
Reported Water Use Efficiency	865,000	936,000	1,056,000	1,162,000	1,211,000	1,263,000	1,325,000	1,389,000
<b>Service Area Demands without Water Use Efficiency Accounted For</b>	<b>5,493,000</b>	<b>5,499,000</b>	<b>5,219,000</b>	<b>4,925,000</b>	<b>5,032,000</b>	<b>5,156,000</b>	<b>5,261,000</b>	<b>5,374,000</b>

*Service Area Demands without Water Use Efficiency*

The service area demands shown in Table A.11-1 represent the total retail water demands for Metropolitan's service area and include municipal and industrial demands, agricultural demands, seawater barrier demands, and storage replenishment demands. These demand types and the modeling methodologies used to calculate them are described in Section 2.2 and Appendix 1 of Metropolitan's UWMP.

Water Use Efficiency

The water use efficiency numbers shown in Table A.11-1 represent the total water use efficiency savings (conservation) for Metropolitan's region, including savings from active, code-based, price-effect and pre-1990 sources. These sources of water use efficiency and the methodologies used to calculate them are described in Section 2.2, Section 3.4, Section 3.7 and Appendix 1 of Metropolitan's UWMP.

The demand and water use efficiency data shown in Table A.11-1 were collected from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table 2-6: Metropolitan Regional Water Demand Average Year
- 2015 values – Metropolitan's 2010 UWMP, Table 2-8: Metropolitan Regional Water Demands Average Year
- 2020 values – Metropolitan's 2015 UWMP, Table 2-3: Metropolitan Regional Water Demands Average Year
- 2025-2045 values – Metropolitan's 2020 UWMP, Table 2-3: Metropolitan Regional Water Demands Normal Water Year

### *Supplies Contributing to Regional Self-Reliance*

For a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) states that water suppliers must report the expected outcomes for measurable improvement in regional self-reliance. Table A.11-2 shows expected outcomes for supplies contributing to regional self-reliance both in amount and as a percentage. The numbers shown in Table A.11-2 represent efforts to improve regional self-reliance for Metropolitan's entire service area and include the total contributions of Metropolitan and its members as well as their customers. Supporting narratives and documentation for the all of the data shown in Table A.11-2 are provided below.

The results shown in Table A.11-2 demonstrate that Metropolitan's service area is measurably improving its regional self-reliance. In the near-term (2025), the expected outcome for normal water year regional self-reliance increases by 747 TAF from the 2010 baseline; this represents an increase of about 23 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year regional self-reliance is expected to increase by more than 1.2 MAF from the 2010 baseline; this represents an increase of 25 percent of 2045 normal water year retail demands.

**Table A.11-2  
Supplies Contributing to Regional Self-Reliance**

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Use Efficiency	865,000	936,000	1,056,000	1,162,000	1,211,000	1,263,000	1,325,000	1,389,000
Water Recycling	316,000	348,000	436,000	550,000	613,000	687,000	698,000	706,000
Stormwater Capture and Use	100,000	103,000	110,000	80,000	82,000	82,000	82,000	82,000
Advanced Water Technologies	111,000	101,000	194,000	194,000	208,000	209,000	209,000	210,000
Conjunctive Use Projects	1,416,000	1,429,000	1,303,000	1,255,000	1,273,000	1,296,000	1,311,000	1,326,000
Local and Regional Water Supply and Storage Projects	252,000	224,000	261,000	257,000	257,000	258,000	258,000	258,000
Other Programs and Projects that Contribute to Regional Self-Reliance	875,000	1,250,000	1,200,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
<b>Water Supplies Contributing to Regional Self-Reliance</b>	<b>3,935,000</b>	<b>4,391,000</b>	<b>4,560,000</b>	<b>4,748,000</b>	<b>4,894,000</b>	<b>5,045,000</b>	<b>5,133,000</b>	<b>5,221,000</b>

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies Contributing to Regional Self-Reliance	3,935,000	4,391,000	4,560,000	4,748,000	4,894,000	5,045,000	5,133,000	5,221,000
<b>Change in Supplies Contributing to Regional Self-Reliance</b>	<b>NA</b>	<b>456,000</b>	<b>625,000</b>	<b>813,000</b>	<b>959,000</b>	<b>1,110,000</b>	<b>1,198,000</b>	<b>1,286,000</b>

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Supplies Contributing to Regional Self-Reliance	71.6%	79.9%	87.4%	96.4%	97.3%	97.8%	97.6%	97.2%
<b>Change in Percent of Supplies Contributing to Regional Self-Reliance</b>	<b>NA</b>	<b>8.2%</b>	<b>15.7%</b>	<b>24.8%</b>	<b>25.6%</b>	<b>26.2%</b>	<b>25.9%</b>	<b>25.5%</b>

### Water Use Efficiency

The water use efficiency information shown in Table A.11-2 is taken directly from Table A.11-1 above.

### Water Recycling

The water recycling values shown in Table A.11-2 reflect the total recycled water production in Metropolitan's service area as described in Section 3.5 and Appendix 2 of Metropolitan's UWMP.

### Stormwater Capture and Use

The stormwater capture and use data shown in Table A.11-2 include supplies from local surface water production as described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

These values do not include production from regional storage reservoirs; storage in these reservoirs is comprised of previously stored water from sources already reflected in Tables A.11-2 and A.11-3. These regional storage resources are generally used to provide additional regional self-reliance in dry years, which is not reflected in this normal water year analysis. The regional storage reservoirs and their yields are described in Section 3.6, Appendix 2 and Appendix 3 of Metropolitan's UWMP.

The stormwater capture and use values shown in Table A.11-2 also do not include stormwater capture that is used to recharge local groundwater basins. Stormwater capture for groundwater recharge supports production of groundwater in the region, and for the purposes of this analysis that production is already captured in Table A.11-2 under conjunctive use projects.

### Advanced Water Technologies

The advanced water technologies data shown in Table A.11-2 include total groundwater recovery and seawater desalination production in Metropolitan's service area as described in Section 3.5 and Appendix 2 of Metropolitan's UWMP.

### Conjunctive Use Projects

The values for conjunctive use projects shown in Table A.11-2 represent total groundwater production in the region as described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

The conjunctive use projects numbers shown in Table A.11-2 do not include production from regional groundwater conjunctive use programs. As described in the stormwater capture and use discussion above, these regional storage programs rely on previously stored water from sources already reflected in Tables A.11-2 and A.11-3 and are generally used to provide additional regional self-reliance in dry-years. The regional groundwater conjunctive use programs and their yields are described in Section 3.6 and Appendix 3.

### Local and Regional Water Supply and Storage Programs

The data for local and regional water supply and storage programs shown in Table A.11-2 include supplies from the Los Angeles Aqueduct. This supply is described in Section 1.4 and Appendix 2 of Metropolitan's UWMP.

The local and regional supply numbers shown in Table A.11-2, except for "Other Programs and Projects that Contribute to Regional Self-Reliance" which is discussed below, were obtained from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table 2-6: Metropolitan Regional Water Demand Average Year

- 2015 values – Metropolitan's 2010 UWMP, Table 2-8: Metropolitan Regional Water Demands Average Year
- 2020 values – Metropolitan's 2015 UWMP, Table 2-3: Metropolitan Regional Water Demands Average Year
- 2025-2045 values – Metropolitan's 2020 UWMP, Table 2-3: Metropolitan Regional Water Demands Normal Water Year

#### Other Programs and Projects that Contribute to Regional Self-Reliance

Other programs and projects that contribute to regional self-reliance shown in Table A.11-2 include current programs from the Colorado River Aqueduct. Colorado River supplies include Metropolitan's basic Colorado River apportionment, as well as supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA), related agreements, and the exchange agreement with SDCWA. Colorado River Aqueduct supplies and programs are described in Section 3.1 and Appendix 3 of Metropolitan's UWMP.

The values shown in Table A.11-2 for other programs and projects that contribute to regional self-reliance come from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2010 (Average Year)
- 2015 values – Metropolitan's 2010 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2015 (Average Year)
- 2020 values – Metropolitan's 2015 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Year 2020 (Average Year)
- 2025-2045 values – Metropolitan's 2020 UWMP, Table A.3-7: Maximum Expected Colorado River Aqueduct Deliveries Years 2025, 2030, 2035, 2040, 2045 (Normal Water Year)

#### Reliance on Water Supplies from the Delta Watershed

In order for a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) requires that water suppliers report the expected outcomes for measurable reductions in supplies from the Delta watershed either as an amount or as a percentage. This analysis provides both calculations. Based on the methodology described in Guidebook Appendix C, and consistent with the approach of this analysis in not including projects under development, this accounting does not include any supplies from potential future covered actions. Table A.11-3 shows the expected outcomes for reliance on supplies from the Delta watershed for Metropolitan's service area. Supporting narratives and documentation for the all of the data shown in Table A.11-3 are provided below.

The results shown in Table A.11-3 demonstrate that Metropolitan's service area is measurably reducing its Delta reliance. In the near-term (2025), the expected outcome for normal water year reliance on supplies from the Delta watershed decreased by 301 TAF from the 2010 baseline; this represents a decrease of 3 percent of 2025 normal water year retail demands. In the long-term (2045), normal water year reliance on supplies from the Delta watershed decreased by 314 TAF from the 2010 baseline; this represents a decrease of just over 5 percent of 2045 normal water year retail demands.

**Table A.11-3  
Reliance on Water Supplies from the Delta Watershed**

Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
CVP/SWP Contract Supplies	1,472,000	1,029,000	984,000	1,133,000	1,130,000	1,128,000	1,126,000	1,126,000
Delta/Delta Tributary Diversions	-	-	-	-	-	-	-	-
Transfers and Exchanges of Supplies from the Delta Watershed	20,000	44,000	91,000	58,000	52,000	52,000	52,000	52,000
Other Water Supplies from the Delta Watershed	-	-	-	-	-	-	-	-
<b>Total Water Supplies from the Delta Watershed</b>	<b>1,492,000</b>	<b>1,073,000</b>	<b>1,075,000</b>	<b>1,191,000</b>	<b>1,182,000</b>	<b>1,180,000</b>	<b>1,178,000</b>	<b>1,178,000</b>

Service Area Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Service Area Demands without Water Use Efficiency Accounted For	5,493,000	5,499,000	5,219,000	4,925,000	5,032,000	5,156,000	5,261,000	5,374,000

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Water Supplies from the Delta Watershed	1,492,000	1,073,000	1,075,000	1,191,000	1,182,000	1,180,000	1,178,000	1,178,000
<b>Change in Supplies from the Delta Watershed</b>	<b>NA</b>	<b>(419,000)</b>	<b>(417,000)</b>	<b>(301,000)</b>	<b>(310,000)</b>	<b>(312,000)</b>	<b>(314,000)</b>	<b>(314,000)</b>

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045
Percent of Supplies from the Delta Watershed	27.2%	19.5%	20.6%	24.2%	23.5%	22.9%	22.4%	21.9%
<b>Change in Percent of Supplies from the Delta Watershed</b>	<b>NA</b>	<b>-7.6%</b>	<b>-6.6%</b>	<b>-3.0%</b>	<b>-3.7%</b>	<b>-4.3%</b>	<b>-4.8%</b>	<b>-5.2%</b>

CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in Table A.11-3 include Metropolitan's SWP Table A and Article 21 supplies. These supplies are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

The values shown in Table A.11-3 do not include Desert Water Agency/Coachella Valley Water District SWP contract supplies. These supplies are exchanged with Desert Water Agency and Coachella Valley Water District for an equal amount of Colorado River water, which is reflected in the Colorado River Aqueduct supplies shown in Table A.11-2. In addition, Desert Water Agency and Coachella Valley Water District should include their SWP contract supplies in their own accountings of reduced reliance. Additional information on these exchange agreements can be found in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

These values also do not include supplies from San Luis Carryover storage or Central Valley storage programs because storage in these programs comprises previously stored water from sources already reflected in Table A.11-3. These storage programs are generally used to provide additional regional self-reliance in dry years, which is not reflected in this normal water year analysis. The Central Valley storage projects and their yields are described in Section 3.3, and Appendix 3. San Luis Carryover storage is described in Section 3.2 and Appendix 3.

Transfers and Exchanges of Supplies from the Delta Watershed

The transfers and exchanges of supplies from the Delta watershed shown in Table A.11-3 include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

Supplies from the Delta Watershed shown in Table A.11-3 are from the following sources:

- Baseline (2010) values – Metropolitan's 2005 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2010 (Average Year)



- 2015 values – Metropolitan's 2010 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2015 (Average Year)
- 2020 values – Metropolitan's 2015 UWMP, Table A.3-7: California Aqueduct Program Capabilities Year 2020 (Average Year)
- 2025-2045 values – Metropolitan's 2020 UWMP, Table A.3-7: California Aqueduct Program Capabilities Years 2025, 2030, 2035, 2040, 2045 (Normal Water Year)

#### **A.11.4 UWMP Implementation**

In addition to the analysis and documentation described above, WR P1 subsection (c)(1)(B) requires that all programs and projects included in the UWMP that are locally cost-effective and technically feasible, which reduce reliance on the Delta, are identified, evaluated, and implemented consistent with the implementation schedule. WR P1 (c)(1)(B) states that:

*(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta[.]*

In accordance with Water Code Section 10631(f), water suppliers must already include in their UWMP a detailed description of expected future projects and programs that they may implement to increase the amount of water supply available to them in normal and single-dry water years and for a period of drought lasting five consecutive years. The UWMP description must also identify specific projects, include a description of the increase in water supply that is expected to be available from each project, and include an estimate regarding the implementation timeline for each project or program.

Section 3 of Metropolitan's UWMP summarizes the implementation plan and continued progress in developing a diversified water portfolio to meet the region's water needs.

##### Water Use Efficiency

The water use efficiency numbers used in this analysis include the total water use efficiency savings (conservation) for the service area, including savings from active, code-based, price-effect and pre-1990 savings. The specific water use efficiency programs and their implementation are described in Section 3.4 of Metropolitan's UWMP.

##### Water Recycling

The water recycling values used in this analysis reflect the total recycled water production in Metropolitan's service area. Water recycling programs and implementation are discussed in Section 3.5 of Metropolitan's UWMP. In addition, individual project-level details are provided in Appendix 5.

##### Stormwater Capture and Use

The stormwater capture and use data used in this analysis include supplies from local surface water production. Local surface water production and its implementation are discussed in Appendix 2 of Metropolitan's UWMP.

##### Advanced Water Technologies

The advanced water technologies data used in this analysis include total groundwater recovery and seawater desalination production in Metropolitan's service. Groundwater recovery and seawater desalination programs and implementation are described in Section 3.5 of Metropolitan's UWMP. In addition, individual project-level details are provided in Appendix 5.

### Conjunctive Use Projects

The values for conjunctive use projects used in this analysis represent total groundwater production in the region. Groundwater production and its implementation are discussed in Appendix 2 of Metropolitan's UWMP.

### Local and Regional Water Supply and Storage Programs

The data for local and regional water supply and storage programs shown in this analysis include supplies from the Los Angeles Aqueduct. This program and its implementation are described in Appendix 2 of Metropolitan's UWMP.

### Other Programs and Projects that Contribute to Regional Self-Reliance

Other programs and projects that contribute to regional self-reliance used in this analysis include current programs from the Colorado River Aqueduct. Colorado River supplies include Metropolitan's basic Colorado River apportionment, as well as supplies that result from existing and committed programs, including those from the IID-MWD Conservation Program, the implementation of the Quantification Settlement Agreement (QSA), related agreements, and the exchange agreement with SDCWA. Colorado River Aqueduct programs and their implementation are described in Section 3.1 and Appendix 3 of Metropolitan's UWMP.

### CVP/SWP Contract Supplies

The CVP/SWP contract supplies shown in this analysis include Metropolitan's SWP Table A and Article 21 supplies. These supplies and their implementation are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.

### Transfers and Exchanges of Supplies from the Delta Watershed

The transfers and exchanges of supplies from the Delta watershed shown in this analysis include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, Irvine Ranch Water District Storage and Exchange Program, and other generic SWP and Central Valley transfers and exchanges. These programs and their implementation are described in Section 3.2 and Appendix 3 of Metropolitan's UWMP.



### **A.11.5 2015 UWMP Appendix 11**

The information contained in this Appendix 11 is also intended to be a new Appendix 11 attached to Metropolitan's 2015 UWMP consistent with WR P1 subsection (c)(1)(C) (Cal. Code Regs. tit. 23, § 5003). Metropolitan provided notice of the availability of the draft 2020 UWMP (including this Appendix 11 which will also be a new Appendix 11 to its 2015 UWMP) and WSCP and the public hearing to consider adoption of both plans and Appendix 11 to the 2015 UWMP in accordance with CWC Sections 10621(b) and 10642, and Government Code Section 6066, and Chapter 17.5 (starting with Section 7290) of Division 7 of Title 1 of the Government Code. The public review drafts of the 2020 UWMP, Appendix 11 to the 2015 UWMP, and the WSCP were posted prominently on Metropolitan's website, mwdh2o.com, starting February 1, 2021, more than 60 days in advance of the public hearing on April 12, 2021. The notice of availability of the documents was sent to Metropolitan's member agencies, as well as cities and counties in Metropolitan's service area. In addition, a public notice advertising the public hearing in English and Spanish was published in 12 Southern California newspapers. The notification in English language newspapers was published on February 1 and 8, 2021. The notification was published on January 28-30, 2021 and February 1, 4-6, and 8, 2021 in Spanish language newspapers, satisfying the requirement for non-English language notification. Copies of: (1) the notification letter sent to the member agencies, cities and counties in Metropolitan's service area, and (2) the notice published in the newspapers are included in the 2020 UWMP Section 5. Thus, this Appendix 11 to Metropolitan's 2020 UWMP, which was adopted with Metropolitan's 2020 UWMP, will also be recognized and treated as Appendix 11 to Metropolitan's 2015 UWMP.

Metropolitan held the public hearing for the draft 2020 UWMP, draft Appendix 11 to the 2015 UWMP, and draft WSCP on April 12, 2021, at the Board's Water Planning and Stewardship Committee meeting, held online due to COVID-19 concerns. On May 11, 2021, Metropolitan's Board determined that the 2020 UWMP and the WSCP are consistent with the MWD Act and accurately represent the water resources plan for Metropolitan's service area. In addition, Metropolitan's Board determined that Appendix 11 to both the 2015 UWMP and the 2020 UWMP includes all of the elements described in Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (Cal. Code Regs. tit. 23, § 5003), which need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action. As stated in Resolutions 9279, 9280, and 9281, the Board adopted the 2020 UWMP, Appendix 11 to the 2015 UWMP, and the WSCP and authorized their submittal to the State of California. Copies of Resolutions 9279, 9280, and 9281 are included in the 2020 UWMP Section 5, and Resolution 9281 for the WSCP is attached to the WSCP as Attachment C.

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**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX C**

**COMPLETED PLAN CHECKLIST**

	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
Retail	x	Chapter 1	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Chapter 1 Lay Description
	x	Chapter 1	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Beginning of each Chapter
	x	Section 2.2	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.2
	x	Section 2.6	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.6
	x	Section 2.6.2	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Section 2.6.2
	x	Section 2.6, Section 6.1	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Sections 2.6 and 6.1
	x	Section 2.6	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Not applicable
	x	Section 3.1	Describe the water supplier service area.	System Description	Section 3.1
	x	Section 3.3	Describe the climate of the service area of the supplier.	System Description	Section 3.3
	x	Section 3.4	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 3.4
	x	Section 3.4.2	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Section 3.4.2
	x	Sections 3.4 and 5.4	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4
	x	Section 3.5	Describe the land uses within the service area.	System Description	Section 3.5
	x	Section 4.2	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2
	x	Section 4.2.4	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 4.2.4
	x	Section 4.2.6	In projected water use, include estimates of water savings from adopted codes, plans and other policies or laws.	System Water Use	Section 4.2.6
	x	Section 4.2.6	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Section 4.2.6
	x optional	Section 4.3.2.4	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Section 4.3.2
	x optional	Section 4.4	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.4
	x	Section 4.5	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 4.5
	x	Chapter 5	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5
	x	Chapter 5	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Chapter 5
	x	Section 5.1	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Not applicable

Retail	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Section 5.2	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Not applicable
x		Section 5.5	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Sections 5.2, 5.3, and 5.5
x		Section 5.5 and Appendix E	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Section 5.5
x	x	Sections 6.1 and 6.2	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Sections 6.1, 6.2, 7.1, and 7.2
x	x	Sections 6.1	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, <i>including changes in supply due to climate change.</i>	System Supplies	Section 6.1
x	x	Section 6.1	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Section 6.1
x	x	Section 6.1.1	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Section 6.1.1
x	x	Section 6.2.8	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	Section 6.2.8
x	x	Section 6.2	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2
x	x	Section 6.2.2	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2
x	x	Section 6.2.2	Describe the groundwater basin.	System Supplies	Section 6.2.2
x	x	Section 6.2.2	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2
x	x	Section 6.2.2.1	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	Not applicable
x	x	Section 6.2.2.4	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.2
x	x	Section 6.2.2	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Section 6.2.2
x	x	Section 6.2.7	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.2.7
x	x	Section 6.2.5	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.5	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.6	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.2.6
x	x	Section 6.2.5	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Section 6.2.5
x	x	Section 6.2.8, Section 6.3.7	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Sections 6.2.8 and 6.2.9

Retail	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.4 and Appendix O	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Section 6.4
x	x	Section 7.2	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.2
x	x	Section 7.2.4	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.2.4
x	x	Section 7.3	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 7.3
x	x	Chapter 8	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Chapter 8
x	x	Chapter 8	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Chapter 8
x	x	Section 8.10	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Section 8.10
x	x	Section 8.2	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Section 8.2
x	x	Section 8.2	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Section 8.2
x	x	Section 8.3	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Section 8.3
x	x	Section 8.3	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	Section 8.3
x	x	Section 8.4	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Section 8.4.2
x	x	Section 8.4	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Section 8.4.1
x	x	Section 8.4	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Section 8.4.3
x	x	Section 8.4	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Section 8.4.4
x	x	Section 8.4	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Section 8.4.7
x	x	Section 8.4.6	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Section 8.4.6
x	x	Section 8.5	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Section 8.5

	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
Retail	X	Section 8.5 and 8.6	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Sections 8.5 and 8.6
	X	Section 8.6	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Section 8.6
	X	Section 8.7	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Section 8.7
	X	Section 8.7	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Section 8.7
	X	Section 8.7	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Section 8.7
	X	Section 8.8	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 8.8
	X	Section 8.8	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 8.8
	X	Section 8.8	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Section 8.8
	X	Section 8.9	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Section 8.9
	X	Section 8.11	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Section 8.11
	X	Sections 8.12 and 10.4	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Sections 8.12 and 10.4
	X	Section 8.12	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 days after adopted the plan.	Water Shortage Contingency Planning	Section 8.12
	X	Sections 9.1 and 9.3	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Not applicable
	X	Sections 9.2 and 9.3	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3
	X	Chapter 10	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	Chapter 10
	X	Section 10.2.1	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Section 10.2.1
	X	Section 10.4	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Section 10.4
	X	Sections 10.2.2, 10.3, and 10.5	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2, 10.3, and 10.5
	X	Section 10.2.2	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Section 10.2.2
	X	Section 10.3.2	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.2
	X	Section 10.4	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3
	X	Section 10.4	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4
	X	Sections 10.4.1 and 10.4.2	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2
	X	Section 10.5	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5

	Wholesale	2020 Guidebook Location	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
Retail	x	Section 10.5	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5
	x	Section 10.6	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	Section 10.6
	x	Section 10.7.2	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	Section 10.7.2



**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX D**

**60 – DAY NOTIFICATION LETTERS  
AND PUBLIC HEARING NOTIFICATIONS**



# CITY OF CERRITOS<sup>SM</sup>

CIVIC CENTER • 18125 BLOOMFIELD AVENUE  
P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0311 • CERRITOS.US



March 24, 2021

Mr. Mike Belknap  
City of La Palma  
City Engineer  
7822 Walker Street  
La Palma, CA 90623

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Mr. Belknap,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

As an urban water supplier, the City of Cerritos is required pursuant to Section 10620(d)(3) of the California Water Code to coordinate with water management agencies, relevant public agencies, and other water suppliers regarding the preparation of the UWMP. Pursuant to Section 10621(b) of the California Water Code, the City of Cerritos will be reviewing the UWMP and will make amendments or changes, as appropriate. The City of Cerritos invites you to submit comments in anticipation of the development of our 2020 UWMP Update. Please provide written comments within the next 30 days to City of Cerritos.

Sincerely,

Javier Martinez  
Water Superintendent



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March 24, 2021

District Manager  
Central District  
Golden State Water Company  
12035 Burke Street, Suite 1  
Santa Fe Springs, CA 90670

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Sir,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

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Water Superintendent





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March 24, 2021

Mr. Matthew Eaton  
Los Angeles County Sanitation Districts  
Technical Services Department  
1955 Workman Mill Road  
Whittier, CA 90601

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Mr. Eaton,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

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Javier Martinez  
Water Superintendent



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March 24, 2021

Clerk-Recorder  
County of Los Angeles  
12400 Imperial Highway  
Norwalk, CA 90650

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Clerk-Recorder,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

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Sincerely,

Javier Martinez  
Water Superintendent





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March 24, 2021

Mr. Alejandro Rojas  
General Manager  
Central Basin Municipal Water District  
6252 Telegraph Road  
Commerce, CA 90040-2512

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Mr. Rojas,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

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Water Superintendent



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March 24, 2021

Mr. Stephen Tucker  
General Manager  
Water Replenishment District of Southern California  
4040 Paramount Boulevard  
Lakewood, CA 90712

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Mr. Tucker,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

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Sincerely,

Javier Martinez  
Water Superintendent





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March 24, 2021

Mr. Noe Negrete  
Director of Public Works  
City of Santa Fe Springs  
11710 Telegraph Road  
Santa Fe Springs, CA 90670

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Mr. Negrete,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

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Sincerely,

Javier Martinez  
Water Superintendent





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March 24, 2021

Mr. Jesus M. Gomez  
City of Norwalk  
12700 Norwalk Boulevard  
Norwalk, CA 90650

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Mr. Gomez,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

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Sincerely,

Javier Martinez  
Water Superintendent



# CITY OF CERRITOS<sup>SM</sup>

CIVIC CENTER • 18125 BLOOMFIELD AVENUE  
P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0311 • CERRITOS.US



March 24, 2021

Mr. Jeffrey Kightlinger  
Manager of Water Resources Management  
Metropolitan Water District of Southern California  
P.O. Box 54153  
Los Angeles, CA 90054

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear Mr. Kightlinger,

The City of Cerritos is currently in the process of reviewing its Urban Water Management Plan (UWMP) for the upcoming 2020 Update. The Urban Water Management Planning Act requires every urban water supplier, which provides water directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, to prepare and adopt an UWMP and periodically update that plan at least once every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate and compare their water supply and reliability to their existing water conservation efforts. The City of Cerritos is currently in the process of preparing the 2020 UWMP Update.

As an urban water supplier, the City of Cerritos is required pursuant to Section 10620(d)(3) of the California Water Code to coordinate with water management agencies, relevant public agencies, and other water suppliers regarding the preparation of the UWMP. Pursuant to Section 10621(b) of the California Water Code, the City of Cerritos will be reviewing the UWMP and will make amendments or changes, as appropriate. The City of Cerritos invites you to submit comments in anticipation of the development of our 2020 UWMP Update. Please provide written comments within the next 30 days to City of Cerritos.

Sincerely,

Javier Martinez  
Water Superintendent





# CITY OF CERRITOS<sup>SM</sup>

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P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0311 • CERRITOS.US



March 24, 2021

City Clerk's Office  
City of Cerritos  
18125 Bloomfield Avenue  
Cerritos, CA 90703

**RE: City of Cerritos 2020 Urban Water Management Plan Update**

Dear City Clerk,

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Sincerely,

Javier Martinez  
Water Superintendent

**PROOF OF PUBLICATION**

**(2015.5 C.C.P.)**

**Los Cerritos Community Newspaper Group  
13017 Artesia Blvd., Suite C-102  
Cerritos CA 90703  
(562) 407-3873**

County Clerk's Filing Stamp

STATE OF CALIFORNIA,  
COUNTY OF LOS ANGELES

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter.

I am the principal clerk of the printer of the Los Cerritos Community News, a newspaper of general circulation, printed and published one time each week in the County of Los Angeles, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of Los Angeles, State of California, under the date of September 9, 1996, in Case Number V5005861 that the notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

**6/11/21**

I certify (or declare) under penalty of perjury that the foregoing is true and correct.  
DATED AT CERRITOS, CALIFORNIA,

**This 11th day of JUNE, 2021**

Signature

Brian Hews

Los Cerritos Community News  
13047 Artesia Blvd. Suite C-102, Cerritos, CA 90703  
562-407-3873  
LCCN FORM 82180 PROOF

**NOTICE OF PUBLIC HEARING**

**NOTICE IS HEREBY GIVEN** that the Cerritos City Council will conduct a public hearing at a meeting on **Thursday, June 24, 2021 at 7:00 p.m.** on the following matter: **REVIEW AND CONSIDERATION TO WAIVE FULL READING OF AND ADOPT A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CERRITOS ADOPTING THE 2020 URBAN WATER MANAGEMENT PLAN AND WATER SHORTAGE CONTINGENCY PLAN PURSUANT TO CALIFORNIA WATER CODE SECTIONS 10610 THROUGH 10657**  
This public hearing will be conducted in-person in the Cerritos City Council Chambers, 18125 Bloomfield Avenue, subject to posted COVID-19 protocols, and by teleconference via ZOOM video communications, as authorized by State of California Executive Orders N-25-20 and N-29-20. Members of the public may provide public comment for this meeting in-person at the meeting or by using any of the following alternate methods: Written correspondence (hard copy or email): Public comments can be submitted via email to [city\\_clerk@cerritos.us](mailto:city_clerk@cerritos.us) or by hard copy to the Office of the City Clerk no later than 3:00 p.m. on the day of the meeting. Please identify the agenda item number in the subject line of the email or hard copy document. All written correspondence received by the City Clerk no later than 3:00 p.m. on the day of the meeting. During the meeting, your name and summary comments will be read into the record. The document will be retained with the public record of the meeting. Teleconference Participation: Live audio public comments can be made by connecting to the meeting using the information listed below. Public speakers will be queued to provide comment at the appropriate time during the meeting agenda and must be available at the time they are called upon to speak. Cerritos Zoom Meeting online link: <https://us02web.zoom.us/j/82489398963>. Cerritos Zoom Meeting call-in telephone number: (669) 900-6833, Cerritos Zoom Meeting ID: 824 8939 8963. The meeting will also air live on Cerritos TV3 and will be streamed over the City of Cerritos website at [www.cerritos.us](http://www.cerritos.us). A copy of the related agenda report will be available for download from the website on the Friday prior to the public hearing. Dated: June 11, 2021 and June 18, 2021, Vida Barone, City Clerk

Published at Los Cerritos Community Newspaper 6/11/21

**PROOF OF PUBLICATION**

**(2015.5 C.C.P.)**

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**6/18/21**

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

**DATED AT CERRITOS, CALIFORNIA,**

**This 18th day of JUNE, 2021**

Signature

Brian Hews

Los Cerritos Community News  
13047 Artesia Blvd. Suite C-102, Cerritos, CA 90703  
562-407-3873  
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Published at Los Cerritos Community News 6/18/21





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PHONE: (562) 860-0311 • CERRITOS.US



October 27, 2021

Mr. Mike Belknap  
City of La Palma  
City Engineer  
7822 Walker Street  
La Palma, CA 90623

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

Dear Mr. Belknap:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

The 2020 Urban Water Management Plan and Water Shortage Contingency Plan were prepared in pursuant to the Urban Water Management Planning Act and California Water Code Section 10621(a), which requires every urban water supplier to update its Urban Water Management Plan at least once every five years, in years ending in six and one, incorporating new information from the preceding five years with each update.

Information regarding the City of Cerritos public hearing is as follows:

**Date: Monday, November 8, 2021**

**Time: 7:00 p.m.**

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The City of Cerritos invites all interested entities to attend and present their comments. A copy of the 2020 Urban Water Management Plan and Water Shortage Contingency Plan will be available at the City of Cerritos City Clerk's Office.

Sincerely,

Javier Martínez  
Water Superintendent

GRACE HU  
MAYOR

CHUONG VO  
MAYOR PRO TEM

BRUCE W. BARROWS  
COUNCILMEMBER

NARESH SOLANKI  
COUNCILMEMBER

FRANK AURELIO YOKOYAMA  
COUNCILMEMBER



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October 27, 2021

District Manager  
Central District  
Golden State Water Company  
12035 Burke Street, Suite 1  
Santa Fe Springs, CA 90670

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

Dear District Manager:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

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Sincerely,

Javier Martinez  
Water Superintendent





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P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0311 • CERRITOS.US



October 27, 2021

Mr. Matthew Eaton  
Los Angeles County Sanitation Districts  
Technical Services Department  
1955 Workman Mill Road  
Whittier, CA 90601

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

Dear Mr. Eaton:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

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Javier Martinez  
Water Superintendent





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P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0311 • CERRITOS.US



October 27, 2021

Clerk-Recorder  
County of Los Angeles  
12400 Imperial Highway  
Norwalk, CA 90650

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

Dear Clerk-Recorder:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

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Sincerely,

Javier Martinez  
Water Superintendent



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P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0311 • CERRITOS.US



October 27, 2021

Mr. Alejandro Rojas  
General Manager  
Central Basin Municipal Water District  
6252 Telegraph Road  
Commerce, CA 90040

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

Dear Mr. Rojas:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

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Sincerely,

Javier Martinez  
Water Superintendent





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P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0311 • CERRITOS.US



October 27, 2021

Mr. Stephen Tucker  
General Manager  
Water Replenishment District of Southern California  
4040 Paramount Boulevard  
Lakewood, CA 90712

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

Dear Mr. Tucker:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

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Sincerely,

Javier Martinez  
Water Superintendent



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P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0511 • CERRITOS.US



October 27, 2021

Mr. Noe Negrete  
Director of Public Works  
City of Santa Fe Springs  
11710 Telegraph Road  
Santa Fe Springs, CA 90670

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

Dear Mr. Negrete:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

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Sincerely,

Javier Martinez  
Water Superintendent





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P.O. BOX 3130 • CERRITOS, CALIFORNIA 90703-3130  
PHONE: (562) 860-0311 • CERRITOS.US



October 27, 2021

Mr. Jesus M. Gomez  
City Manager  
City of Norwalk  
12700 Norwalk Boulevard  
Norwalk, CA 90650

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

Dear Mr. Gomez:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

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COUNCILMEMBER

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COUNCILMEMBER

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October 27, 2021

Mr. Jeffrey Kightlinger  
Manager of Water Resources Mangement  
Metropolitan Water District of Southern California  
P.O. Box 54153  
Los Angeles, CA 90054

**RE: City of Cerritos Notice of Public Hearing for 2020 Urban Water Management Plan and Water Shortage Contingency Plan**

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Sincerely,

Javier Martinez  
Water Superintendent

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MAYOR PRO TEM

BRUCE W. BARROWS  
COUNCILMEMBER

NARESH SOLANKI  
COUNCILMEMBER

FRANK AURELIO YOKOYAMA  
COUNCILMEMBER





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October 27, 2021

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City of Cerritos  
18125 Bloomfield Avenue  
Cerritos, CA 90703

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Dear City Clerk:

The City of Cerritos will hold a public hearing on November 8, 2021, to adopt its 2020 Urban Water Management Plan which incorporate a Water Shortage Contingency Plan.

The 2020 Urban Water Management Plan and Water Shortage Contingency Plan were prepared in pursuant to the Urban Water Management Planning Act and California Water Code Section 10621(a), which requires every urban water supplier to update its Urban Water Management Plan at least once every five years, in years ending in six and one, incorporating new information from the preceding five years with each update.

Information regarding the City of Cerritos public hearing is as follows:

**Date: Monday, November 8, 2021**

**Time: 7:00 p.m.**

**Place: City Council Chambers, 18125 Bloomfield Ave. Cerritos, CA 90703**

The meeting will also air live on Cerritos TV3 and will be streamed over the City of Cerritos website at [www.cerritos.us](http://www.cerritos.us).

The meeting link will be posted on the City of Cerritos' website at the following address:  
[http://www.cerritos.us/GOVERNMENT/city\\_council\\_meetings.php](http://www.cerritos.us/GOVERNMENT/city_council_meetings.php)

The City of Cerritos invites all interested entities to attend and present their comments. A copy of the 2020 Urban Water Management Plan and Water Shortage Contingency Plan will be available at the City of Cerritos City Clerk's Office.

Sincerely,

Javier Martinez  
Water Superintendent

APN: 8022-008-008 TS No: CA07000224-21-1 TO No: 210502750-CA-VOI NOTICE OF TRUSTEE'S SALE (The above statement is made pursuant to CA Civil Code Section 2923.3(d)(1). The Summary will be provided to Trustee(s) and/or vested owner(s) pursuant to CA Civil Code Section 2923.3(d)(2). YOU ARE IN DEFAULT UNDER A DEED OF TRUST DATED MAY 21, 2007. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDINGS AGAINST YOU, YOU SHOULD CONTACT A LAWYER. On February 22, 2022 at 10:00 AM, behind the fountain located in the Civic Center Plaza, 400 Civic Center Plaza, Pomona CA 91766, MTC Financial Inc., dba Trustee Corps, as the duly Appointed Trustee, under and pursuant to the power of sale contained in that certain Deed of Trust recorded on May 30, 2007 as Instrument No. 20071299733, of official records in the Office of the Recorder of Los Angeles County, California, executed by CARMEN J TEJADA, AN UNMARRIED WOMAN, as Trustor(s), in favor of HOME CAPITAL FUNDING as Beneficiary, WILL SELL AT PUBLIC AUCTION TO THE HIGHEST BIDDER, in lawful money of the United States, all payable at the time of sale, that certain property situated in said County, California describing the land therein as: AS MORE FULLY DESCRIBED IN SAID DEED OF TRUST The property heretofore described is being sold "as is". The street address and other common designations of any of the real property described above is purported to be: 1138 DUNE STREET, NORWALK, CA 90650 The undersigned Trustee disclaims any liability for any inaccuracy of the street address and other common designations, if any, shown herein. Said sale will be made without covenant or warranty, express or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the Note(s) secured by said Deed of Trust, with interest thereon, as provided in said Note(s), advances if any, under the terms of the Deed of Trust, estimated fees, charges and expenses of the Trustee and of the trusts created by said Deed of Trust. The total amount of the unpaid balance of the obligations secured by the property to be sold and reasonable estimated costs, expenses and advances at the time of the initial publication of this Notice of Trustee's Sale is estimated to be \$348,256.79 (Estimated). However, prepayment premiums, accrued interest and advances will increase this figure prior to sale. Beneficiary's bid at said sale may include all or part of said amount. In addition to cash, the Trustee will accept a cashier's check drawn on a state or national bank, a check drawn by a state or federal credit union or a check drawn by a state or federal savings and loan association, savings association or savings bank specified in Section 5102 of the California Financial Code and authorized to do business in California, or other such funds as may be acceptable to the Trustee. In the event tender other than cash is accepted, the Trustee may withhold the issuance of the Trustee's Deed Upon Sale until funds become available to the payee or endorsee as a matter of right. The property offered for sale excludes all funds held on account by the property receiver, if applicable. If the Trustee is unable to convey title for any reason, the successful bidder's sole and exclusive remedy shall be the return of monies paid to the Trustee and the successful bidder shall have no further recourse. Notice to Potential Bidders If you are considering bidding on this property, you should understand that there are risks involved in bidding at a Trustee auction. You will be bidding on a lien, not on the property itself. Placing the highest bid at a Trustee auction does not automatically entitle you to free and clear ownership of the property. You should also be aware that the lien being auctioned off may be a junior lien. If you are the highest bidder at the auction, you are or may be responsible for paying off all liens senior to the lien being auctioned off, before you can receive clear title to the property. You are encouraged to investigate the existence, priority, and size of outstanding liens that may exist on this property by contacting the county recorder's office or a title insurance company, either of which may charge you a fee for this information. If you consult either of these resources, you should be aware that the same Lender may hold more than one mortgage or Deed of Trust on the property. Notice to Property Owner The sale date shown on this Notice of Sale may be postponed one or more times by the Mortgagee, Beneficiary, Trustee, or a court, pursuant to Section 2924g of the California Civil Code. The law requires that information about Trustee Sale postponements be made available to you and to the public, as a courtesy to those not present at the sale. If you wish to learn whether your sale date has been postponed, and, if applicable, the rescheduled time and date for the sale of this property, you may call In Source Logic at 702-659-7766 for information regarding the Trustee's Sale or visit the Internet Website www.insourcelogic.com for information regarding the sale of this property, using the file number assigned to this case, CA07000224-21-1. Information about postponements that are very short in duration or that occur close in time to the scheduled sale may not immediately be reflected in the telephone information or on the Internet Website. The best way to verify postponement information is to attend the scheduled sale. Notice to Tenant NOTICE TO TENANT FOR FORECLOSURE AFTER JANUARY 1, 2021 You may have a right to purchase this property after the trustee auction pursuant to Section 2924m of the California Civil Code. If you are an "eligible tenant buyer," you can purchase the property if you match the last and highest bid placed at the trustee auction. If you are an "eligible bidder," you may be able to purchase the property if you exceed the last and highest bid placed at the trustee auction. There are three steps to exercising this right of purchase. First, 48 hours after the date of the trustee sale, you can call 702-659-7766, or visit this internet website www.insourcelogic.com, using the file number assigned to this case (CA07000224-21-1) to find the date on which the trustee's sale was held, the amount of the last and highest bid, and the address of the trustee. Second, you must send a written notice of intent to place a bid so that the trustee receives it no more than 15 days after the trustee's sale. Third, you must submit a bid so that the trustee receives it no more than 45 days after the trustee's sale. If you think you may qualify as an "eligible tenant buyer" or "eligible bidder," you should consider contacting an attorney or appropriate real estate professional immediately for advice regarding this potential right to purchase. Date: December 21, 2021 MTC Financial Inc., dba Trustee Corps TS No. CA07000224-21-1 17100 Gillette Ave Irvine, CA 92614 Phone: 949-252-8300 TDD: 866-660-4288 Amy Lemus, Author-ized Signatory SALE INFORMATION CAN BE OBTAINED ON LINE AT: www.insourcelogic.com FOR AUTOMATED SALES IN-FORMATION PLEASE CALL: In Source Logic At 702-659-7766 Trustee as a debt collector attempting to collect a debt. Any information obtained may be used for that purpose. Order Number 79188, Pub Dates: 12/31/2021, 1/7/2022, 1/14/2022, LA MIRADA LAMPLIGHTER

NOTICE OF PETITION TO ADMINISTER ESTATE OF: HERNANDO M. MAGALLANES CASE NO. 21STPB199 To all heirs, beneficiaries, creditors, contingent creditors, and persons who may otherwise be interested in the WILL, or estate, or both of HERNANDO M. MAGALLANES. A PETITION FOR PROBATE has been filed by ANA LOURDES R. MAGALLANES in the Superior Court of California, County of LOS ANGELES. THE PETITION FOR PROBATE requests that ANA LOURDES R. MAGALLANES be appointed as Special Administrator to administer the estate of the decedent. A HEARING on the petition will be held in this case as follows: 01/02/22 at 8:30AM in Dept. 29 located at 111 N. GILLETTE ST., LOS ANGELES, CA 90012 IF YOU OBJECT to the granting of the petition, you should appear at the hearing and state your objections or file written objections with the court before the hearing. Your appearance may be in person or by attorney. IF YOU ARE A CREDITOR or a contingent creditor, you must file your claim with the court and mail a copy to the personal representative appointed by the court within the later of either (1) four months from the date of first issuance of letters to a general personal representative, as defined in section 58(b) of the California Probate Code, or (2) 60 days from the date of mailing or personal delivery to you of a notice under section 9052 of the California Probate Code. Other California statutes and legal authority may affect your rights as a creditor. You may want to consult with an attorney knowledgeable in California law. YOU MAY EXAMINE the file kept by the court. If you are a person interested in the estate, you may file with the court a Request for Special Notice (form DE-154) of the filing of an inventory and appraisal of estate assets or of any petition or account as provided in Probate Code section 1250. A Request for Special Notice form is available from the court clerk. Attorney for Petitioner: EUGENE A. GLEASON III - SBN 096415 GLEASON LAW OFFICES 15651 E. IMPERIAL HWY., SUITE 202A LA MIRADA CA 90638 12/31/21, 1/7, 1/14/22 CNS-354217# LA MIRADA LAMPLIGHTER

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the Cerritos City Council will conduct a public hearing on **Thursday, January 13, 2022 at 7:00 p.m.** on the following matter: **Review and consideration to waive full reading of and adopt a RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CERRITOS ADOPTING THE 2020 URBAN WATER MANAGEMENT PLAN AND WATER SHORTAGE CONTINGENCY PLAN PURSUANT TO CALIFORNIA WATER CODE SECTIONS 10610 THROUGH 10657.** This public hearing will be conducted in-person in the Cerritos City Council Chamber, 18125 Bloomfield Avenue, Cerritos, California, 90703. To protect public health and safety during the COVID-19 pandemic and in compliance with the current Los Angeles County Health Officer Order and City of Cerritos COVID-19 Safety Plan, the City Council Chamber will be open to the public. As authorized by State of California Executive Orders N-25-20, N-29-20, and N-08-21, and subsequently by Assembly Bill 361 (Chapter 165, Statutes of 2021), this meeting may also be conducted via teleconference, if necessary. The meeting will also air live on Cerritos TV3 and will be streamed over the City of Cerritos website at [www.cerritos.us](http://www.cerritos.us). A copy of the related agenda report will be available for download from the website on the Friday prior to the public hearing. Public comments can be provided in-person at the meeting or via email to [city\\_clerk@cerritos.us](mailto:city_clerk@cerritos.us) or by hard copy to the Office of the City Clerk no later than 3:00 p.m. on the day of the meeting. Please identify the agenda item number in the subject line of the email or hard copy document. All written correspondence received by the 3:00 p.m. deadline will be distributed to the legislative body prior to the meeting. During the meeting, your name and summary comments will be read into the record. The document will be retained with the public record of the meeting. If you challenge the above mentioned item and related actions in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence emailed to the Office of the prior to the public hearing. Any person interested in this matter may contact the Office of the City Clerk at (562) 916-1248 for additional information and/or appear at the hearing in person or by agent and be heard. Dated: December 31, 2021 and January 7, 2022. /s/Vida Barone, City Clerk

Published at Los Cerritos Community News 12/31/21

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CITY OF LA MIRADA

NOTICE IS HEREBY GIVEN of a public hearing to be held by the Planning Commission of the City of La Mirada on **Thursday, January 20, 2022 at 6:30 p.m.** in the City Hall Council Chambers located at 13700 La Mirada Boulevard, La Mirada, California to consider the following:

**ZONING ORDINANCE AMENDMENT (ZOA) NO. 52: THE CITY OF LA MIRADA PLANNING COMMISSION WILL CONSIDER A RESOLUTION RECOMMENDING TO THE CITY COUNCIL THE ADOPTION OF AN ORDINANCE ESTABLISHING STANDARDS FOR THE INSTALLATION OF "ELECTRONIC BILLBOARDS" WITHIN THE FREEWAY COMMERCIAL (C-F) ZONING DISTRICT AND AMENDING TITLE 21 OF THE LA MIRADA MUNICIPAL CODE**

At the hearing, the Planning Commission will consider staff's report and recommendation as well as all testimony and public input prior to making a final decision. The documents being considered are available for review at the City's Economic Development Division office located at City Hall, 13700 La Mirada Boulevard, La Mirada, California. You may contact the Economic Development Division at (562) 943-0131 should you have any questions concerning the project. Final action by the City Council will occur at a subsequent public hearing that will be duly noticed.

If you wish to be heard concerning an item identified in this Notice, you may appear in person at the public hearing or you may submit your comments in writing to the City prior to or at the public hearing. Mailed comments should be addressed to the City of La Mirada, Economic Development Division, 13700 La Mirada Boulevard, La Mirada, California, 90637.

Please notify the City Clerk's office at (562) 943-0131, extension 2306, at least four days prior to this hearing should you require a disability-related accommodation (e.g. sign language interpreter).

**IF YOU CHALLENGE ANY OF THE FOREGOING ACTIONS IN COURT, YOU MAY BE LIMITED TO RAISING ONLY THOSE ISSUES YOU OR SOMEONE ELSE RAISED AT THE PUBLIC HEARING FOR FINAL ACTION DESCRIBED IN THIS NOTICE, OR IN WRITTEN CORRESPONDENCE DELIVERED TO THE PLANNING COMMISSION AT OR PRIOR TO THE PUBLIC HEARING.**

Alison Moore  
Economic Development Manager

Published at La Mirada Lamplighter Newspaper 12/31/21

NOTICE OF TRUSTEE'S SALE T.S. No.: 2021-01347 Loan No.: SLS-022421 APN: 7050-013-038 NOTE: THERE IS A SUMMARY OF THE INFORMATION IN THIS DOCUMENT ATTACHED YOU ARE IN DEFAULT UNDER A DEED OF TRUST DATED 12/12/2020. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDING AGAINST YOU, YOU SHOULD CONTACT A LAWYER. A public action sale to the highest bidder for cash, cashier's check drawn on a state or national bank, check drawn by a state or federal credit union, or a check drawn by a state or federal savings and loan association, or savings account, or savings bank specified in Section 5102 of the Financial Code and authorized to do business in this state will be held by the duly appointed trustee as shown below, of all right, title, and interest conveyed to and now held by the trustee in the hereinafter described property under and pursuant to a Deed of Trust described below. The sale will be made, but without covenant or warranty, expressed or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the note(s) secured by the Deed of Trust, with interest and late charges thereon, as provided in the note(s), advances, under the terms of the Deed of Trust, interest thereon, fees, charges and expenses of the Trustee for the total amount (at the time of the initial publication of the Notice of Sale) reasonably estimated to be set forth below. The amount may be greater on the day of sale. SUPERIOR TAE KYONG KANG AND MOO SYON KANG, HUSBAND AND WIFE AS JOINT TENANTS Duly Appointed Trustee: SUPERIOR LOAN SERVICING Recorded 12/11/2020 as Instrument No. 20201630977 in book , page of Official Records in the office of the Recorder of Los Angeles County, California, Date of Sale: 1/21/2022 at 11:00 AM Place of Sale: By the fountain located at 400 Civic Center Plaza, Pomona, CA 91766 Amount of unpaid balance and other charges: \$619,148.01 Street Address or other common designation of real property: 11441 Gonsalves Street Cerritos, CA 90703 A.P.N.: 7050-013-038 "As Is Where Is" The undersigned Trustee disclaims any liability for any inaccuracy of the street address or other common designation, if any, shown above. If no street address or other common designation is shown, directions to the location of the property may be obtained by sending a written request to the beneficiary within 10 days of the date of first publication of this Notice of Sale. NOTICE TO POTENTIAL BIDDERS: If you are considering bidding on this property, you should understand that there are risks involved in bidding at a trustee auction. You will be bidding on a lien, not on the property itself. Placing the highest bid at a trustee auction does not automatically entitle you to free and clear ownership of the property. You should also be aware that the lien being auctioned off may be a junior lien. If you are the highest bidder at the auction, you are or may be responsible for paying off all liens senior to the lien being auctioned off, before you can receive clear title to the property. You are encouraged to investigate the existence, priority, and size of outstanding liens that may exist on this property by contacting the county recorder's office or a title insurance company, either of which may charge you a fee for this information. If you consult either of these resources, you should be aware that the same lender may hold more than one mortgage or deed of trust on the property. NOTICE TO PROPERTY OWNER: The sale date shown on this notice of sale may be postponed one or more times by the mortgagee, beneficiary, trustee, or a court, pursuant to Section 2924g of the California Civil Code. The law requires that information about trustee sale postponements be made available to you and to the public, as a courtesy to those not present at the sale. If you wish to learn whether your sale date has been postponed, and, if applicable, the rescheduled time and date for the sale of this property, you may call (714) 730-2727 or visit this Internet Web site [www.servicelinkASAP.com](http://www.servicelinkASAP.com), using the file number assigned to this case 2021-01347. Information about postponements that are very short in duration or that occur close in time to the scheduled sale may not immediately be reflected in the telephone information or on the Internet Web site. The best way to verify postponement information is to attend the scheduled sale. NOTICE TO TENANT: You may have a right to purchase this property after the trustee auction pursuant to Section 2924m of the California Civil Code. If you are an "eligible tenant buyer," you can purchase the property if you match the last and highest bid placed at the trustee auction. If you are an "eligible bidder," you may be able to purchase the property if you exceed the last and highest bid placed at the trustee auction. There are three steps to exercising this right of purchase. First, 48 hours after the date of the trustee sale, you can call (714) 730-2727, or visit this internet website [www.servicelinkASAP.com](http://www.servicelinkASAP.com), using the file number assigned to this case 2021-01347 to find the date on which the trustee's sale was held, the amount of the last and highest bid, and the address of the trustee. Second, you must send a written notice of intent to place a bid so that the trustee receives it no more than 15 days after the trustee's sale. Third, you must submit a bid so that the trustee receives it no more than 45 days after the trustee's sale. If you think you may qualify as an "eligible tenant buyer" or "eligible bidder," you should consider contacting an attorney or appropriate real estate professional immediately for advice regarding this potential right to purchase. Date: 12/23/2021 SUPERIOR LOAN SERVICING, BY ASSET DEFAULT MANAGEMENT, INC., AS AGENT FOR TRUSTEE 7525 Topanga Canyon Blvd. Canoga Park, California 91303 Sale Line: (714) 730-2727 Julie Taberdo, Sr. Trustee Sale Officer A-4739401 12/31/2021, 01/07/2022, 01/14/2022

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the Cerritos Planning Commission will conduct a public hearing at a special meeting on **Wednesday, January 12, 2022 at 7:00 p.m.** on the following matter: **Review and consideration to waive full reading of and adopt a RESOLUTION OF THE CERRITOS PLANNING COMMISSION RECOMMENDING THAT THE CERRITOS CITY COUNCIL ADOPT THE CITY OF CERRITOS 2021-2029 HOUSING ELEMENT OF THE CERRITOS GENERAL PLAN AND APPROVE AND CERTIFY THE ASSOCIATED NEGATIVE DECLARATION PREPARED IN ACCORDANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) IN SUPPORT OF THE 2021-2029 HOUSING ELEMENT.** This public hearing will be conducted in-person in the Cerritos City Council Chamber, 18125 Bloomfield Avenue, Cerritos, California, 90703. To protect public health and safety during the COVID-19 pandemic and in compliance with the current State Department of Public Health and Los Angeles County Health Officer Orders, and City of Cerritos COVID-19 Safety Plan, the City Council Chamber will be open to the public. As authorized by State of California Executive Orders N-25-20, N-29-20, and N-08-21, and subsequently by Assembly Bill 361 (Chapter 165, Statutes of 2021), this meeting may also be conducted via teleconference, if necessary. The meeting will also air live on Cerritos TV3 and will be streamed over the City of Cerritos website at [www.cerritos.us](http://www.cerritos.us). A copy of the related staff report will be available for download from the website on the Friday prior to the public hearing. Written correspondence (hard copy or email): Public comments can be submitted via email to [planning@cerritos.us](mailto:planning@cerritos.us) or by hard copy to the Community Development Department no later than 3:00 p.m. on the day of the meeting. Please identify the agenda item number in the subject line of the email or hard copy document. All written correspondence received by the 3:00 p.m. deadline will be distributed to the Commission prior to the meeting. During the meeting, your name and summary comments will be read into the record. The document will be retained with the public record of the meeting. If you challenge the above mentioned item and related actions in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence emailed to the Department of Community Development prior to the public hearing. Any person interested in this matter may contact the Department of Community Development at (562) 916-1201 for additional information and/or participate in the public hearing. Dated: December 31, 2021. /s/Kristin Aguilu, Secretary to the Cerritos Planning Commission.

Published at Los Cerritos Community News 12/31/21



**CITY OF COMMERCE  
NOTICE OF PUBLIC HEARING  
COMMERCIAL CANNABIS PERMIT APPLICATION  
AMENDED AND RESTATED DEVELOPMENT AGREEMENT NO. 7#**

Pursuant to California Government Code §§ 65867, 65090, and 6061, **NOTICE IS HEREBY GIVEN OF A PUBLIC HEARING** to be held on January 19, 2022 before the Planning Commission of the City of Commerce for the consideration of an Ordinance Approving an Amended and Restated Development Agreement to replace **Development Agreement No. 724** [Commercial Cannabis Permit] for Commercial Cannabis Activities.

**Project Description:** Development Agreement No. 724 allows for Cultivation and Manufacturing of commercial cannabis products at 2939 S. Vail Ave, CA 90040. The amended and restated Development Agreement would include a square footage reconfiguration and technical corrections. A copy of the proposed amended and restated Development Agreement with all proposed amendments will be available on the City's website and with the City Clerk's Office.

**Environmental Determination:** The request for an Amended and Restated Development Agreement has been determined to be exempt from environmental review pursuant to the guidelines of the California Environmental Quality Act (Pub. Res. Code, § 21080, subd. (b)(9); Cal. Code Regs., tit. 14, Ch. 3, § 15301 [Class 1, "Existing Facilities"]). This section specifically applies to small additions, expansions, or alterations to existing structures where there is negligible or no expansion of the use. In this case, the request includes a request to establish an Amended and Restated Development Agreement.

**SPECIAL MEETING OF THE PLANNING COMMISSION**

**SAID PUBLIC HEARING MEETING:** A virtual meeting will be held via Teleconference during a Special Planning Commission hearing on Wednesday, January 19, 2022 at 6:30 p.m., at which time proponents and opponents of the Amended and Restated Development Agreement to replace Development Agreement No. 724 will be heard. Instructions for Teleconference access are provided below:

**Call in phone number: (669) 900-9128  
Meeting ID: 936 8760 5928  
Password: 838914**

Per Government Code Section 65009, if you challenge this amended and restated development agreement in court, you may be limited to raising only those issues you or someone else raised at the hearing described in this notice, or in written correspondence delivered to the Planning Commission at, or prior to, the hearing.

Pursuant to Executive Order N-29-20, please be advised that members of the Commerce City Planning Commission will participate in meetings telephonically and/or via the internet. Said meeting will be held in accordance with the Ralph M. Brown Act and AB 361, which allows a local legislative body to hold public meetings via teleconferencing and to make public meetings accessible telephonically or otherwise electronically to all members of the public seeking to observe and to address the local legislative body, provided the legislative body adopts a resolution making certain findings. On December 7, 2021, the City Council adopted a resolution making the required findings to continue holding remote public meetings.

Further, in the interest of maintaining appropriate social distancing, and restricting gatherings of over ten (10) people, due to the health risks associated with COVID-19 pursuant to Federal, State and County orders, directives and/or guidelines, this meeting will be telephonically accessible to the public. Members of the public may participate by calling in to the number provided herein.

City Manager  
Edgar Cisneros

Published at Los Cerritos Community News 1/7/2022

**NOTICE OF PUBLIC HEARING**

**NOTICE IS HEREBY GIVEN** that the **Cerritos City Council** will conduct a public hearing on **Thursday, January 13, 2022 at 7:00 p.m.** on the following matter: **Review and consideration to waive full reading of and adopt A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CERRITOS ADOPTING THE 2020 URBAN WATER MANAGEMENT PLAN AND WATER SHORTAGE CONTINGENCY PLAN PURSUANT TO CALIFORNIA WATER CODE SECTIONS 10610 THROUGH 10657.** This public hearing will be conducted in-person in the Cerritos City Council Chamber, 18125 Bloomfield Avenue, Cerritos, California, 90703. To protect public health and safety during the COVID-19 pandemic and in compliance with the current Los Angeles County Health Officer Order and City of Cerritos COVID-19 Safety Plan, the City Council Chamber will be open to the public. As authorized by State of California Executive Orders N-25-20, N-29-20, and N-08-21, and subsequently by Assembly Bill 361 (Chapter 165, Statutes of 2021), this meeting may also be conducted via teleconference, if necessary. The meeting will also air live on Cerritos TV3 and will be streamed over the City of Cerritos website at [www.cerritos.us](http://www.cerritos.us). A copy of the related agenda report will be available for download from the website on the Friday prior to the public hearing. Public comments can be provided in-person at the meeting or via email to [city\\_clerk@cerritos.us](mailto:city_clerk@cerritos.us) or by hard copy to the Office of the City Clerk no later than 3:00 p.m. on the day of the meeting. Please identify the agenda item number in the subject line of the email or hard copy document. All written correspondence received by the 3:00 p.m. deadline will be distributed to the legislative body prior to the meeting. During the meeting, your name and summary comments will be read into the record. The document will be retained with the public record of the meeting. If you challenge the above mentioned item and related actions in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence emailed to the Office of the prior to the public hearing. Any person interested in this matter may contact the Office of the City Clerk at (562) 916-1248 for additional information and/or appear at the hearing in person or by agent and be heard. Dated: December 31, 2021 and January 7, 2022. /s/Vida Barone, City Clerk

Published at Los Cerritos Community News 1/7/2022

**Financial Analyst**

Toolots Inc. seeks a Financial Analyst in Cerritos, CA; to analyze & prepare accounting, financial & product offering info, dev. & maintain internal financial info systems, etc. Min reqs incl Master's degree in Finance or related w/18-month work exp. as Financial Analyst or related involving financial reporting, financial budgeting & forecasting, financial modeling & invoicing using QuickBooks. Proficiency in Excel, including VBA/macro, Solver, multi-criteria VLOOKUP, Index and Match functions.

**Email resume  
w/ job #121 to  
aquezada@toolots.com.**

**ASSOCIATE ATTORNEY  
(Cerritos, CA)**

Prfrm legal rsrch, draft & analyze legal docs, appear in court, & advise on legal matters. JD deg; Licensed to practice law in CA and/or NY; 1 year of legal work exp involving legal rsrch & preparation of legal docs; Familiarity w/ CA rules of evidence & court procedure; Excellent legal rsrch & problem-solving skills

**Send resume to:  
ralph@tsonglaw.com or  
Tsong Law Group,  
A Professional  
Corporation,  
c/o Ralph Tsong  
19112 Gridley Rd, Ste.211,  
Cerritos, CA 90703**

**CITY OF COMMERCE  
NOTICE OF PUBLIC HEARING**

**6364 Zindell Street (Veterans Park) and 7316 E. Gage Avenue  
Specific Plan No. 21-01, Zone Change 21-01, General Plan Amendment 21-01, Site Plan Approval, Master Sign Plan, Vesting Tentative Tract Map No. 83334, Development Agreement, and Consideration of an EIR (SCH# 2019080312)**

**NOTICE IS HEREBY GIVEN OF A SPECIAL PUBLIC HEARING** to be held on Wednesday, January 19, 2022, before the Planning Commission of the City of Commerce to consider the proposed Modelo Project (hereinafter referred to as the "Project").

**Project Description:** The proposed Project involves the demolition of the existing Veterans Memorial Park located at 6364 Zindell Street, and an adjacent vacant parcel at 7316 E. Gage Avenue (collectively, the "Project Site"), and the redevelopment of the Project Site to accommodate a mixed-use residential development. The proposed Project would include the construction of up to 850 residential units, up to 165,000 square feet of commercial uses, a new public community center and museum, and approximately five acres of park and open space. Additionally, due to the previous use of the Project Site as a landfill, the Project would include the remediation of the entire Project Site to allow for safe implementation of the Project, consisting of excavation of the impacted soil pursuant to a Remedial Action Plan overseen by the Los Angeles Regional Water Quality Control Board. As part of its action, the Planning Commission will consider the following requests: A Development Agreement; General Plan Amendment (to change the land use designation from Public Facilities and Commercial Manufacturing to Public Open Space, Commercial Retail, and Residential with the corresponding Specific Plan zone); An associated Zone Change and Zoning Map amendment to reflect the new Specific Plan zoning for the Project site; A Specific Plan to establish the uses and development standards for the Project Site, a Project Master Signage Plan; a Vesting Tentative Tract Map; a Site Plan per the City's Municipal Code § 19.39.680; and the Environmental Impact Report ("EIR") prepared pursuant to the California Environmental Quality Act, Public Resources Code Sections 21000, et seq. and the Guidelines set forth in the California Code of Regulations, Title 14, Sections 15000, et seq. ("CEQA").

**Environmental Determination:** Consistent with State CEQA Guidelines §15087, a Notice of Availability of the Draft EIR was sent to agencies and interested parties on July 16, 2020, and the Draft EIR was circulated for a 45-day public review period from July 16, 2020 to August 31, 2020. Additionally, in accordance with the Safer at Home Orders by the State of California and the County of Los Angeles, the City hosted a public meeting on the Project Site on August 1, 2020, at Veterans Memorial Park. The City received 19 comment letters on the Draft EIR during the 2020 public review period. The City has prepared responses to all comments received consistent with State CEQA Guidelines §15088. The Final EIR consists of the Draft EIR, comments received on the Draft EIR, a list of commenters, the City's responses to comments, the clarification and errata for the Draft EIR, appendices, and all other information required by the CEQA Guidelines § 15132. A Mitigation Monitoring and Reporting Program was prepared and will be considered by the Planning Commission.

**SPECIAL MEETING OF THE PLANNING COMMISSION**

**SAID SPECIAL PUBLIC HEARING MEETING:** A virtual meeting will be held via Teleconference for the Planning Commission on **Wednesday, January 19, 2022 at 6:30 p.m.**, at which time members of the public who wish to speak on the proposed Project will be heard. (See Back of this page)

Instructions for Teleconference access are provided below:

**Call in phone number: (669) 900-9128  
Meeting ID: 936 8760 5928  
Password: 838914**

Per Government Code Section 65009, if you challenge this amended and restated development agreement in court, you may be limited to raising only those issues you or someone else raised at the hearing described in this notice, or in written correspondence delivered to the Planning Commission at, or prior to, the hearing.

Pursuant to Executive Order N-29-20, please be advised that members of the Commerce City Planning Commission will participate in meetings telephonically and/or via the internet. Said meeting will be held in accordance with the Ralph M. Brown Act and AB 361, which allows a local legislative body to hold public meetings via teleconferencing and to make public meetings accessible telephonically or otherwise electronically to all members of the public seeking to observe and to address the local legislative body, provided the legislative body adopts a resolution making certain findings. On October 5, 2021, the City Council adopted a resolution making the required findings to continue holding remote public meetings.

Further, in the interest of maintaining appropriate social distancing, and restricting gatherings of over ten (10) people, due to the health risks associated with COVID-19 pursuant to Federal, State and County orders, directives and/or guidelines, this meeting will be telephonically accessible to the public. Members of the public may participate by calling in to the number provided herein.

Jose D. Jimenez, Director of Economic Development and Planning

Published at Los Cerritos Community News 1/7/2022

APN: 8064-029-007 TS No: CA07000246-21-1 TO No: 21050228-CA-VOI NOTICE OF TRUSTEE'S SALE (The above statement is made pursuant to CA Civil Code Section 2923.3(d)(1). The Summary will be provided to Trustor(s) and/or vested owner(s) only, pursuant to CA Civil Code Section 2923.3(d)(2) YOU ARE IN DEFAULT UNDER A DEED OF TRUST DATED August 26, 2013. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDINGS AGAINST YOU, YOU SHOULD CONTACT A LAWYER. On February 22, 2022 at 10:00 AM, behind the fountain located in the Civic Center Plaza, 400 Civic Center Plaza, Pomona CA 91766, MTC Financial Inc. dba Trustee Corps, as the duly appointed Trustee, under and pursuant to the power of sale contained in that certain Deed of Trust recorded on September 4, 2013 as Instrument No. 20131291074, of official records in the Office of the Recorder of Los Angeles County, California, executed by ORALIA NEGRETE, A WIDOW, as Trustor(s), in favor of MORTGAGE ELECTRONIC REGISTRATION SYSTEMS, INC., as Beneficiary, as nominee for URBAN FINANCIAL GROUP INC. as Beneficiary, WILL SELL AT PUBLIC AUCTION TO THE HIGHEST BIDDER, in lawful money of the United States, all payable at the time of sale, that certain property situated in said County, California describing the land therein as: AS MORE FULLY DESCRIBED IN SAID DEED OF TRUST The property heretofore described is being sold "as is". The street address and other common designation, if any, of the real property described above is purported to be: 6364 ZINDELL STREET, LA MIRADA, CA 90638. The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. Said sale will be made without covenant or warranty, express or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the Note(s) secured by said Deed of Trust, with interest thereon, as provided in said Note(s), advances if any, under the terms of the Deed of Trust, estimated fees, charges and expenses of the Trustee and of the trustee created by said Deed of Trust. The total amount of the unpaid balance of the obligations secured by the property to be sold and reasonable estimated costs, expenses and advances at the time of the initial publication of this Notice of Trustee's Sale is estimated to be \$446,207.45 (Estimated). However, prepayment premiums, accrued interest and advances will increase this figure prior to sale. Beneficiary's bid at said sale may include all or part of said amount. In addition to cash, the Trustee will accept a cashier's check drawn on a state or national bank, a check drawn by a state or federal credit union or a check drawn by a state or federal savings and loan association, savings association or savings bank specified in Section 5102 of the California Financial Code and authorized to do business in California, or other such funds as may be acceptable to the Trustee. In the event tender other than cash is accepted, the Trustee may withhold the issuance of the Trustee's Deed Upon Sale until funds become available to the payee or endorsee as a matter of right. The property offered for sale excludes all funds held on account by the property receiver, if applicable. If the Trustee is unable to convey title for any reason, the successful bidder's sole and exclusive remedy shall be the return of monies paid to the Trustee and the successful bidder shall have no further recourse. Notice to Potential Bidders: If you are considering bidding on this property, you should understand that there are risks involved in bidding at a Trustee auction. You will be bidding on a lien, not the property itself. Placing the highest bid at a Trustee auction does not automatically entitle you to free and clear ownership of the property. You should also be aware that the lien being auctioned off may be a junior lien. If you are the highest bidder at the auction, you are or may be responsible for paying off all liens senior to the lien being auctioned off, before you can receive clear title to the property. You are encouraged to investigate the existence, priority, and size of outstanding liens that may exist on this property by contacting the county recorder's office or a title insurance company, either of which may charge you a fee for this information. If you consult either of these resources, you should be aware that the same Lender may hold more than one mortgage or Deed of Trust on the property. Notice to Property Owner: The sale date shown on this Notice of Sale may be postponed one or more times by the Mortgagee, Beneficiary, Trustee, or a court, pursuant to Section 2924g of the California Civil Code. The law requires that information about Trustee sale postponements be made available to you and to the public, as a courtesy to those not present at the sale. If you wish to learn whether your sale date has been postponed, and, if applicable, the rescheduled time and date for the sale of this property, you may call In Source Logic at 702-659-7766 for information regarding the Trustee's Sale or visit the Internet Website [www.insourcelogic.com](http://www.insourcelogic.com) for information regarding the sale of this property, using the file number assigned to this case, CA07000246-21-1. Information about postponements that are very short in duration or that occur close in time to the scheduled sale may not immediately be reflected in the telephone information or on the Internet Website. The best way to verify postponement information is to attend the scheduled sale. Notice to Tenant FOR FORTIPLICIERS AFTER JANUARY 1, 2021 You may have a right to purchase this property after the trustee auction pursuant to Section 2924a of the California Civil Code. If you are an "eligible tenant buyer," you can purchase the property if you match the last and highest bid placed at the trustee auction. If you are an "eligible bidder," you may be able to purchase the property if you exceed the last and highest bid placed at the trustee auction. There are three steps to exercising this right of purchase. First, 48 hours after the date of the trustee sale, you can call 702-659-7766, or visit this internet website [www.insourcelogic.com](http://www.insourcelogic.com), using the file number assigned to this case CA07000246-21-1 to find the date on which the trustee's sale was held, the amount of the last and highest bid, and the address of the trustee. Second, you must send a written notice of intent to place a bid so that the trustee receives it no more than 15 days after the trustee's sale. Third, you must submit a bid so that the trustee receives it no more than 45 days after the trustee's sale. If you think you may qualify as an "eligible tenant buyer" or "eligible bidder," you should consider contacting an attorney or appropriate real estate professional immediately for advice regarding this potential right of purchase. Date: December 21, 2021 MTC Financial Inc. dba Trustee Corps TS No: CA07000246-21-1 17100 Gillette Ave Irvine, CA 92614 Phone: 949-252-8300 TDD: 866-660-4288 Any Lendum, Authorized Signatory SALE INFORMATION CAN BE OBTAINED ON LINE AT [www.insourcelogic.com](http://www.insourcelogic.com) FOR AUTOMATED SALES INFORMATION PLEASE CALL: In Source Logic AT 702-659-7766 Trustee Corps may be acting as a debt collector attempting to collect a debt. Any information obtained may be used for that purpose. Order Number 79181, Pub Dates: 12/31/2021, 1/7/2022, 1/14/2022, LA MIRADA LAMPLIGHTER

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX E**

**AWWA WATER LOSS AUDIT REPORTS**



# AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0  
American Water Works Association  
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? Click to access definition  
+ Click to add a comment

Water Audit Report for: **CITY OF CERRITOS (1910019)**  
Reporting Year: **2016**    1/2016 - 12/2016

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

**All volumes to be entered as: ACRE-FEET PER YEAR**

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

### WATER SUPPLIED

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+ ? 8	7,531.000	acre-ft/yr
Water imported:	+ ? 7	313.500	acre-ft/yr
Water exported:	+ ? 2	799.000	acre-ft/yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	
+ ? 2	<input type="text" value="-135.950"/>	acre-ft/yr
+ ? 2	<input type="text" value=""/>	acre-ft/yr
+ ? 2	<input type="text" value=""/>	acre-ft/yr

Enter negative % or value for under-registration  
Enter positive % or value for over-registration

**WATER SUPPLIED:** **7,181.450** acre-ft/yr

### AUTHORIZED CONSUMPTION

Billed metered:	+ ? 5	6,760.020	acre-ft/yr
Billed unmetered:	+ ? n/a	0.000	acre-ft/yr
Unbilled metered:	+ ? n/a	0.000	acre-ft/yr
Unbilled unmetered:	+ ? 3	1.000	acre-ft/yr

**AUTHORIZED CONSUMPTION:** **6,761.020** acre-ft/yr

Click here: ?  
for help using option buttons below

Pcnt:	Value:	
<input type="text" value=""/>	<input type="text" value=""/>	acre-ft/yr

Use buttons to select percentage of water supplied OR value

Pcnt:	Value:	
<input type="text" value="0.25%"/>	<input type="text" value=""/>	acre-ft/yr

<input type="text" value="1.00%"/>	<input type="text" value=""/>	acre-ft/yr
<input type="text" value="0.25%"/>	<input type="text" value=""/>	acre-ft/yr

### WATER LOSSES (Water Supplied - Authorized Consumption)

**420.430** acre-ft/yr

#### Apparent Losses

Unauthorized consumption: + ? **17.954** acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+ ? 2	68.283	acre-ft/yr
Systematic data handling errors:	+ ?	16.900	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

**Apparent Losses:** **103.137** acre-ft/yr

#### Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? **317.293** acre-ft/yr

**WATER LOSSES:** **420.430** acre-ft/yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **421.430** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ? 7	186.4	miles
Number of <u>active AND inactive</u> service connections:	+ ? 7	15,577	
Service connection density:	?	84	conn./mile main

Are customer meters typically located at the curbside or property line?

Average length of customer service line: + ? (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: + ? 5  psi

### COST DATA

Total annual cost of operating water system:	+ ? 10	\$8,984,490	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ? 9	\$1.92	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+ ? 5	\$442.45	\$/acre-ft

Use Customer Retail Unit Cost to value real

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 64 out of 100 \*\*\*

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

### PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

- 1: Customer metering inaccuracies
- 2: Volume from own sources
- 3: Billed metered



# AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0  
American Water Works Association  
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?	Click to access definition
+	Click to add a comment

Water Audit Report for: **City of Cerritos (1910019)**  
 Reporting Year: **2017**      1/2017 - 12/2017

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

**All volumes to be entered as: ACRE-FEET PER YEAR**

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

### WATER SUPPLIED

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+	?	7	8,237.567	acre-ft/yr
Water imported:	+	?	n/a	0.000	acre-ft/yr
Water exported:	+	?	3	877.510	acre-ft/yr

### Master Meter and Supply Error Adjustments

Pcnt:	+	?	4	-2.00%	acre-ft/yr
Value:	+	?	4		acre-ft/yr
	+	?	4		acre-ft/yr

Enter negative % or value for under-registration  
 Enter positive % or value for over-registration

**WATER SUPPLIED:** 7,528.171 acre-ft/yr

### AUTHORIZED CONSUMPTION

Billed metered:	+	?	6	6,697.952	acre-ft/yr
Billed unmetered:	+	?	n/a	0.000	acre-ft/yr
Unbilled metered:	+	?	n/a	0.000	acre-ft/yr
Unbilled unmetered:	+	?	5	94.102	acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

**AUTHORIZED CONSUMPTION:** 6,792.054 acre-ft/yr

Click here: ?  
for help using option buttons below

Pcnt:	+	?	1	1.25%	acre-ft/yr
Value:	+	?	1		acre-ft/yr

Use buttons to select percentage of water supplied  
OR value

### WATER LOSSES (Water Supplied - Authorized Consumption)

736.116 acre-ft/yr

### Apparent Losses

Unauthorized consumption: 18.820 acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+	?	2	136.693	acre-ft/yr
Systematic data handling errors:	+	?	5	16.745	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

**Apparent Losses:** 172.258 acre-ft/yr

Pcnt:	+	?	2	0.25%	acre-ft/yr
Value:	+	?	2		acre-ft/yr

Pcnt:	+	?	3	2.00%	acre-ft/yr
Value:	+	?	3		acre-ft/yr

### Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 563.858 acre-ft/yr

**WATER LOSSES:** 736.116 acre-ft/yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** 830.219 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+	?	7	186.4	miles
Number of <u>active AND inactive</u> service connections:	+	?	8	15,333	
Service connection density:	?	?	82	82	conn./mile main

Are customer meters typically located at the curbside or property line? Yes

Average length of customer service line: + ?

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: + ? 5 82.5 psi

(length of service line, beyond the property boundary, that is the responsibility of the utility)

### COST DATA

Total annual cost of operating water system:	+	?	10	\$8,595,240	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?	9	\$1.97	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+	?	5	\$429.18	\$/acre-ft

Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 63 out of 100 \*\*\*

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

### PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Customer metering inaccuracies

3: Billed metered



# AWWA Free Water Audit Software: Reporting Worksheet

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Water Audit Report for: **City of Cerritos (1910019)**  
Reporting Year: **2018** | 1/2018 - 12/2018

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

**All volumes to be entered as: ACRE-FEET PER YEAR**

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

### WATER SUPPLIED

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+ ? 7	8,382.470	acre-ft/yr
Water imported:	+ ? n/a	0.000	acre-ft/yr
Water exported:	+ ? 3	782.420	acre-ft/yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	acre-ft/yr
+ ? 4	-1.50%	0.000
+ ? 4		0.000
+ ? 4		0.000

Enter negative % or value for under-registration  
Enter positive % or value for over-registration

**WATER SUPPLIED:** **7,727.702** acre-ft/yr

### AUTHORIZED CONSUMPTION

Billed metered:	+ ? 6	7,248.820	acre-ft/yr
Billed unmetered:	+ ? n/a	0.000	acre-ft/yr
Unbilled metered:	+ ? n/a	0.000	acre-ft/yr
Unbilled unmetered:	+ ? 8	20.000	acre-ft/yr

**AUTHORIZED CONSUMPTION:** **7,268.820** acre-ft/yr

Click here: ? for help using option buttons below

Pcnt:	Value:	acre-ft/yr
	20.000	0.000

Use buttons to select percentage of water supplied OR value

Pcnt:	Value:	acre-ft/yr
0.25%		0.000
3.40%		0.000
0.25%		0.000

### WATER LOSSES (Water Supplied - Authorized Consumption)

**458.882** acre-ft/yr

#### Apparent Losses

Unauthorized consumption: + ? **19.319** acre-ft/yr  
Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	+ ? 6	255.134	acre-ft/yr
Systematic data handling errors:	+ ?	18.122	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

**Apparent Losses:** **292.576** acre-ft/yr

#### Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? **166.306** acre-ft/yr

**WATER LOSSES:** **458.882** acre-ft/yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** ? **478.882** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains:	+ ? 7	186.4	miles
Number of active AND inactive service connections:	+ ? 8	16,004	
Service connection density:	? 86		conn./mile main

Are customer meters typically located at the curbside or property line?  (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ?  
Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: + ? 5 **82.5** psi

### COST DATA

Total annual cost of operating water system:	+ ? 10	\$8,878,986	\$/Year
Customer retail unit cost (applied to Apparent Losses):	+ ? 9	\$2.27	\$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+ ? 7	\$446.72	\$/acre-ft <input type="checkbox"/> Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 69 out of 100 \*\*\*

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

### PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

- 1: Volume from own sources
- 2: Billed metered
- 3: Customer metering inaccuracies



# AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0  
American Water Works Association  
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? Click to access definition  
+ Click to add a comment

Water Audit Report for: **City of Cerritos (1910019)**  
Reporting Year: **2019**    1/2019 - 12/2019

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

**All volumes to be entered as: ACRE-FEET PER YEAR**

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

### WATER SUPPLIED

----- Enter grading in column 'E' and 'J' ----->

Volume from own sources:	+ ? 9	8,073.420	acre-ft/yr
Water imported:	+ ? 9	79.120	acre-ft/yr
Water exported:	+ ? 3	1,235.090	acre-ft/yr

### Master Meter and Supply Error Adjustments

Pcnt:	Value:	
+ ? 4	-1.50%	acre-ft/yr
+ ? 4	-0.31%	acre-ft/yr
+ ? 4		acre-ft/yr

**WATER SUPPLIED:** **7,040.642** acre-ft/yr

Enter negative % or value for under-registration  
Enter positive % or value for over-registration

### AUTHORIZED CONSUMPTION

Billed metered:	+ ? 6	6,567.860	acre-ft/yr
Billed unmetered:	+ ? n/a	0.000	acre-ft/yr
Unbilled metered:	+ ? n/a	0.000	acre-ft/yr
Unbilled unmetered:	+ ? 8	12.890	acre-ft/yr

**AUTHORIZED CONSUMPTION:** **6,580.750** acre-ft/yr

Click here: ?  
for help using option buttons below

Pcnt: Value: 12.890 acre-ft/yr

Use buttons to select percentage of water supplied OR value

Pcnt: Value: 0.25% 2.90% 0.25% acre-ft/yr

### WATER LOSSES (Water Supplied - Authorized Consumption)

**459.892** acre-ft/yr

#### Apparent Losses

Unauthorized consumption: + ? 17.602 acre-ft/yr

**Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed**

Customer metering inaccuracies: + ? 7 196.156 acre-ft/yr

Systematic data handling errors: + ? 16.420 acre-ft/yr

**Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed**

**Apparent Losses:** **230.178** acre-ft/yr

#### Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? **229.714** acre-ft/yr

**WATER LOSSES:** **459.892** acre-ft/yr

### NON-REVENUE WATER

**NON-REVENUE WATER:** **472.782** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

### SYSTEM DATA

Length of mains: + ? 7 186.4 miles

Number of active AND inactive service connections: + ? 8 16,034

Service connection density: ? 86 conn./mile main

Are customer meters typically located at the curbside or property line? Yes (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line: + ? Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: + ? 5 84.0 psi

### COST DATA

Total annual cost of operating water system: + ? 10 \$8,878,986 \$/Year

Customer retail unit cost (applied to Apparent Losses): + ? 9 \$2.50 \$/100 cubic feet (ccf)

Variable production cost (applied to Real Losses): + ? 7 \$462.60 \$/acre-ft  Use Customer Retail Unit Cost to value real losses

### WATER AUDIT DATA VALIDITY SCORE:

\*\*\* YOUR SCORE IS: 75 out of 100 \*\*\*

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

### PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Billed metered

2: Water exported

3: Volume from own sources

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX F**

**CLIMATE CHANGE CONSIDERATIONS (CAL- ADAPT DATA)**



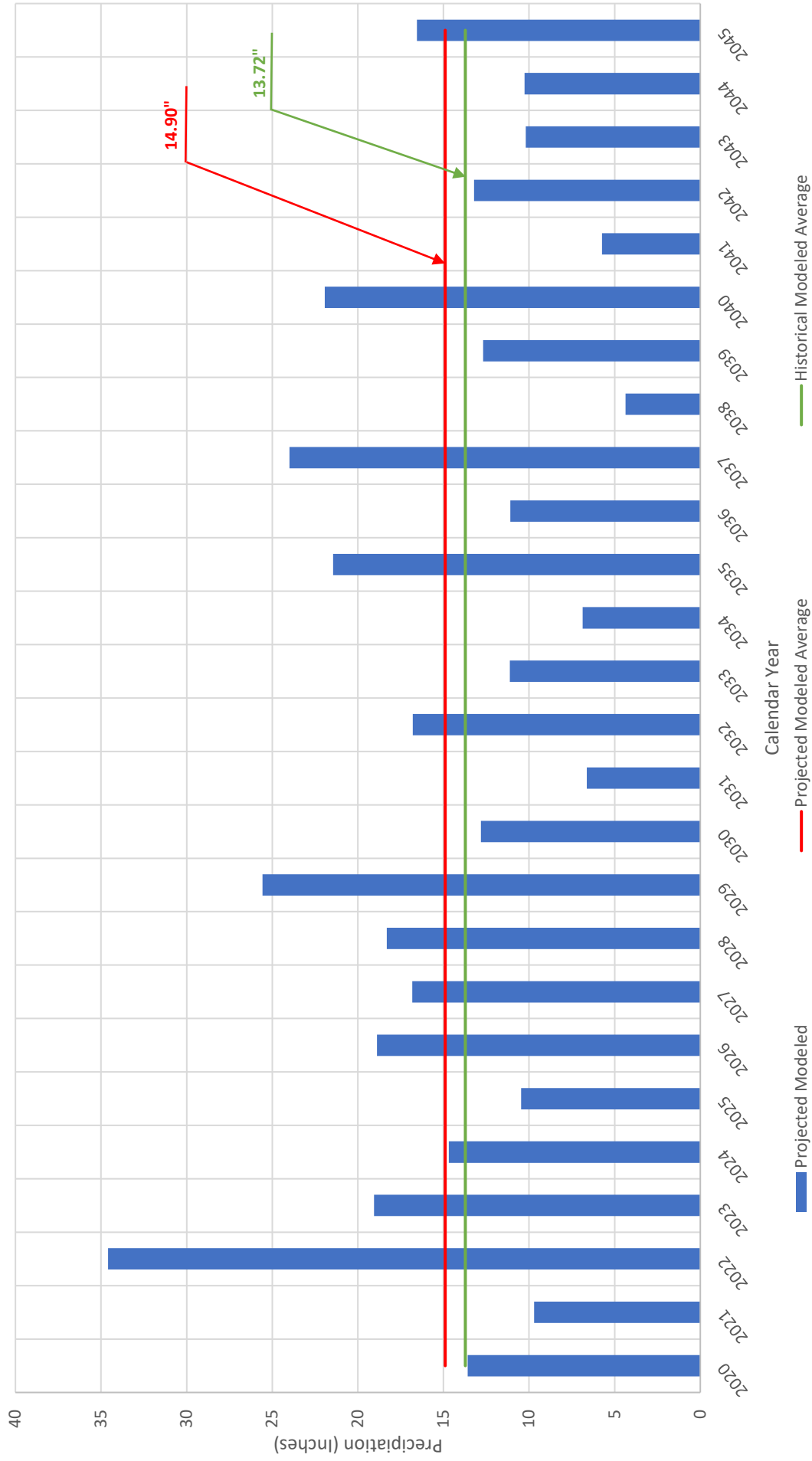
## **CENTRAL BASIN**

**MODELED ANNUAL AVERAGE PRECIPITATION**

**CAL-ADAPT METHOD: RCP 4.5 (CANESM2)**

**CAL-ADAPT DATA**

# Central Basin Modeled Annual Average Precipitation Cal-Adapt Method: RCP 4.5 (CanESM2)



Data Source: Cal-Adapt

**Notes:**

Projected Modeled Average includes modeled years 2020 through 2045

Historical Modeled Average includes modeled years 1950 through 2019

Cal-Adapt defines the general circulation model (GCM) CanESM2 as an "average simulation"

Cal-Adapt defines RCP 4.5 as a scenario in which emissions peak around 2040, then decline

**Cal-Adapt**  
**Annual Averages Tool - Precipitation**  
**Central Basin**

location User Defined Boundary - Central Basin  
climate variable Precipitation  
units inches  
scenario rcp45

**Projected Modeled Average:** 14.89874 [inches]  
**Historical Modeled Average:** 13.72240 [inches]

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Sun Jan 01 1950 00:00:00 GMT-0800 (Pacific Standard Time)	1950			2.711204
CanESM2	Mon Jan 01 1951 00:00:00 GMT-0800 (Pacific Standard Time)	1951			14.92971
CanESM2	Tue Jan 01 1952 00:00:00 GMT-0800 (Pacific Standard Time)	1952			14.37643
CanESM2	Thu Jan 01 1953 00:00:00 GMT-0800 (Pacific Standard Time)	1953			10.62691
CanESM2	Fri Jan 01 1954 00:00:00 GMT-0800 (Pacific Standard Time)	1954			16.24152
CanESM2	Sat Jan 01 1955 00:00:00 GMT-0800 (Pacific Standard Time)	1955			23.99039
CanESM2	Sun Jan 01 1956 00:00:00 GMT-0800 (Pacific Standard Time)	1956			7.088746
CanESM2	Tue Jan 01 1957 00:00:00 GMT-0800 (Pacific Standard Time)	1957			10.47703
CanESM2	Wed Jan 01 1958 00:00:00 GMT-0800 (Pacific Standard Time)	1958			4.384411
CanESM2	Thu Jan 01 1959 00:00:00 GMT-0800 (Pacific Standard Time)	1959			8.905023
CanESM2	Fri Jan 01 1960 00:00:00 GMT-0800 (Pacific Standard Time)	1960			13.33926
CanESM2	Sun Jan 01 1961 00:00:00 GMT-0800 (Pacific Standard Time)	1961			13.29385
CanESM2	Mon Jan 01 1962 00:00:00 GMT-0800 (Pacific Standard Time)	1962			22.25729
CanESM2	Tue Jan 01 1963 00:00:00 GMT-0800 (Pacific Standard Time)	1963			5.046277
CanESM2	Wed Jan 01 1964 00:00:00 GMT-0800 (Pacific Standard Time)	1964			23.65362
CanESM2	Fri Jan 01 1965 00:00:00 GMT-0800 (Pacific Standard Time)	1965			29.53302
CanESM2	Sat Jan 01 1966 00:00:00 GMT-0800 (Pacific Standard Time)	1966			11.89462
CanESM2	Sun Jan 01 1967 00:00:00 GMT-0800 (Pacific Standard Time)	1967			17.65118
CanESM2	Mon Jan 01 1968 00:00:00 GMT-0800 (Pacific Standard Time)	1968			16.5368
CanESM2	Wed Jan 01 1969 00:00:00 GMT-0800 (Pacific Standard Time)	1969			31.08076
CanESM2	Thu Jan 01 1970 00:00:00 GMT-0800 (Pacific Standard Time)	1970			11.10033
CanESM2	Fri Jan 01 1971 00:00:00 GMT-0800 (Pacific Standard Time)	1971			3.89031
CanESM2	Sat Jan 01 1972 00:00:00 GMT-0800 (Pacific Standard Time)	1972			11.90623
CanESM2	Mon Jan 01 1973 00:00:00 GMT-0800 (Pacific Standard Time)	1973			11.35168
CanESM2	Tue Jan 01 1974 00:00:00 GMT-0800 (Pacific Standard Time)	1974			27.6406
CanESM2	Wed Jan 01 1975 00:00:00 GMT-0800 (Pacific Standard Time)	1975			7.240355
CanESM2	Thu Jan 01 1976 00:00:00 GMT-0800 (Pacific Standard Time)	1976			13.72431
CanESM2	Sat Jan 01 1977 00:00:00 GMT-0800 (Pacific Standard Time)	1977			16.3902
CanESM2	Sun Jan 01 1978 00:00:00 GMT-0800 (Pacific Standard Time)	1978			8.943045
CanESM2	Mon Jan 01 1979 00:00:00 GMT-0800 (Pacific Standard Time)	1979			8.955363
CanESM2	Tue Jan 01 1980 00:00:00 GMT-0800 (Pacific Standard Time)	1980			5.315283
CanESM2	Thu Jan 01 1981 00:00:00 GMT-0800 (Pacific Standard Time)	1981			12.0593
CanESM2	Fri Jan 01 1982 00:00:00 GMT-0800 (Pacific Standard Time)	1982			21.42766
CanESM2	Sat Jan 01 1983 00:00:00 GMT-0800 (Pacific Standard Time)	1983			12.02122
CanESM2	Sun Jan 01 1984 00:00:00 GMT-0800 (Pacific Standard Time)	1984			14.33201
CanESM2	Tue Jan 01 1985 00:00:00 GMT-0800 (Pacific Standard Time)	1985			33.68452
CanESM2	Wed Jan 01 1986 00:00:00 GMT-0800 (Pacific Standard Time)	1986			6.287982
CanESM2	Thu Jan 01 1987 00:00:00 GMT-0800 (Pacific Standard Time)	1987			15.10777
CanESM2	Fri Jan 01 1988 00:00:00 GMT-0800 (Pacific Standard Time)	1988			9.260901
CanESM2	Sun Jan 01 1989 00:00:00 GMT-0800 (Pacific Standard Time)	1989			15.46279
CanESM2	Mon Jan 01 1990 00:00:00 GMT-0800 (Pacific Standard Time)	1990			16.02319
CanESM2	Tue Jan 01 1991 00:00:00 GMT-0800 (Pacific Standard Time)	1991			18.35758
CanESM2	Wed Jan 01 1992 00:00:00 GMT-0800 (Pacific Standard Time)	1992			15.34088
CanESM2	Fri Jan 01 1993 00:00:00 GMT-0800 (Pacific Standard Time)	1993			11.07439
CanESM2	Sat Jan 01 1994 00:00:00 GMT-0800 (Pacific Standard Time)	1994			13.77059
CanESM2	Sun Jan 01 1995 00:00:00 GMT-0800 (Pacific Standard Time)	1995			11.83516
CanESM2	Mon Jan 01 1996 00:00:00 GMT-0800 (Pacific Standard Time)	1996			12.02629
CanESM2	Wed Jan 01 1997 00:00:00 GMT-0800 (Pacific Standard Time)	1997			40.54302
CanESM2	Thu Jan 01 1998 00:00:00 GMT-0800 (Pacific Standard Time)	1998			7.581085
CanESM2	Fri Jan 01 1999 00:00:00 GMT-0800 (Pacific Standard Time)	1999			9.345686
CanESM2	Sat Jan 01 2000 00:00:00 GMT-0800 (Pacific Standard Time)	2000			6.411961
CanESM2	Mon Jan 01 2001 00:00:00 GMT-0800 (Pacific Standard Time)	2001			8.649922

**Cal-Adapt**  
**Annual Averages Tool - Precipitation**  
**Central Basin**

location User Defined Boundary - Central Basin  
climate variable Precipitation  
units inches  
scenario rcp45

**Projected Modeled Average: 14.89874 [inches]**  
**Historical Modeled Average: 13.72240 [inches]**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Tue Jan 01 2002 00:00:00 GMT-0800 (Pacific Standard Time)	2002			11.65704
CanESM2	Wed Jan 01 2003 00:00:00 GMT-0800 (Pacific Standard Time)	2003			13.22306
CanESM2	Thu Jan 01 2004 00:00:00 GMT-0800 (Pacific Standard Time)	2004			14.98838
CanESM2	Sat Jan 01 2005 00:00:00 GMT-0800 (Pacific Standard Time)	2005			23.47014
CanESM2	Sun Jan 01 2006 00:00:00 GMT-0800 (Pacific Standard Time)	2006			11.89425
CanESM2	Mon Jan 01 2007 00:00:00 GMT-0800 (Pacific Standard Time)	2007			4.495376
CanESM2	Tue Jan 01 2008 00:00:00 GMT-0800 (Pacific Standard Time)	2008			11.29432
CanESM2	Thu Jan 01 2009 00:00:00 GMT-0800 (Pacific Standard Time)	2009			10.8637
CanESM2	Fri Jan 01 2010 00:00:00 GMT-0800 (Pacific Standard Time)	2010			11.74419
CanESM2	Sat Jan 01 2011 00:00:00 GMT-0800 (Pacific Standard Time)	2011			16.35504
CanESM2	Sun Jan 01 2012 00:00:00 GMT-0800 (Pacific Standard Time)	2012			6.021612
CanESM2	Tue Jan 01 2013 00:00:00 GMT-0800 (Pacific Standard Time)	2013			7.790606
CanESM2	Wed Jan 01 2014 00:00:00 GMT-0800 (Pacific Standard Time)	2014			6.588845
CanESM2	Thu Jan 01 2015 00:00:00 GMT-0800 (Pacific Standard Time)	2015			21.14658
CanESM2	Fri Jan 01 2016 00:00:00 GMT-0800 (Pacific Standard Time)	2016			29.24212
CanESM2	Sun Jan 01 2017 00:00:00 GMT-0800 (Pacific Standard Time)	2017			9.844625
CanESM2	Mon Jan 01 2018 00:00:00 GMT-0800 (Pacific Standard Time)	2018			5.430142
CanESM2	Tue Jan 01 2019 00:00:00 GMT-0800 (Pacific Standard Time)	2019	13.72239645		9.438077
CanESM2	Wed Jan 01 2020 00:00:00 GMT-0800 (Pacific Standard Time)	2020	13.72239645	14.89873563	13.58247
CanESM2	Fri Jan 01 2021 00:00:00 GMT-0800 (Pacific Standard Time)	2021	13.72239645	14.89873563	9.707081
CanESM2	Sat Jan 01 2022 00:00:00 GMT-0800 (Pacific Standard Time)	2022	13.72239645	14.89873563	34.58837
CanESM2	Sun Jan 01 2023 00:00:00 GMT-0800 (Pacific Standard Time)	2023	13.72239645	14.89873563	19.0544
CanESM2	Mon Jan 01 2024 00:00:00 GMT-0800 (Pacific Standard Time)	2024	13.72239645	14.89873563	14.68272
CanESM2	Wed Jan 01 2025 00:00:00 GMT-0800 (Pacific Standard Time)	2025	13.72239645	14.89873563	10.47002
CanESM2	Thu Jan 01 2026 00:00:00 GMT-0800 (Pacific Standard Time)	2026	13.72239645	14.89873563	18.87796
CanESM2	Fri Jan 01 2027 00:00:00 GMT-0800 (Pacific Standard Time)	2027	13.72239645	14.89873563	16.822
CanESM2	Sat Jan 01 2028 00:00:00 GMT-0800 (Pacific Standard Time)	2028	13.72239645	14.89873563	18.30698
CanESM2	Mon Jan 01 2029 00:00:00 GMT-0800 (Pacific Standard Time)	2029	13.72239645	14.89873563	25.56606
CanESM2	Tue Jan 01 2030 00:00:00 GMT-0800 (Pacific Standard Time)	2030	13.72239645	14.89873563	12.81422
CanESM2	Wed Jan 01 2031 00:00:00 GMT-0800 (Pacific Standard Time)	2031	13.72239645	14.89873563	6.631485
CanESM2	Thu Jan 01 2032 00:00:00 GMT-0800 (Pacific Standard Time)	2032	13.72239645	14.89873563	16.79226
CanESM2	Sat Jan 01 2033 00:00:00 GMT-0800 (Pacific Standard Time)	2033	13.72239645	14.89873563	11.12471
CanESM2	Sun Jan 01 2034 00:00:00 GMT-0800 (Pacific Standard Time)	2034	13.72239645	14.89873563	6.871288
CanESM2	Mon Jan 01 2035 00:00:00 GMT-0800 (Pacific Standard Time)	2035	13.72239645	14.89873563	21.4413
CanESM2	Tue Jan 01 2036 00:00:00 GMT-0800 (Pacific Standard Time)	2036	13.72239645	14.89873563	11.10212
CanESM2	Thu Jan 01 2037 00:00:00 GMT-0800 (Pacific Standard Time)	2037	13.72239645	14.89873563	23.99351
CanESM2	Fri Jan 01 2038 00:00:00 GMT-0800 (Pacific Standard Time)	2038	13.72239645	14.89873563	4.368184
CanESM2	Sat Jan 01 2039 00:00:00 GMT-0800 (Pacific Standard Time)	2039	13.72239645	14.89873563	12.68419
CanESM2	Sun Jan 01 2040 00:00:00 GMT-0800 (Pacific Standard Time)	2040	13.72239645	14.89873563	21.93329
CanESM2	Tue Jan 01 2041 00:00:00 GMT-0800 (Pacific Standard Time)	2041	13.72239645	14.89873563	5.741362
CanESM2	Wed Jan 01 2042 00:00:00 GMT-0800 (Pacific Standard Time)	2042	13.72239645	14.89873563	13.20755
CanESM2	Thu Jan 01 2043 00:00:00 GMT-0800 (Pacific Standard Time)	2043	13.72239645	14.89873563	10.18665
CanESM2	Fri Jan 01 2044 00:00:00 GMT-0800 (Pacific Standard Time)	2044	13.72239645	14.89873563	10.26452
CanESM2	Sun Jan 01 2045 00:00:00 GMT-0800 (Pacific Standard Time)	2045	13.72239645	14.89873563	16.55242
CanESM2	Mon Jan 01 2046 00:00:00 GMT-0800 (Pacific Standard Time)	2046	13.72239645		27.77441
CanESM2	Tue Jan 01 2047 00:00:00 GMT-0800 (Pacific Standard Time)	2047	13.72239645		22.46368
CanESM2	Wed Jan 01 2048 00:00:00 GMT-0800 (Pacific Standard Time)	2048	13.72239645		18.88688
CanESM2	Fri Jan 01 2049 00:00:00 GMT-0800 (Pacific Standard Time)	2049	13.72239645		8.667589
CanESM2	Sat Jan 01 2050 00:00:00 GMT-0800 (Pacific Standard Time)	2050	13.72239645		10.00292
CanESM2	Sun Jan 01 2051 00:00:00 GMT-0800 (Pacific Standard Time)	2051	13.72239645		7.326474
CanESM2	Mon Jan 01 2052 00:00:00 GMT-0800 (Pacific Standard Time)	2052	13.72239645		27.14731
CanESM2	Wed Jan 01 2053 00:00:00 GMT-0800 (Pacific Standard Time)	2053	13.72239645		9.759648

**Cal-Adapt**  
**Annual Averages Tool - Precipitation**  
**Central Basin**

location User Defined Boundary - Central Basin  
climate variable Precipitation  
units inches  
scenario rcp45

**Projected Modeled Average: 14.89874 [inches]**  
**Historical Modeled Average: 13.72240 [inches]**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Thu Jan 01 2054 00:00:00 GMT-0800 (Pacific Standard Time)	2054	13.72239645		12.40571
CanESM2	Fri Jan 01 2055 00:00:00 GMT-0800 (Pacific Standard Time)	2055	13.72239645		9.147796
CanESM2	Sat Jan 01 2056 00:00:00 GMT-0800 (Pacific Standard Time)	2056	13.72239645		15.57772
CanESM2	Mon Jan 01 2057 00:00:00 GMT-0800 (Pacific Standard Time)	2057	13.72239645		12.66258
CanESM2	Tue Jan 01 2058 00:00:00 GMT-0800 (Pacific Standard Time)	2058	13.72239645		7.271203
CanESM2	Wed Jan 01 2059 00:00:00 GMT-0800 (Pacific Standard Time)	2059	13.72239645		29.27046
CanESM2	Thu Jan 01 2060 00:00:00 GMT-0800 (Pacific Standard Time)	2060	13.72239645		27.70644
CanESM2	Sat Jan 01 2061 00:00:00 GMT-0800 (Pacific Standard Time)	2061	13.72239645		4.950572
CanESM2	Sun Jan 01 2062 00:00:00 GMT-0800 (Pacific Standard Time)	2062	13.72239645		11.41258
CanESM2	Mon Jan 01 2063 00:00:00 GMT-0800 (Pacific Standard Time)	2063	13.72239645		3.654642
CanESM2	Tue Jan 01 2064 00:00:00 GMT-0800 (Pacific Standard Time)	2064	13.72239645		8.214566
CanESM2	Thu Jan 01 2065 00:00:00 GMT-0800 (Pacific Standard Time)	2065	13.72239645		11.61876
CanESM2	Fri Jan 01 2066 00:00:00 GMT-0800 (Pacific Standard Time)	2066	13.72239645		14.80172
CanESM2	Sat Jan 01 2067 00:00:00 GMT-0800 (Pacific Standard Time)	2067	13.72239645		19.90516
CanESM2	Sun Jan 01 2068 00:00:00 GMT-0800 (Pacific Standard Time)	2068	13.72239645		13.34654
CanESM2	Tue Jan 01 2069 00:00:00 GMT-0800 (Pacific Standard Time)	2069	13.72239645		26.78298
CanESM2	Wed Jan 01 2070 00:00:00 GMT-0800 (Pacific Standard Time)	2070	13.72239645		24.21188
CanESM2	Thu Jan 01 2071 00:00:00 GMT-0800 (Pacific Standard Time)	2071	13.72239645		18.31411
CanESM2	Fri Jan 01 2072 00:00:00 GMT-0800 (Pacific Standard Time)	2072	13.72239645		6.002166
CanESM2	Sun Jan 01 2073 00:00:00 GMT-0800 (Pacific Standard Time)	2073	13.72239645		25.56517
CanESM2	Mon Jan 01 2074 00:00:00 GMT-0800 (Pacific Standard Time)	2074	13.72239645		15.05161
CanESM2	Tue Jan 01 2075 00:00:00 GMT-0800 (Pacific Standard Time)	2075	13.72239645		20.92709
CanESM2	Wed Jan 01 2076 00:00:00 GMT-0800 (Pacific Standard Time)	2076	13.72239645		11.00945
CanESM2	Fri Jan 01 2077 00:00:00 GMT-0800 (Pacific Standard Time)	2077	13.72239645		22.11288
CanESM2	Sat Jan 01 2078 00:00:00 GMT-0800 (Pacific Standard Time)	2078	13.72239645		18.92326
CanESM2	Sun Jan 01 2079 00:00:00 GMT-0800 (Pacific Standard Time)	2079	13.72239645		20.65069
CanESM2	Mon Jan 01 2080 00:00:00 GMT-0800 (Pacific Standard Time)	2080	13.72239645		41.49389
CanESM2	Wed Jan 01 2081 00:00:00 GMT-0800 (Pacific Standard Time)	2081	13.72239645		16.41931
CanESM2	Thu Jan 01 2082 00:00:00 GMT-0800 (Pacific Standard Time)	2082	13.72239645		14.65818
CanESM2	Fri Jan 01 2083 00:00:00 GMT-0800 (Pacific Standard Time)	2083	13.72239645		13.02577
CanESM2	Sat Jan 01 2084 00:00:00 GMT-0800 (Pacific Standard Time)	2084	13.72239645		16.81547
CanESM2	Mon Jan 01 2085 00:00:00 GMT-0800 (Pacific Standard Time)	2085	13.72239645		7.584033
CanESM2	Tue Jan 01 2086 00:00:00 GMT-0800 (Pacific Standard Time)	2086	13.72239645		21.69217
CanESM2	Wed Jan 01 2087 00:00:00 GMT-0800 (Pacific Standard Time)	2087	13.72239645		8.520626
CanESM2	Thu Jan 01 2088 00:00:00 GMT-0800 (Pacific Standard Time)	2088	13.72239645		33.79725
CanESM2	Sat Jan 01 2089 00:00:00 GMT-0800 (Pacific Standard Time)	2089	13.72239645		15.19317
CanESM2	Sun Jan 01 2090 00:00:00 GMT-0800 (Pacific Standard Time)	2090	13.72239645		10.93645
CanESM2	Mon Jan 01 2091 00:00:00 GMT-0800 (Pacific Standard Time)	2091	13.72239645		4.858918
CanESM2	Tue Jan 01 2092 00:00:00 GMT-0800 (Pacific Standard Time)	2092	13.72239645		4.077083
CanESM2	Thu Jan 01 2093 00:00:00 GMT-0800 (Pacific Standard Time)	2093	13.72239645		26.28714
CanESM2	Fri Jan 01 2094 00:00:00 GMT-0800 (Pacific Standard Time)	2094	13.72239645		13.79538
CanESM2	Sat Jan 01 2095 00:00:00 GMT-0800 (Pacific Standard Time)	2095	13.72239645		6.434525
CanESM2	Sun Jan 01 2096 00:00:00 GMT-0800 (Pacific Standard Time)	2096	13.72239645		9.720349
CanESM2	Tue Jan 01 2097 00:00:00 GMT-0800 (Pacific Standard Time)	2097	13.72239645		15.93864
CanESM2	Wed Jan 01 2098 00:00:00 GMT-0800 (Pacific Standard Time)	2098	13.72239645		20.52491
CanESM2	Thu Jan 01 2099 00:00:00 GMT-0800 (Pacific Standard Time)	2099	13.72239645		9.708835
CanESM2	Fri Jan 01 2100 00:00:00 GMT-0800 (Pacific Standard Time)	2100	13.72239645		14.42276

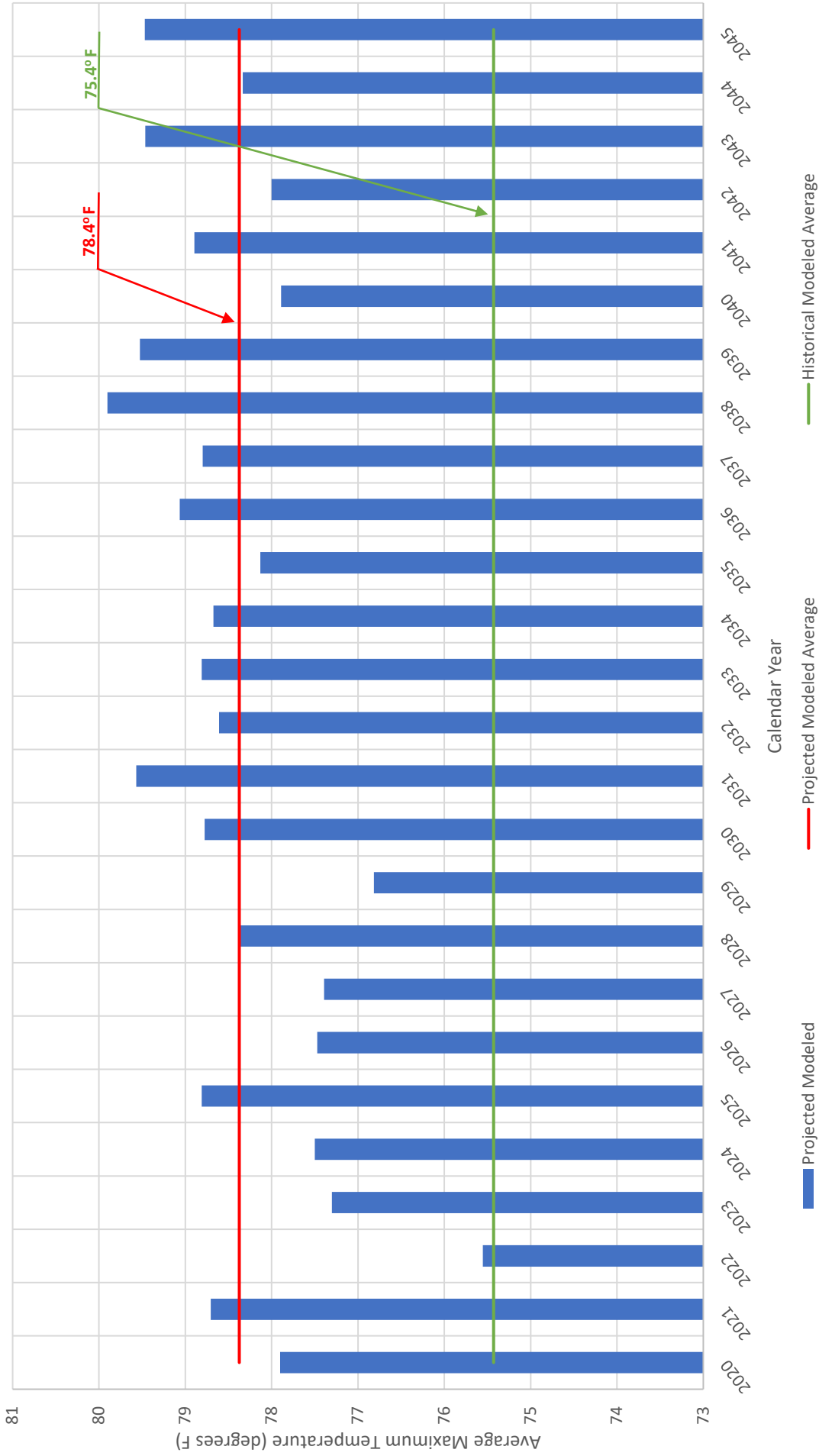
## **CENTRAL BASIN**

**MODELED ANNUAL AVERAGE TEMPERATURE**

**CAL-ADAPT METHOD: RCP 4.5 (CANESM2)**

**CAL-ADAPT DATA**

Central Basin  
 Modeled Annual Average Maximum Temperature  
 Cal-Adapt Method: RCP 4.5 (CanESM2)



Data Source: Cal-Adapt

**Notes:**  
 Projected Modeled Average includes modeled years 2020 through 2045  
 Historical Modeled Average includes modeled years 1950 through 2019  
 Cal-Adapt defines the general circulation model (GCM) CanESM2 as an "average simulation"  
 Cal-Adapt defines RCP 4.5 as a scenario in which emissions peak around 2040, then decline



**Cal-Adapt**  
**Annual Averages Tool - Maximum Temperature**  
**Central Basin**

location User Defined Boundary - Central Basin  
climate variable Maximum Temperature  
units °F  
scenario rcp45

**Projected Modeled Average: 78.37471 °F**  
**Historical Modeled Average: 75.42910 °F**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Sun Jan 01 1950 00:00:00 GMT-0800 (Pacific Standard Time)	1950			76.81594
CanESM2	Mon Jan 01 1951 00:00:00 GMT-0800 (Pacific Standard Time)	1951			75.09323
CanESM2	Tue Jan 01 1952 00:00:00 GMT-0800 (Pacific Standard Time)	1952			74.11544
CanESM2	Thu Jan 01 1953 00:00:00 GMT-0800 (Pacific Standard Time)	1953			75.0258
CanESM2	Fri Jan 01 1954 00:00:00 GMT-0800 (Pacific Standard Time)	1954			74.06848
CanESM2	Sat Jan 01 1955 00:00:00 GMT-0800 (Pacific Standard Time)	1955			73.66977
CanESM2	Sun Jan 01 1956 00:00:00 GMT-0800 (Pacific Standard Time)	1956			75.06849
CanESM2	Tue Jan 01 1957 00:00:00 GMT-0800 (Pacific Standard Time)	1957			75.02455
CanESM2	Wed Jan 01 1958 00:00:00 GMT-0800 (Pacific Standard Time)	1958			74.71398
CanESM2	Thu Jan 01 1959 00:00:00 GMT-0800 (Pacific Standard Time)	1959			75.93509
CanESM2	Fri Jan 01 1960 00:00:00 GMT-0800 (Pacific Standard Time)	1960			75.27767
CanESM2	Sun Jan 01 1961 00:00:00 GMT-0800 (Pacific Standard Time)	1961			73.89659
CanESM2	Mon Jan 01 1962 00:00:00 GMT-0800 (Pacific Standard Time)	1962			74.88831
CanESM2	Tue Jan 01 1963 00:00:00 GMT-0800 (Pacific Standard Time)	1963			77.5504
CanESM2	Wed Jan 01 1964 00:00:00 GMT-0800 (Pacific Standard Time)	1964			73.73211
CanESM2	Fri Jan 01 1965 00:00:00 GMT-0800 (Pacific Standard Time)	1965			72.11022
CanESM2	Sat Jan 01 1966 00:00:00 GMT-0800 (Pacific Standard Time)	1966			73.73795
CanESM2	Sun Jan 01 1967 00:00:00 GMT-0800 (Pacific Standard Time)	1967			74.92674
CanESM2	Mon Jan 01 1968 00:00:00 GMT-0800 (Pacific Standard Time)	1968			74.39023
CanESM2	Wed Jan 01 1969 00:00:00 GMT-0800 (Pacific Standard Time)	1969			73.83777
CanESM2	Thu Jan 01 1970 00:00:00 GMT-0800 (Pacific Standard Time)	1970			73.03439
CanESM2	Fri Jan 01 1971 00:00:00 GMT-0800 (Pacific Standard Time)	1971			74.74292
CanESM2	Sat Jan 01 1972 00:00:00 GMT-0800 (Pacific Standard Time)	1972			74.89177
CanESM2	Mon Jan 01 1973 00:00:00 GMT-0800 (Pacific Standard Time)	1973			74.89842
CanESM2	Tue Jan 01 1974 00:00:00 GMT-0800 (Pacific Standard Time)	1974			75.40034
CanESM2	Wed Jan 01 1975 00:00:00 GMT-0800 (Pacific Standard Time)	1975			76.61719
CanESM2	Thu Jan 01 1976 00:00:00 GMT-0800 (Pacific Standard Time)	1976			74.83677
CanESM2	Sat Jan 01 1977 00:00:00 GMT-0800 (Pacific Standard Time)	1977			74.29179
CanESM2	Sun Jan 01 1978 00:00:00 GMT-0800 (Pacific Standard Time)	1978			76.03504
CanESM2	Mon Jan 01 1979 00:00:00 GMT-0800 (Pacific Standard Time)	1979			76.29205
CanESM2	Tue Jan 01 1980 00:00:00 GMT-0800 (Pacific Standard Time)	1980			77.65762
CanESM2	Thu Jan 01 1981 00:00:00 GMT-0800 (Pacific Standard Time)	1981			77.00924
CanESM2	Fri Jan 01 1982 00:00:00 GMT-0800 (Pacific Standard Time)	1982			73.78987
CanESM2	Sat Jan 01 1983 00:00:00 GMT-0800 (Pacific Standard Time)	1983			74.44761
CanESM2	Sun Jan 01 1984 00:00:00 GMT-0800 (Pacific Standard Time)	1984			73.79973
CanESM2	Tue Jan 01 1985 00:00:00 GMT-0800 (Pacific Standard Time)	1985			73.29404
CanESM2	Wed Jan 01 1986 00:00:00 GMT-0800 (Pacific Standard Time)	1986			74.73086
CanESM2	Thu Jan 01 1987 00:00:00 GMT-0800 (Pacific Standard Time)	1987			73.88843
CanESM2	Fri Jan 01 1988 00:00:00 GMT-0800 (Pacific Standard Time)	1988			74.50882
CanESM2	Sun Jan 01 1989 00:00:00 GMT-0800 (Pacific Standard Time)	1989			74.04036
CanESM2	Mon Jan 01 1990 00:00:00 GMT-0800 (Pacific Standard Time)	1990			74.5839
CanESM2	Tue Jan 01 1991 00:00:00 GMT-0800 (Pacific Standard Time)	1991			75.46996
CanESM2	Wed Jan 01 1992 00:00:00 GMT-0800 (Pacific Standard Time)	1992			73.32562
CanESM2	Fri Jan 01 1993 00:00:00 GMT-0800 (Pacific Standard Time)	1993			76.37235
CanESM2	Sat Jan 01 1994 00:00:00 GMT-0800 (Pacific Standard Time)	1994			73.36906
CanESM2	Sun Jan 01 1995 00:00:00 GMT-0800 (Pacific Standard Time)	1995			76.05676
CanESM2	Mon Jan 01 1996 00:00:00 GMT-0800 (Pacific Standard Time)	1996			76.1869
CanESM2	Wed Jan 01 1997 00:00:00 GMT-0800 (Pacific Standard Time)	1997			74.65371
CanESM2	Thu Jan 01 1998 00:00:00 GMT-0800 (Pacific Standard Time)	1998			76.05054
CanESM2	Fri Jan 01 1999 00:00:00 GMT-0800 (Pacific Standard Time)	1999			76.954
CanESM2	Sat Jan 01 2000 00:00:00 GMT-0800 (Pacific Standard Time)	2000			76.5939
CanESM2	Mon Jan 01 2001 00:00:00 GMT-0800 (Pacific Standard Time)	2001			76.75888

**Cal-Adapt**  
**Annual Averages Tool - Maximum Temperature**  
**Central Basin**

location User Defined Boundary - Central Basin  
climate variable Maximum Temperature  
units °F  
scenario rcp45

**Projected Modeled Average: 78.37471 °F**  
**Historical Modeled Average: 75.42910 °F**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Tue Jan 01 2002 00:00:00 GMT-0800 (Pacific Standard Time)	2002			76.45095
CanESM2	Wed Jan 01 2003 00:00:00 GMT-0800 (Pacific Standard Time)	2003			75.01004
CanESM2	Thu Jan 01 2004 00:00:00 GMT-0800 (Pacific Standard Time)	2004			76.18596
CanESM2	Sat Jan 01 2005 00:00:00 GMT-0800 (Pacific Standard Time)	2005			76.06153
CanESM2	Sun Jan 01 2006 00:00:00 GMT-0800 (Pacific Standard Time)	2006			75.81518
CanESM2	Mon Jan 01 2007 00:00:00 GMT-0800 (Pacific Standard Time)	2007			76.53652
CanESM2	Tue Jan 01 2008 00:00:00 GMT-0800 (Pacific Standard Time)	2008			76.90854
CanESM2	Thu Jan 01 2009 00:00:00 GMT-0800 (Pacific Standard Time)	2009			77.60979
CanESM2	Fri Jan 01 2010 00:00:00 GMT-0800 (Pacific Standard Time)	2010			76.91934
CanESM2	Sat Jan 01 2011 00:00:00 GMT-0800 (Pacific Standard Time)	2011			77.10655
CanESM2	Sun Jan 01 2012 00:00:00 GMT-0800 (Pacific Standard Time)	2012			77.90654
CanESM2	Tue Jan 01 2013 00:00:00 GMT-0800 (Pacific Standard Time)	2013			78.77252
CanESM2	Wed Jan 01 2014 00:00:00 GMT-0800 (Pacific Standard Time)	2014			76.24993
CanESM2	Thu Jan 01 2015 00:00:00 GMT-0800 (Pacific Standard Time)	2015			76.18709
CanESM2	Fri Jan 01 2016 00:00:00 GMT-0800 (Pacific Standard Time)	2016			75.22148
CanESM2	Sun Jan 01 2017 00:00:00 GMT-0800 (Pacific Standard Time)	2017			76.63658
CanESM2	Mon Jan 01 2018 00:00:00 GMT-0800 (Pacific Standard Time)	2018			78.54419
CanESM2	Tue Jan 01 2019 00:00:00 GMT-0800 (Pacific Standard Time)	2019	75.42910037		77.45271
CanESM2	Wed Jan 01 2020 00:00:00 GMT-0800 (Pacific Standard Time)	2020	75.42910037	78.37470886	77.90284
CanESM2	Fri Jan 01 2021 00:00:00 GMT-0800 (Pacific Standard Time)	2021	75.42910037	78.37470886	78.70459
CanESM2	Sat Jan 01 2022 00:00:00 GMT-0800 (Pacific Standard Time)	2022	75.42910037	78.37470886	75.55427
CanESM2	Sun Jan 01 2023 00:00:00 GMT-0800 (Pacific Standard Time)	2023	75.42910037	78.37470886	77.30179
CanESM2	Mon Jan 01 2024 00:00:00 GMT-0800 (Pacific Standard Time)	2024	75.42910037	78.37470886	77.49998
CanESM2	Wed Jan 01 2025 00:00:00 GMT-0800 (Pacific Standard Time)	2025	75.42910037	78.37470886	78.8105
CanESM2	Thu Jan 01 2026 00:00:00 GMT-0800 (Pacific Standard Time)	2026	75.42910037	78.37470886	77.47173
CanESM2	Fri Jan 01 2027 00:00:00 GMT-0800 (Pacific Standard Time)	2027	75.42910037	78.37470886	77.39326
CanESM2	Sat Jan 01 2028 00:00:00 GMT-0800 (Pacific Standard Time)	2028	75.42910037	78.37470886	78.37676
CanESM2	Mon Jan 01 2029 00:00:00 GMT-0800 (Pacific Standard Time)	2029	75.42910037	78.37470886	76.81463
CanESM2	Tue Jan 01 2030 00:00:00 GMT-0800 (Pacific Standard Time)	2030	75.42910037	78.37470886	78.77666
CanESM2	Wed Jan 01 2031 00:00:00 GMT-0800 (Pacific Standard Time)	2031	75.42910037	78.37470886	79.56799
CanESM2	Thu Jan 01 2032 00:00:00 GMT-0800 (Pacific Standard Time)	2032	75.42910037	78.37470886	78.60872
CanESM2	Sat Jan 01 2033 00:00:00 GMT-0800 (Pacific Standard Time)	2033	75.42910037	78.37470886	78.80861
CanESM2	Sun Jan 01 2034 00:00:00 GMT-0800 (Pacific Standard Time)	2034	75.42910037	78.37470886	78.67489
CanESM2	Mon Jan 01 2035 00:00:00 GMT-0800 (Pacific Standard Time)	2035	75.42910037	78.37470886	78.12972
CanESM2	Tue Jan 01 2036 00:00:00 GMT-0800 (Pacific Standard Time)	2036	75.42910037	78.37470886	79.06538
CanESM2	Thu Jan 01 2037 00:00:00 GMT-0800 (Pacific Standard Time)	2037	75.42910037	78.37470886	78.7997
CanESM2	Fri Jan 01 2038 00:00:00 GMT-0800 (Pacific Standard Time)	2038	75.42910037	78.37470886	79.90191
CanESM2	Sat Jan 01 2039 00:00:00 GMT-0800 (Pacific Standard Time)	2039	75.42910037	78.37470886	79.52668
CanESM2	Sun Jan 01 2040 00:00:00 GMT-0800 (Pacific Standard Time)	2040	75.42910037	78.37470886	77.88959
CanESM2	Tue Jan 01 2041 00:00:00 GMT-0800 (Pacific Standard Time)	2041	75.42910037	78.37470886	78.89424
CanESM2	Wed Jan 01 2042 00:00:00 GMT-0800 (Pacific Standard Time)	2042	75.42910037	78.37470886	78.00215
CanESM2	Thu Jan 01 2043 00:00:00 GMT-0800 (Pacific Standard Time)	2043	75.42910037	78.37470886	79.46227
CanESM2	Fri Jan 01 2044 00:00:00 GMT-0800 (Pacific Standard Time)	2044	75.42910037	78.37470886	78.33426
CanESM2	Sun Jan 01 2045 00:00:00 GMT-0800 (Pacific Standard Time)	2045	75.42910037	78.37470886	79.4693
CanESM2	Mon Jan 01 2046 00:00:00 GMT-0800 (Pacific Standard Time)	2046			78.21366
CanESM2	Tue Jan 01 2047 00:00:00 GMT-0800 (Pacific Standard Time)	2047			78.16745
CanESM2	Wed Jan 01 2048 00:00:00 GMT-0800 (Pacific Standard Time)	2048			79.00869
CanESM2	Fri Jan 01 2049 00:00:00 GMT-0800 (Pacific Standard Time)	2049			78.76172
CanESM2	Sat Jan 01 2050 00:00:00 GMT-0800 (Pacific Standard Time)	2050			79.95276
CanESM2	Sun Jan 01 2051 00:00:00 GMT-0800 (Pacific Standard Time)	2051			79.6668
CanESM2	Mon Jan 01 2052 00:00:00 GMT-0800 (Pacific Standard Time)	2052			78.20725
CanESM2	Wed Jan 01 2053 00:00:00 GMT-0800 (Pacific Standard Time)	2053			79.77849

**Cal-Adapt**  
**Annual Averages Tool - Maximum Temperature**  
**Central Basin**

location User Defined Boundary - Central Basin  
climate variable Maximum Temperature  
units °F  
scenario rcp45

**Projected Modeled Average: 78.37471 °F**  
**Historical Modeled Average: 75.42910 °F**

name	date	Year	Historical Average	Modeled Average	value
CanESM2	Thu Jan 01 2054 00:00:00 GMT-0800 (Pacific Standard Time)	2054			81.20495
CanESM2	Fri Jan 01 2055 00:00:00 GMT-0800 (Pacific Standard Time)	2055			82.21394
CanESM2	Sat Jan 01 2056 00:00:00 GMT-0800 (Pacific Standard Time)	2056			79.87422
CanESM2	Mon Jan 01 2057 00:00:00 GMT-0800 (Pacific Standard Time)	2057			79.48531
CanESM2	Tue Jan 01 2058 00:00:00 GMT-0800 (Pacific Standard Time)	2058			81.88786
CanESM2	Wed Jan 01 2059 00:00:00 GMT-0800 (Pacific Standard Time)	2059			79.8483
CanESM2	Thu Jan 01 2060 00:00:00 GMT-0800 (Pacific Standard Time)	2060			78.93825
CanESM2	Sat Jan 01 2061 00:00:00 GMT-0800 (Pacific Standard Time)	2061			80.80398
CanESM2	Sun Jan 01 2062 00:00:00 GMT-0800 (Pacific Standard Time)	2062			80.77498
CanESM2	Mon Jan 01 2063 00:00:00 GMT-0800 (Pacific Standard Time)	2063			81.62168
CanESM2	Tue Jan 01 2064 00:00:00 GMT-0800 (Pacific Standard Time)	2064			81.41727
CanESM2	Thu Jan 01 2065 00:00:00 GMT-0800 (Pacific Standard Time)	2065			79.64433
CanESM2	Fri Jan 01 2066 00:00:00 GMT-0800 (Pacific Standard Time)	2066			79.12803
CanESM2	Sat Jan 01 2067 00:00:00 GMT-0800 (Pacific Standard Time)	2067			77.56873
CanESM2	Sun Jan 01 2068 00:00:00 GMT-0800 (Pacific Standard Time)	2068			78.93649
CanESM2	Tue Jan 01 2069 00:00:00 GMT-0800 (Pacific Standard Time)	2069			79.5317
CanESM2	Wed Jan 01 2070 00:00:00 GMT-0800 (Pacific Standard Time)	2070			79.32315
CanESM2	Thu Jan 01 2071 00:00:00 GMT-0800 (Pacific Standard Time)	2071			79.38442
CanESM2	Fri Jan 01 2072 00:00:00 GMT-0800 (Pacific Standard Time)	2072			81.95296
CanESM2	Sun Jan 01 2073 00:00:00 GMT-0800 (Pacific Standard Time)	2073			79.15277
CanESM2	Mon Jan 01 2074 00:00:00 GMT-0800 (Pacific Standard Time)	2074			82.33441
CanESM2	Tue Jan 01 2075 00:00:00 GMT-0800 (Pacific Standard Time)	2075			80.22528
CanESM2	Wed Jan 01 2076 00:00:00 GMT-0800 (Pacific Standard Time)	2076			80.37602
CanESM2	Fri Jan 01 2077 00:00:00 GMT-0800 (Pacific Standard Time)	2077			81.16308
CanESM2	Sat Jan 01 2078 00:00:00 GMT-0800 (Pacific Standard Time)	2078			79.65826
CanESM2	Sun Jan 01 2079 00:00:00 GMT-0800 (Pacific Standard Time)	2079			81.26578
CanESM2	Mon Jan 01 2080 00:00:00 GMT-0800 (Pacific Standard Time)	2080			80.30891
CanESM2	Wed Jan 01 2081 00:00:00 GMT-0800 (Pacific Standard Time)	2081			80.40226
CanESM2	Thu Jan 01 2082 00:00:00 GMT-0800 (Pacific Standard Time)	2082			81.18511
CanESM2	Fri Jan 01 2083 00:00:00 GMT-0800 (Pacific Standard Time)	2083			79.49623
CanESM2	Sat Jan 01 2084 00:00:00 GMT-0800 (Pacific Standard Time)	2084			80.14512
CanESM2	Mon Jan 01 2085 00:00:00 GMT-0800 (Pacific Standard Time)	2085			80.17983
CanESM2	Tue Jan 01 2086 00:00:00 GMT-0800 (Pacific Standard Time)	2086			80.42222
CanESM2	Wed Jan 01 2087 00:00:00 GMT-0800 (Pacific Standard Time)	2087			81.76029
CanESM2	Thu Jan 01 2088 00:00:00 GMT-0800 (Pacific Standard Time)	2088			80.45757
CanESM2	Sat Jan 01 2089 00:00:00 GMT-0800 (Pacific Standard Time)	2089			80.29346
CanESM2	Sun Jan 01 2090 00:00:00 GMT-0800 (Pacific Standard Time)	2090			79.77905
CanESM2	Mon Jan 01 2091 00:00:00 GMT-0800 (Pacific Standard Time)	2091			79.51293
CanESM2	Tue Jan 01 2092 00:00:00 GMT-0800 (Pacific Standard Time)	2092			80.75489
CanESM2	Thu Jan 01 2093 00:00:00 GMT-0800 (Pacific Standard Time)	2093			79.90386
CanESM2	Fri Jan 01 2094 00:00:00 GMT-0800 (Pacific Standard Time)	2094			78.46119
CanESM2	Sat Jan 01 2095 00:00:00 GMT-0800 (Pacific Standard Time)	2095			80.46391
CanESM2	Sun Jan 01 2096 00:00:00 GMT-0800 (Pacific Standard Time)	2096			80.02276
CanESM2	Tue Jan 01 2097 00:00:00 GMT-0800 (Pacific Standard Time)	2097			80.06407
CanESM2	Wed Jan 01 2098 00:00:00 GMT-0800 (Pacific Standard Time)	2098			79.7292
CanESM2	Thu Jan 01 2099 00:00:00 GMT-0800 (Pacific Standard Time)	2099			80.91749
CanESM2	Fri Jan 01 2100 00:00:00 GMT-0800 (Pacific Standard Time)	2100			82.13603

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX G**

**SB X7-7 VERIFICATION FORM**

**SB X7-7 Table 0: Units of Measure Used in UWMP\***

*(select one from the drop down list)*

Acre Feet

*\*The unit of measure must be consistent with Table 2-3*

NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	12,916	Acre Feet
	2008 total volume of delivered recycled water	2,164	Acre Feet
	2008 recycled water as a percent of total deliveries	16.75%	Percent
	Number of years in baseline period <sup>1</sup>	14	Years
	Year beginning baseline period range	1997	
	Year ending baseline period range <sup>2</sup>	2010	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	
	Year ending baseline period range <sup>3</sup>	2008	
<sup>1</sup> If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.			
<sup>2</sup> The ending year must be between December 31, 2004 and December 31, 2010.			
<sup>3</sup> The ending year must be between December 31, 2007 and December 31, 2010.			
NOTES:			

**SB X7-7 Table 2: Method for Population Estimates**

<b>Method Used to Determine Population</b> (may check more than one)	
<input type="checkbox"/>	<b>1. Department of Finance (DOF)</b> DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
<input type="checkbox"/>	<b>2. Persons-per-Connection Method</b>
<input checked="" type="checkbox"/>	<b>3. DWR Population Tool</b>
<input type="checkbox"/>	<b>4. Other</b> DWR recommends pre-review
NOTES:	



**SB X7-7 Table 3: Service Area Population**

Year	Population	
10 to 15 Year Baseline Population		
Year 1	1997	50,501
Year 2	1998	50,374
Year 3	1999	50,391
Year 4	2000	51,114
Year 5	2001	51,737
Year 6	2002	52,710
Year 7	2003	53,726
Year 8	2004	54,102
Year 9	2005	54,286
Year 10	2006	54,229
<i>Year 11</i>	<i>2007</i>	<i>54,112</i>
<i>Year 12</i>	<i>2008</i>	<i>54,167</i>
<i>Year 13</i>	<i>2009</i>	<i>54,256</i>
<i>Year 14</i>	<i>2010</i>	<i>54,546</i>
<i>Year 15</i>		
5 Year Baseline Population		
Year 1	2004	54,102
Year 2	2005	54,286
Year 3	2006	54,229
Year 4	2007	54,112
Year 5	2008	54,167
2015 Compliance Year Population		
<b>2015</b>		49,091
NOTES:		

**SB X7-7 Table 4: Annual Gross Water Use \***

	Baseline Year <i>Fm SB X7-7 Table 3</i>	Volume Into Distribution System <i>Fm SB X7-7 Table(s) 4-A</i>	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water <i>Fm SB X7-7 Table 4-B</i>	Water Delivered for Agricultural Use	Process Water <i>Fm SB X7-7 Table(s) 4-D</i>	
<b>10 to 15 Year Baseline - Gross Water Use</b>								
Year 1	1997	12372	2,091		0		0	10,281
Year 2	1998	11401	1,976		0		0	9,425
Year 3	1999	11607	1,918		0		0	9,689
Year 4	2000	12770	2,470		0		0	10,300
Year 5	2001	12314	2,357		0		0	9,957
Year 6	2002	12756	2,614		0		0	10,142
Year 7	2003	12486	2,761		0		0	9,725
Year 8	2004	13247	3,140		0		0	10,107
Year 9	2005	11927	2,799		0		0	9,128
Year 10	2006	12653	3,492		0		0	9,161
Year 11	2007	13317	3,526		0		0	9,791
Year 12	2008	13442	2,690		0		0	10,752
Year 13	2009	10361	1,717		0		0	8,644
Year 14	2010	9597	1,257		0		0	8,340
Year 15	0	0			0		0	0
<b>10 - 15 year baseline average gross water use</b>								<b>9,029</b>
<b>5 Year Baseline - Gross Water Use</b>								
Year 1	2004	13,247	3,140		0		0	10,107
Year 2	2005	11,927	2,799		0		0	9,128
Year 3	2006	12,653	3,492		0		0	9,161
Year 4	2007	13,317	3,526		0		0	9,791
Year 5	2008	13,442	2,690		0		0	10,752
<b>5 year baseline average gross water use</b>								<b>9,788</b>
<b>2015 Compliance Year - Gross Water Use</b>								
<b>2015</b>		8,460	827		0		0	7,633
* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3								
NOTES:								

**SB X7-7 Table 4-A: Volume Entering the Distribution System(s)**

Complete one table for each source.

<b>Name of Source</b>		GW		
<b>This water source is:</b>				
<input checked="" type="checkbox"/>	The supplier's own water source			
<input type="checkbox"/>	A purchased or imported source			
<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment* <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System	
<b>10 to 15 Year Baseline - Water into Distribution System</b>				
Year 1	1997	8705		8,705
Year 2	1998	9374		9,374
Year 3	1999	7772		7,772
Year 4	2000	9515		9,515
Year 5	2001	9759		9,759
Year 6	2002	10504		10,504
Year 7	2003	9971		9,971
Year 8	2004	10349		10,349
Year 9	2005	10434		10,434
Year 10	2006	12028		12,028
Year 11	2007	11812		11,812
Year 12	2008	11415		11,415
Year 13	2009	10021		10,021
Year 14	2010	9307		9,307
Year 15	0			0
<b>5 Year Baseline - Water into Distribution System</b>				
Year 1	2004	10349		10,349
Year 2	2005	10434		10,434
Year 3	2006	12028		12,028
Year 4	2007	11812		11,812
Year 5	2008	11415		11,415
<b>2015 Compliance Year - Water into Distribution System</b>				
<b>2015</b>	7809.1			<b>7,809</b>
<i>* Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>				
NOTES:				

**SB X7-7 Table 4-A: Volume Entering the Distribution System(s)**

**Name of Source** CBMWD/MET

<b>This water source is:</b>				
<input type="checkbox"/>	The supplier's own water source			
<input checked="" type="checkbox"/>	A purchased or imported source			

<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>	Volume Entering Distribution System	Meter Error Adjustment* <i>Optional (+/-)</i>	Corrected Volume Entering Distribution System	
<b>10 to 15 Year Baseline - Water into Distribution System</b>				
Year 1	1997	3667		3,667
Year 2	1998	2027		2,027
Year 3	1999	3835		3,835
Year 4	2000	3255		3,255
Year 5	2001	2555		2,555
Year 6	2002	2252		2,252
Year 7	2003	2515		2,515
Year 8	2004	2898		2,898
Year 9	2005	1493		1,493
Year 10	2006	625		625
Year 11	2007	1505		1,505

Year 12	2008	2027		2,027
Year 13	2009	340		340
Year 14	2010	290		290
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2004	2898		2,898
Year 2	2005	1493		1,493
Year 3	2006	625		625
Year 4	2007	1505		1,505
Year 5	2008	2027		2,027
2015 Compliance Year - Water into Distribution System				
2015		651		651
<i>* Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>				
NOTES:				

<b>SB X7-7 Table 4-A: Volume Entering the Distribution</b>				
<b>Name of Source</b>		Source 3		
<b>This water source is:</b>				
<input type="checkbox"/>	The supplier's own water source			
<input type="checkbox"/>	A purchased or imported source			
<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>	<b>Volume Entering Distribution System</b>	<b>Meter Error Adjustment* Optional (+/-)</b>	<b>Corrected Volume Entering Distribution System</b>	
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1997			0
Year 2	1998			0
Year 3	1999			0
Year 4	2000			0
Year 5	2001			0
Year 6	2002			0
Year 7	2003			0
Year 8	2004			0
Year 9	2005			0
Year 10	2006			0
Year 11	2007			0
Year 12	2008			0
Year 13	2009			0
Year 14	2010			0
Year 15	0			0
5 Year Baseline - Water into Distribution System				
Year 1	2004			0
Year 2	2005			0
Year 3	2006			0
Year 4	2007			0
Year 5	2008			0
2015 Compliance Year - Water into Distribution System				
2015				0
<i>* Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>				
NOTES:				

<b>SB X7-7 Table 4-A: Volume Entering the Distribution</b>				
<b>Name of Source</b>		Source 4		
<b>This water source is:</b>				
<input type="checkbox"/>	The supplier's own water source			
<input type="checkbox"/>	A purchased or imported source			

**SB X7-7 Table 4-B: Indirect Recycled Water Use Deduction** (For use only by agencies that are deducting indirect recycled water)

Baseline Year <i>Fm SB X7-7 Table 3</i>	Surface Reservoir Augmentation					Groundwater Recharge			Total Deductible Volume of Indirect Recycled Water Entering the Distribution System
	Volume Discharged from Reservoir for Distribution System Delivery	Percent Recycled Water	Recycled Water Delivered to Treatment Plant	Transmission/ Treatment Loss	Recycled Volume Entering Distribution System from Surface Reservoir Augmentation	Recycled Water Pumped by Utility*	Transmission/ Treatment Losses	Recycled Volume Entering Distribution System from Groundwater Recharge	
<b>10-15 Year Baseline - Indirect Recycled Water Use</b>									
Year 1	1997		0		0			0	0
Year 2	1998		0		0			0	0
Year 3	1999		0		0			0	0
Year 4	2000		0		0			0	0
Year 5	2001		0		0			0	0
Year 6	2002		0		0			0	0
Year 7	2003		0		0			0	0
Year 8	2004		0		0			0	0
Year 9	2005		0		0			0	0
Year 10	2006		0		0			0	0
Year 11	2007		0		0			0	0
Year 12	2008		0		0			0	0
Year 13	2009		0		0			0	0
Year 14	2010		0		0			0	0
Year 15	0		0		0			0	0
<b>5 Year Baseline - Indirect Recycled Water Use</b>									
Year 1	2004		0		0			0	0
Year 2	2005		0		0			0	0
Year 3	2006		0		0			0	0
Year 4	2007		0		0			0	0
Year 5	2008		0		0			0	0
<b>2015 Compliance - Indirect Recycled Water Use</b>									
	<b>2015</b>		0		0			0	0
*Suppliers will provide supplemental sheets to document the calculation for their input into "Recycled Water Pumped by Utility". The volume reported in this cell must be less than total groundwater pumped - See Methodology 1, Step 8, section 2.c.									
NOTES:									

**SB X7-7 Table 4-C: Process Water Deduction Eligibility**

*(For use only by agencies that are deducting process water) Choose Only One*

<input type="checkbox"/>	<b>Criteria 1-</b> Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
<input type="checkbox"/>	<b>Criteria 2 -</b> Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
<input type="checkbox"/>	<b>Criteria 3 -</b> Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
<input type="checkbox"/>	<b>Criteria 4 -</b> Disadvantaged Community. Complete SB x7-7 Table 4-C.4

NOTES:

## SB X7-7 Table 4-C.1: Process Water Deduction Eligibility

### Criteria 1

Industrial water use is equal to or greater than 12% of gross water use

Baseline Year <i>Fm SB X7-7 Table 3</i>	Gross Water Use Without Process Water Deduction	Industrial Water Use	Percent Industrial Water	Eligible for Exclusion Y/N
<b>10 to 15 Year Baseline - Process Water Deduction Eligibility</b>				
Year 1	1997	10,281	0%	NO
Year 2	1998	9,425	0%	NO
Year 3	1999	9,689	0%	NO
Year 4	2000	10,300	0%	NO
Year 5	2001	9,957	0%	NO
Year 6	2002	10,142	0%	NO
Year 7	2003	9,725	0%	NO
Year 8	2004	10,107	0%	NO
Year 9	2005	9,128	0%	NO
Year 10	2006	9,161	0%	NO
Year 11	2007	9,791	0%	NO
Year 12	2008	10,752	0%	NO
Year 13	2009	8,644	0%	NO
Year 14	2010	8,340	0%	NO
Year 15	0	0		NO
<b>5 Year Baseline - Process Water Deduction Eligibility</b>				
Year 1	2004	10,107	0%	NO
Year 2	2005	9,128	0%	NO
Year 3	2006	9,161	0%	NO
Year 4	2007	9,791	0%	NO
Year 5	2008	10,752	0%	NO
<b>2015 Compliance Year - Process Water Deduction Eligibility</b>				
<b>2015</b>		7,633	0%	NO
NOTES:				



**SB X7-7 Table 4-C.2: Process Water Deduction Eligibility**

**Criteria 2**

Industrial water use is equal to or greater than 15 GPCD

Baseline Year <i>Fm SB X7-7 Table 3</i>	Industrial Water Use	Population	Industrial GPCD	Eligible for Exclusion Y/N	
<b>10 to 15 Year Baseline - Process Water Deduction Eligibility</b>					
Year 1	1997		50,501	0	NO
Year 2	1998		50,374	0	NO
Year 3	1999		50,391	0	NO
Year 4	2000		51,114	0	NO
Year 5	2001		51,737	0	NO
Year 6	2002		52,710	0	NO
Year 7	2003		53,726	0	NO
Year 8	2004		54,102	0	NO
Year 9	2005		54,286	0	NO
Year 10	2006		54,229	0	NO
<i>Year 11</i>	2007		54,112	0	NO
<i>Year 12</i>	2008		54,167	0	NO
<i>Year 13</i>	2009		54,256	0	NO
<i>Year 14</i>	2010		54,546	0	NO
<i>Year 15</i>	0		0		NO
<b>5 Year Baseline - Process Water Deduction Eligibility</b>					
Year 1	2004		54,102	0	NO
Year 2	2005		54,286	0	NO
Year 3	2006		54,229	0	NO
Year 4	2007		54,112	0	NO
Year 5	2008		54,167	0	NO
<b>2015 Compliance Year - Process Water Deduction Eligibility</b>					
<b>2015</b>			49,091	0	NO
NOTES:					

**SB X7-7 Table 4-C.3: Process Water Deduction Eligibility**

**Criteria 3**

Non-industrial use is equal to or less than 120 GPCD

Baseline Year <i>Fm SB X7-7 Table 3</i>	Gross Water Use Without Process Water Deduction <i>Fm SB X7-7 Table 4</i>	Industrial Water Use	Non-industrial Water Use	Population <i>Fm SB X7-7 Table 3</i>	Non-Industrial GPCD	Eligible for Exclusion Y/N	
<b>10 to 15 Year Baseline - Process Water Deduction Eligibility</b>							
Year 1	1997	10,281		10,281	50,501	182	NO
Year 2	1998	9,425		9,425	50,374	167	NO
Year 3	1999	9,689		9,689	50,391	172	NO
Year 4	2000	10,300		10,300	51,114	180	NO
Year 5	2001	9,957		9,957	51,737	172	NO
Year 6	2002	10,142		10,142	52,710	172	NO
Year 7	2003	9,725		9,725	53,726	162	NO
Year 8	2004	10,107		10,107	54,102	167	NO
Year 9	2005	9,128		9,128	54,286	150	NO
Year 10	2006	9,161		9,161	54,229	151	NO
Year 11	2007	9,791		9,791	54,112	162	NO
Year 12	2008	10,752		10,752	54,167	177	NO
Year 13	2009	8,644		8,644	54,256	142	NO
Year 14	2010	8,340		8,340	54,546	136	NO
Year 15	0	0		0	0		NO
<b>5 Year Baseline - Process Water Deduction Eligibility</b>							
Year 1	2004	10,107		10,107	54,102	167	NO
Year 2	2005	9,128		9,128	54,286	150	NO
Year 3	2006	9,161		9,161	54,229	151	NO
Year 4	2007	9,791		9,791	54,112	162	NO
Year 5	2008	10,752		10,752	54,167	177	NO
<b>2015 Compliance Year - Process Water Deduction Eligibility</b>							
<b>2015</b>		7,633		7,633	49,091	139	NO
NOTES:							

**SB X7-7 Table 4-C.4: Process Water Deduction Eligibility**

**Criteria 4**

Disadvantaged Community

Use IRWM DAC Mapping tool [http://www.water.ca.gov/irwm/grants/resources\\_dac.cfm](http://www.water.ca.gov/irwm/grants/resources_dac.cfm)

California Median Household Income		Service Area Median Household Income	Percentage of Statewide Average	Eligible for Exclusion? Y/N
<b>2015 Compliance Year - Process Water Deduction Eligibility</b>				
2010	\$53,046		0%	YES

*A "Disadvantaged Community" is a community with a median household income less than 80 percent of the statewide average.*

NOTES:

**SB X7-7 Table 4-D: Process Water Deduction - Volume**

*Complete a*

*separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer		<i>Industrial Customer 1</i>				
Baseline Year <i>Fm SB X7-7 Table 3</i>	Industrial Customer's Total Water Use	Total Volume Supplied by Water Agency	% of Water Supplied by Water Agency	Customer's Total Process Water Use	Volume of Process Water Eligible for Exclusion for this Customer	
<b>10 to 15 Year Baseline - Process Water Deduction</b>						
Year 1	1997				0	
Year 2	1998				0	
Year 3	1999				0	
Year 4	2000				0	
Year 5	2001				0	
Year 6	2002				0	
Year 7	2003				0	
Year 8	2004				0	
Year 9	2005				0	
Year 10	2006				0	
<i>Year 11</i>	2007				0	
<i>Year 12</i>	2008				0	
<i>Year 13</i>	2009				0	
<i>Year 14</i>	2010				0	
<i>Year 15</i>	0				0	
<b>5 Year Baseline - Process Water Deduction</b>						
Year 1	2004				0	
Year 2	2005				0	
Year 3	2006				0	
Year 4	2007				0	
Year 5	2008				0	
<b>2015 Compliance Year - Process Water Deduction</b>						
<b>2015</b>					0	
NOTES:						

**SB X7-7 Table 4-D: Process Water Deduction - Volume**

*Complete a*

*separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer		<i>Industrial Customer 2</i>				
Baseline Year <i>Fm SB X7-7 Table 3</i>	Industrial Customer's Total Water Use	Total Volume Supplied by Water Agency	% of Water Supplied by Water Agency	Customer's Total Process Water Use	Volume of Process Water Eligible for Exclusion for this Customer	

**SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)**

<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>		<b>Service Area Population</b> <i>Fm SB X7-7 Table 3</i>	<b>Annual Gross Water Use</b> <i>Fm SB X7-7 Table 4</i>	<b>Daily Per Capita Water Use (GPCD)</b>
<b>10 to 15 Year Baseline GPCD</b>				
Year 1	1997	50,501	10,281	182
Year 2	1998	50,374	9,425	167
Year 3	1999	50,391	9,689	172
Year 4	2000	51,114	10,300	180
Year 5	2001	51,737	9,957	172
Year 6	2002	52,710	10,142	172
Year 7	2003	53,726	9,725	162
Year 8	2004	54,102	10,107	167
Year 9	2005	54,286	9,128	150
Year 10	2006	54,229	9,161	151
<i>Year 11</i>	2007	54,112	9,791	162
<i>Year 12</i>	2008	54,167	10,752	177
<i>Year 13</i>	2009	54,256	8,644	142
<i>Year 14</i>	2010	54,546	8,340	136
<i>Year 15</i>	0	0	0	
<b>10-15 Year Average Baseline GPCD</b>				<b>164</b>
<b>5 Year Baseline GPCD</b>				
<b>Baseline Year</b> <i>Fm SB X7-7 Table 3</i>		<b>Service Area Population</b> <i>Fm SB X7-7 Table 3</i>	<b>Gross Water Use</b> <i>Fm SB X7-7 Table 4</i>	<b>Daily Per Capita Water Use</b>
Year 1	2004	54,102	10,107	167
Year 2	2005	54,286	9,128	150
Year 3	2006	54,229	9,161	151
Year 4	2007	54,112	9,791	162
Year 5	2008	54,167	10,752	177
<b>5 Year Average Baseline GPCD</b>				<b>161</b>
<b>2015 Compliance Year GPCD</b>				
<b>2015</b>		49,091	7,633	139
NOTES:				

**SB X7-7 Table 6: Gallons per Capita per Day**  
*Summary From Table SB X7-7 Table 5*

10-15 Year Baseline GPCD	164
5 Year Baseline GPCD	161
2015 Compliance Year GPCD	139
NOTES:	

**SB X7-7 Table 7: 2020 Target Method***Select Only One*

Target Method		Supporting Documentation
<input type="checkbox"/>	Method 1	SB X7-7 Table 7A
<input type="checkbox"/>	Method 2	SB X7-7 Tables 7B, 7C, and 7D <i>Contact DWR for these tables</i>
<input checked="" type="checkbox"/>	Method 3	SB X7-7 Table 7-E
<input type="checkbox"/>	Method 4	Method 4 Calculator
NOTES:		



**SB X7-7 Table 7-A: Target Method 1**

20% Reduction

10-15 Year Baseline GPCD	2020 Target GPCD
164	131

NOTES:

**SB X7-7 Table 7-E: Target Method 3**

Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
<input type="checkbox"/>		North Coast	137	130
<input type="checkbox"/>		North Lahontan	173	164
<input type="checkbox"/>		Sacramento River	176	167
<input type="checkbox"/>		San Francisco Bay	131	124
<input type="checkbox"/>		San Joaquin River	174	165
<input type="checkbox"/>		Central Coast	123	117
<input type="checkbox"/>		Tulare Lake	188	179
<input type="checkbox"/>		South Lahontan	170	162
<input checked="" type="checkbox"/>	100%	South Coast	149	142
<input type="checkbox"/>		Colorado River	211	200
<p align="center"><b>Target</b> <i>(If more than one region is selected, this value is calculated.)</i></p>				<p align="center"><b>142</b></p>
<p>NOTES:</p>				

**SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target**

5 Year Baseline GPCD <i>From SB X7-7 Table 5</i>	Maximum 2020 Target*	Calculated 2020 Target <i>Fm Appropriate Target Table</i>	Confirmed 2020 Target
161	153	142	142

\* Maximum 2020 Target is 95% of the 5 Year Baseline GPCD

NOTES:

**SB X7-7 Table 8: 2015 Interim Target GPCD**

Confirmed 2020 Target <i>Fm SB X7-7 Table 7-F</i>	10-15 year Baseline GPCD <i>Fm SB X7-7 Table 5</i>	2015 Interim Target GPCD
142	164	153

NOTES:

**SB X7-7 Table 9: 2015 Compliance**

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments <i>(in GPCD)</i>					2015 GPCD <i>(Adjusted if applicable)</i>	Did Supplier Achieve Targeted Reduction for 2015?
		Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD		
139	153	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	<i>From Methodology 8 (Optional)</i>	0	138.8041681	138.8041681	YES

NOTES:

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX H**

**SB X7-7 2020 COMPLIANCE FORM**

## SB X7-7 2020 Compliance Form

**The SB X7-7 2020 Compliance Form is for the calculation of 2020 compliance only. All retail suppliers must complete the SB X7-7 Compliance Form.** Baseline and target calculations are done in the SB X 7-7 Verification Form.

**The SB X7-7 Verification Form is for the calculation of baselines and targets and is a separate workbook from the SB X7-7 2020 Compliance Form.**

Most Suppliers will have completed the SB X7-7 Verification Form with their 2015 UWMP and do not need to complete this form again in 2020. See Chapter 5 Section 5.3 of the UWMP Guidebook for more information regarding which Suppliers must, or may, complete the SB X7-7 Verification Form for their 2020 UWMP. 2020 compliance calculations are done in the SB X7-7 2020 Compliance Form.

### WUE Data Portal Entry Exceptions

**The data from the tables below will not be entered into WUE Data Portal tables. These tables will be submitted as separate uploads, in Excel, to WUE Data Portal.**

#### **Process Water Deduction**

SB X7-7 tables 4-C, 4-C.1, 4-C.2, 4-C.3, 4-C.4 and 4-D

A supplier that will use the process water deduction will complete the appropriate tables in Excel, submit them as a separate upload to the WUE Data Portal, and include them in its UWMP.



**SB X7-7 Table 0: Units of Measure Used in 2020 UWMP\***  
*(select one from the drop down list)*

Acre Feet

*\*The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*

NOTES:

**SB X7-7 Table 2: Method for 2020 Population Estimate**

<b>Method Used to Determine 2020 Population</b> (may check more than one)	
<input checked="" type="checkbox"/>	<b>1. Department of Finance (DOF) or American Community Survey (ACS)</b>
<input type="checkbox"/>	<b>2. Persons-per-Connection Method</b>
<input type="checkbox"/>	<b>3. DWR Population Tool</b>
<input checked="" type="checkbox"/>	<b>4. Other</b> DWR recommends pre-review
NOTES: 2020 population was obtained from California Census 2020. California Census 2020 utilizes data from the United States Census Bureau and the American Community Survey.	

**SB X7-7 Table 3: 2020 Service Area Population**

**2020 Compliance Year Population**

<b>2020</b>	50,143
-------------	--------

NOTES:

**SB X7-7 Table 4: 2020 Gross Water Use**

Compliance Year 2020	2020 Volume Into Distribution System <i>This column will remain blank until SB X7-7 Table 4-A is completed.</i>	2020 Deductions					2020 Gross Water Use
		Exported Water *	Change in Dist. System Storage* (+/-)	Indirect Recycled Water <i>This column will remain blank until SB X7-7 Table 4-B is completed.</i>	Water Delivered for Agricultural Use*	Process Water <i>This column will remain blank until SB X7-7 Table 4-D is completed.</i>	
	8,455	1,228		-		-	<b>7,227</b>

\* Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

**SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment**

Complete one table for each source.

<b>Name of Source</b>		Central Basin Groundwater	
<b>This water source is (check one) :</b>			
<input checked="" type="checkbox"/>	The supplier's own water source		
<input type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System <sup>1</sup>	Meter Error Adjustment <sup>2</sup> <i>Optional</i> (+/-)	Corrected Volume Entering Distribution System
	8,448	-	8,448
<sup>1</sup> <i>Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.</i> <sup>2</sup> <i>Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>			
NOTES: Includes deliveries to the City of Norwalk and Golden State Water Company.			

**SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment**

Complete one table for each source.

<b>Name of Source</b>		Central Basin MWD	
<b>This water source is (check one) :</b>			
<input type="checkbox"/>	The supplier's own water source		
<input checked="" type="checkbox"/>	A purchased or imported source		
Compliance Year 2020	Volume Entering Distribution System <sup>1</sup>	Meter Error Adjustment <sup>2</sup> <i>Optional</i> (+/-)	Corrected Volume Entering Distribution System
	7		7
<sup>1</sup> <i>Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.</i> <sup>2</sup> <i>Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document</i>			
NOTES:			

**SB X7-7 Table 4-B: 2020 Indirect Recycled Water Use Deduction** (For use only by agencies that are deducting indirect recycled water)

2020 Compliance Year	2020 Surface Reservoir Augmentation				2020 Groundwater Recharge			Total Deductible Volume of Indirect Recycled Water Entering the Distribution System	
	Volume Discharged from Reservoir for Distribution System Delivery <sup>1</sup>	Percent Recycled Water	Recycled Water Delivered to Treatment Plant	Transmission/Treatment Loss <sup>1</sup>	Recycled Volume Entering Distribution System from Surface Reservoir Augmentation	Recycled Water Pumped by Utility <sup>1,2</sup>	Transmission/Treatment Losses <sup>1</sup>		Recycled Volume Entering Distribution System from Groundwater Recharge
			-		-			-	-

<sup>1</sup> Units of measure (AF, MG , or CCF) must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

<sup>2</sup> Suppliers will provide supplemental sheets to document the calculation for their input into "Recycled Water Pumped by Utility". The volume reported in this cell must be less than total groundwater pumped - See Methodology 1, Step 8, section 2.c.

--

**SB X7-7 Table 4-C: 2020 Process Water Deduction Eligibility**  
**(For use only by agencies that are deducting process water) Choose Only One**

<input type="checkbox"/>	<b>Criteria 1-</b> Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
<input type="checkbox"/>	<b>Criteria 2 -</b> Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
<input type="checkbox"/>	<b>Criteria 3 -</b> Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
<input type="checkbox"/>	<b>Criteria 4 -</b> Disadvantaged Community. Complete SB x7-7 Table 4-C.4

NOTES:

**SB X7-7 Table 4-C.1: 2020 Process Water Deduction Eligibility**

*(For use only by agencies that are deducting process water using Criteria 1)*

**Criteria 1**

Industrial water use is equal to or greater than 12% of gross water use

<b>2020 Compliance Year</b>	2020 Gross Water Use Without Process Water Deduction	2020 Industrial Water Use	Percent Industrial Water	<b>Eligible for Exclusion Y/N</b>
	7,227		0%	NO

NOTES:



**SB X7-7 Table 4-C.2: 2020 Process Water Deduction Eligibility**

*(For use only by agencies that are deducting process water using Criteria 2)*

**Criteria 2**

Industrial water use is equal to or greater than 15 GPCD

2020 Compliance Year	2020 Industrial Water Use	2020 Population	2020 Industrial GPCD	Eligible for Exclusion Y/N
		50,143	-	NO

NOTES:

**SB X7-7 Table 4-C.3: 2020 Process Water Deduction Eligibility***(For use only by agencies that are deducting process water using Criteria 3)***Criteria 3**

Non-industrial use is equal to or less than 120 GPCD

<b>2020 Compliance Year</b>	2020 Gross Water Use Without Process Water Deduction <i>Fm SB X7-7 Table 4</i>	2020 Industrial Water Use	2020 Non-industrial Water Use	2020 Population <i>Fm SB X7-7 Table 3</i>	Non-Industrial GPCD	<b>Eligible for Exclusion Y/N</b>
	7,227		7,227	50,143	129	NO

NOTES:

**SB X7-7 Table 4-C.4: 2020 Process Water Deduction Eligibility** (For use only by agencies that are deducting process water using Criteria 4)

**Criteria 4**

Disadvantaged Community. A "Disadvantaged Community" (DAC) is a community with a median household income less than 80 percent of the statewide average.

**SELECT ONE**

"Disadvantaged Community" status was determined using one of the methods listed below:

**1. IRWM DAC Mapping tool <https://gis.water.ca.gov/app/dacs/>**

If using the IRWM DAC Mapping Tool, include a screen shot from the tool showing that the service area is considered a DAC.

**2. 2020 Median Income**

<input type="checkbox"/>	California Median Household Income*		Service Area Median Household Income	Percentage of Statewide Average	Eligible for Exclusion? Y/N
	<b>2020</b>	<b>\$75,235</b>		0%	YES
*California median household income 2015 -2019 as reported in US Census Bureau QuickFacts.					

NOTES

**SB X7-7 Table 4-D: 2020 Process Water Deduction - Volume**

*Complete a separate table for each industrial customer with a process water exclusion*

Name of Industrial Customer		<i>Enter Name of Industrial Customer 1</i>			
Compliance Year 2020	Industrial Customer's Total Water Use *	Total Volume Provided by Supplier*	% of Water Provided by Supplier	Customer's Total Process Water Use*	Volume of Process Water Eligible for Exclusion for this Customer

\* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

**SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)**

<b>2020 Gross Water</b> <i>Fm SB X7-7 Table 4</i>	<b>2020 Population</b> <i>Fm SB X7-7 Table 3</i>	<b>2020 GPCD</b>
7,227	50,143	<b>129</b>

NOTES:

**SB X7-7 Table 9: 2020 Compliance**

Actual 2020 GPCD <sup>1</sup>	Optional Adjustments to 2020 GPCD					2020 Confirmed Target GPCD <sup>1, 2</sup>	Did Supplier Achieve Targeted Reduction for 2020?
	Enter "0" if Adjustment Not Used			TOTAL Adjustments <sup>1</sup>	Adjusted 2020 GPCD <sup>1</sup> <i>(Adjusted if applicable)</i>		
	Extraordinary Events <sup>1</sup>	Weather Normalization <sup>1</sup>	Economic Adjustment <sup>1</sup>				
129	-	-	-	-	129	142	YES

<sup>1</sup> All values are reported in GPCD

<sup>2</sup> **2020 Confirmed Target GPCD** is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.

NOTES:

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX I**

**CENTRAL BASIN THIRD AMENDED JUDGMENT**

1 WILLIAM F. KRUSE (CSB # 090231)  
2 LAGERLOF, SENEAL, GOSNEY & KRUSE, LLP  
3 301 N. Lake Avenue, 10th Floor  
4 Pasadena, CA 91101-4108  
5 626/793-9400; FAX 626/793-5900

6  
7  
8 Attorneys for CITY OF LAKEWOOD,  
9 CITY OF LONG BEACH

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SUPERIOR COURT OF THE STATE OF CALIFORNIA  
FOR THE COUNTY OF LOS ANGELES

CENTRAL AND WEST BASIN WATER  
REPLENISHMENT DISTRICT, etc.,

Plaintiff,

vs.

CHARLES E. ADAMS, et al.,

Defendant

CITY OF LAKEWOOD, a municipal  
corporation,

Cross-Complainant

vs.

CHARLES E. ADAMS, et al.,

Cross-Defendants.

Case No.: 786,656

THIRD AMENDED JUDGMENT

(Declaring and establishing  
water rights in Central Basin,  
enjoining extractions  
therefrom in excess of  
specified quantities  
and providing for the storage and  
extraction of stored water.)

Assigned for all purposes to  
Hon. Abraham Khan  
Dept. 51



1 **TABLE OF CONTENTS**

2

3 I. DECLARATION AND DETERMINATION OF WATER RIGHTS OF

4 PARTIES; RESTRICTION ON THE EXERCISE THEREOF..... 13

5 A. Determination of Rights of Parties. .... 13

6 B. Parties Enjoined as to Quantities of Extractions..... 14

7 C. Parties Enjoined as to Export of Extractions. .... 17

8 II. APPOINTMENT OF WATERMASTER; WATERMASTER

9 ADMINISTRATION PROVISIONS..... 17

10 A. The Administrative Body..... 18

11 (1) To Require Reports, Information and Records..... 18

12 (2) Storage Projects. .... 18

13 (3) Annual Report..... 18

14 (4) Annual Budget and Appeal Procedure in Relation Thereto..... 19

15 (5) Rules. .... 22

16 B. The Central Basin Water Rights Panel. .... 22

17 C. The Storage Panel. .... 26

18 D. Use of Facilities and Data Collected by Other Governmental Agencies..... 26

19 E. Appeal from Watermaster Decisions..... 26

20 F. Effect of Non-Compliance by Watermaster With Time Provisions. .... 27

21 G. Limitations on Administrative Body. .... 27

22 H. Regional Disadvantaged Communities Incentive Program. .... 28

23 III. PROVISIONS FOR PHYSICAL SOLUTION TO MEET THE

24 WATER REQUIREMENTS IN CENTRAL BASIN. .... 29

25 A. Carryover of Portion of Allowed Pumping Allocation..... 29

26 (1) Amount of Carryover..... 29

27 (2) Conversion of Carryover to Stored Water. .... 30

28 (3) Declared Water Emergency..... 30

1 (4) Drought Carryover. .... 31

2 (5) Accumulated Drought Carryover..... 31

3 B. When Over-Extractions May be Permitted..... 31

4 (1) Underestimation of Requirements for Water..... 32

5 (2) Reductions in Allowed Pumping Allocations in Succeeding

6 Years to Compensate for Permissible Overextractions. .... 32

7 (3) Reductions in Allowed Pumping Allocations for the Next

8 Succeeding Administrative Year to Compensate for Overpumping..... 32

9 (4) Reports of Certain Over-extractions to the Court..... 33

10 (5) Effect of Over-extractions on Rights. .... 33

11 (6) Pumping Under Agreement With Plaintiff During

12 Periods of Emergency..... 33

13 (7) Exemption for Extractors of Contaminated Groundwater..... 39

14 C. Exchange Pool Provisions..... 42

15 (1) Definitions..... 42

16 (2) Parties Who May Purchase Water Through the Exchange Pool..... 43

17 (3) Procedure for Purchasing Exchange Pool Water..... 43

18 (4) Subscriptions to Exchange Pool..... 44

19 (5) Limitations on Purchases of Exchange Pool Water and Allocation of

20 Requests to Purchase Exchange Pool Water Among Exchangors..... 46

21 (6) Additional Voluntary Subscriptions. .... 48

22 (7) Effect if Category (a) Requests Exceed Available Subscriptions, Both

23 Required and Voluntary..... 48

24 (8) Additional Pumping by Exchangees Pursuant to

25 Exchange Pool Provisions..... 49

26 (9) Reduction in Pumping by Exchangors..... 49

27 (10) Price to be Paid for Exchange Pool Water..... 49

28 (11) Carry-over of Exchange Pool Purchases by Exchangees. .... 50

1	(12) Notification by Watermaster to Exchangers and	
2	Exchanges of Exchange Pool Requests and Allocations	
3	Thereof and Price of Exchange Pool Water.....	51
4	(13) Payment by Exchanges. ....	52
5	(14) Payments to Exchangers.....	52
6	(15) Delinquent Payments. ....	52
7	IV. PROVISIONS FOR THE STORAGE OF WATER AND	
8	THE EXTRACTION OF STORED WATER.....	53
9	A. Adjudication of Available Dewatered Space, Storage Capacity and Storage	
10	Apportionment. ....	53
11	B. Avoidance of Material Physical Harm.....	53
12	C. Apportionment of Available Dewatered Space. ....	54
13	D. Individual Storage Allocation. ....	55
14	E. Community Storage; Regional Disadvantaged Communities Incentive Program.....	55
15	F. Limit on Storage. ....	57
16	G. Extractions of Stored Water; Exemption from Replenishment Assessment. ....	58
17	H. Storage Procedure. ....	58
18	I. Loss of Stored Water/Relative Priority.....	59
19	J. Limits on Extraction. ....	59
20	K. Increased Extractions in the Central Basin for Certain Water Purveyors.....	60
21	L. Special Provisions for Temporary Storage within Community Storage Pool. ....	61
22	M. Basin Operating Reserve.....	63
23	(1) Participating Parties. ....	66
24	(2) Determination of Additional Extraction Rights.....	66
25	(3) Increase in Extraction Rights. ....	67
26	(4) Nominal Fluctuations.....	67
27	(5) Availability of New Water.....	67
28	(6) Limitation.....	68

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28

O. Limits on Watermaster Review. .... 68

P. Hearing Process For Watermaster Review. .... 69

Q. Trial Court Review ..... 69

R. Space Available Storage, Relative Priority, and Dedication of “Spilled” Water. 70

V. CONTINUING JURISDICTION OF THE COURT. .... 72

VI. GENERAL PROVISIONS..... 74

A. Judgment Constitutes Inter Se Adjudication..... 74

B. Assignment, Transfer, Etc., of Rights..... 74

C. Service Upon and Delivery to Parties of Various Papers. .... 74

D. Judgment Does Not Affect Rights, Powers, Etc., of Plaintiff District..... 75

E. Continuation of Order under Interim Agreement. .... 75

F. Effect of Extractions by Exchangees; Reductions in Extractions..... 75

G. Judgment Binding on Successors, Etc. .... 76

H. Costs..... 76

I. Intervention of Successors in Interest and New Parties..... 76

J. Effect of this Amended Judgment on Orders Filed Herein..... 76

1 The original judgment in this action was entered on or about August 27, 1965. Pursuant  
2 to the reserved and continuing jurisdiction of the court under the Judgment herein, certain  
3 amendments to said Judgment and temporary orders have heretofore been made and entered.  
4 Continuing jurisdiction of the court for this action is currently assigned to Hon. Abraham Khan.

5 The Motion of Plaintiff WATER REPLENISHMENT DISTRICT OF SOUTHERN  
6 CALIFORNIA (which originally brought this action under its former name “Central and West  
7 Basin Water Replenishment District”), and of defendants, City of Lakewood, City of Long  
8 Beach, Golden State Water Company, California Water Service Company, City of Los Angeles,  
9 City of Cerritos, City of Downey, City of Signal Hill, Pico Water District, Bellflower-Somerset  
10 Mutual Water Company, LaHabra Heights County Water District, City of Norwalk, Orchard  
11 Dale Water District, Montebello Land & Water Company, South Montebello Irrigation District,  
12 Sativa Los Angeles County Water District, City of Vernon and Central Basin Municipal Water  
13 District (“Moving Parties”) herein for further amendments to the Judgment, notice thereof and of  
14 the hearing thereon having been duly and regularly given to all parties, came on for hearing in  
15 Department 51 of the above-entitled court on December 18, 2013 at 9:00 a.m. before said Hon.  
16 Abraham Khan. This “Third Amended Judgment” incorporates amendments and orders  
17 heretofore made to the extent presently operable and amendments pursuant to said last  
18 mentioned motion. To the extent this Amended Judgment is a restatement of the Judgment as  
19 heretofore amended, it is for convenience in incorporating all matters in one document, is not a  
20 readjudication of such matters and is not intended to reopen any such matters. As used  
21 hereinafter the word “Judgment” shall include the original Judgment entered in this action as  
22 amended to date, including this Third Amended Judgment.

23 There exists in the County of Los Angeles, State of California, an underground water  
24 basin or reservoir known and hereinafter referred to as the “Central Basin” or “Basin” described  
25 in Appendix “1” to this Judgment.

26 Within this Judgment, the following terms, words, phrases and clauses are used by the  
27 Court with the following meanings:

28 “Adjudicated Storage Capacity” means 220,000 acre-feet of the Available Dewatered

1 Space which has been apportioned herein for Individual Storage Accounts and Community  
2 Storage.

3 “Administrative Body” is defined in Section II(A).

4 “Administrative Year” means the twelve (12) month period beginning July 1 and ending  
5 June 30.

6 “Allowed Pumping Allocation” is that quantity in acre feet which the Court adjudges to  
7 be the maximum quantity which a party should be allowed to extract annually from Central  
8 Basin as set forth in Part I hereof, which constitutes 80% of such party’s Total Water Right.

9 “Allowed Pumping Allocation for a particular Administrative Year” and “Allowed  
10 Pumping Allocation in the following Administrative Year” and similar clauses, mean the  
11 Allowed Pumping Allocation as increased in a particular Administrative Year by any authorized  
12 carryovers pursuant to Section III(A) of this Judgment and as reduced by reason of any over-  
13 extractions in a previous Administrative Year.

14 “Artificial Replenishment” is the replenishment of Central Basin achieved through the  
15 spreading or injection of imported or recycled water for percolation thereof into Central Basin by  
16 a governmental agency, including WRD.

17 “Artificial Replenishment Water” means water captured or procured by WRD to  
18 replenish the Basin, either directly by percolating or injecting the water into the Basin, or  
19 through in lieu replenishment by substituting surface water (or payment therefor) in lieu of  
20 production and use of groundwater.

21 “Available Dewatered Space” means the total amount of space available to hold  
22 groundwater within the Central Basin without causing Material Physical Harm, which space is  
23 allocated between Adjudicated Storage Capacity and Basin Operating Reserve.

24 “Base Water Right” is the highest continuous extractions of water by a party from Central  
25 Basin for a beneficial use in any period of five consecutive years after the commencement of  
26 overdraft in Central Basin and prior to the commencement of this action, as to which there has  
27 been no cessation of use by that party during any subsequent period of five consecutive years.  
28 As employed in the above definition, the words “extractions of water by a party” and “cessation

1 of use by that party” include such extractions and cessations by any predecessor or predecessors  
2 in interest.

3 “Basin Operating Reserve” means a total of 110,000 acre feet of Available Dewatered  
4 Space available for Basin operations as provided in Section IV(L). The Basin Operating Reserve  
5 added to the Adjudicated Storage Capacity equals the amount of Available Dewatered Space.

6 “Calendar Year” is the twelve month period commencing January 1 of each year and  
7 ending December 31 of each year.

8 “Carryover” is defined in Section III(A).

9 “Carryover Conversion” means the process of transferring water properly held as  
10 Carryover into Stored Water, or the water so converted to Stored Water.

11 “Central Basin” is the underground basin or reservoir underlying the Central Basin Area,  
12 the exterior boundaries of which Central Basin are the same as the exterior boundaries of Central  
13 Basin Area.

14 “Central Basin Area” is the territory described in Appendix “1” to this Judgment and is a  
15 segment of the territory comprising Plaintiff District.

16 “Central Basin Water Rights Panel” means the constituent body of Watermaster  
17 consisting of seven (7) Parties elected from among parties holding Allowed Pumping Allocations  
18 as provided in Section II(B).

19 “CEQA” refers to the California Environmental Quality Act, Public Resources Code  
20 §§ 21000 *et seq.*

21 “Community Storage Pool” is defined in Section IV(E).

22 “Declared Water Emergency” means a period commencing with the adoption of a  
23 resolution of the Board of Directors of WRD declaring that conditions within the Central Basin  
24 relating to natural and imported supplies of water are such that, without implementation of the  
25 water emergency provisions of this Judgment, the water resources of the Central Basin risk  
26 degradation. Such Declaration may be made as provided in Section III(A)(3).

27 “Disadvantaged Community” means any area that is served by a Water Purveyor and that  
28 consists of one or more contiguous census tracts which, based upon the most-recent United

1 States Census data, demonstrates a median household income which is less than eighty percent  
2 (80%) of the median household income for all Census Tracts within the state of California. The  
3 identification of Disadvantaged Communities shall be made by Watermaster following each  
4 decennial census.

5 “Extraction,” “extractions,” “extracting,” “extracted,” and other variations of the same  
6 noun and verb, mean pumping, taking, diverting or withdrawing groundwater by any manner or  
7 means whatsoever from Central Basin.

8 “Imported Water” means water brought into Central Basin Area from a non-tributary  
9 source by a party and any predecessors in interest, either through purchase directly from  
10 Metropolitan Water District of Southern California (“MWD”), the Central Basin Municipal  
11 Water District (“CBMWD”), or any other MWD member agency and additionally, as to the  
12 Department of Water and Power of the City of Los Angeles, water brought into the Central Basin  
13 Area by that party by means of the Owens River Aqueduct. In the case of water imported for  
14 storage by a party pursuant to this Judgment, “Imported Water” means water brought into the  
15 Central Basin from any non-tributary source as one method for establishing storage in the  
16 Central Basin.

17 “Imported Water Use Credit” is the annual amount, computed on a calendar year basis, of  
18 Imported Water which any party and any predecessors in interest, who have timely made the  
19 required filings under Water Code Section 1005.1, have imported into Central Basin Area in any  
20 calendar year and subsequent to July 9, 1951, for beneficial use therein, but not exceeding the  
21 amount by which that party and any predecessors in interest reduces his or their extractions of  
22 groundwater from Central Basin in that calendar year from the level of his or their extractions in  
23 the preceding calendar year, or in any prior calendar year not earlier than the calendar year 1950,  
24 whichever is the greater.

25 “Individual Storage Allocation” is defined in Section IV(D).

26 “Majority Protest” means a written protest filed with the Administrative Body of  
27 Watermaster within sixty (60) days following a protested event or decision, which evidences the  
28 concurrence of a majority of the Allowed Pumping Allocations held within the Basin as of the



1 date thereof.

2       “Material Physical Harm” means material physical injury or a material diminution in the  
3 quality or quantity of groundwater available within the Basin to support extraction of Total  
4 Water Rights or Stored Water, that is demonstrated to be attributable to the placement, recharge,  
5 injection, storage or recapture of Stored Water in the Central Basin, including, but not limited to,  
6 degradation of water quality, liquefaction, land subsidence and other material physical injury  
7 caused by elevated or lowered groundwater levels. Material Physical Harm does not include  
8 “economic injury” that results from other than direct physical causes, including any adverse  
9 effect on water rates, lease rates, or demand for water. Once fully mitigated, physical injury  
10 shall no longer be considered to be material.

11       “Natural Replenishment” means and includes all processes other than “Artificial  
12 Replenishment” by which water may become a part of the groundwater supply of Central Basin.

13       “Natural Safe Yield” is the maximum quantity of groundwater, not in excess of the long  
14 term average annual quantity of Natural Replenishment, which may be extracted annually from  
15 Central Basin without eventual depletion thereof or without otherwise causing eventual  
16 permanent damage to Central Basin as a source of groundwater for beneficial use, said maximum  
17 quantity being determined without reference to Artificial Replenishment.

18       “Outgoing Watermaster” is the State of California, Department of Water Resources, the  
19 Watermaster appointed pursuant to the terms of the Judgment before this Third Amendment.

20       “Overdraft” is that condition of a groundwater basin resulting from extractions in any  
21 given annual period or periods in excess of the long term average annual quantity of Natural  
22 Replenishment, or in excess of that quantity which may be extracted annually without otherwise  
23 causing eventual permanent damage to the basin.

24       “Party” means a party to this action. Whenever the term “party” is used in connection  
25 with a quantitative water right, or any quantitative right, privilege or obligation, or in connection  
26 with the assessment for the budget of the Watermaster, it shall be deemed to refer collectively to  
27 those parties to whom are attributed a Total Water Right in Part I of this Judgment.

28       “Person” or “persons” include individuals, partnerships, associations, governmental

1 agencies and corporations, and any and all types of entities.

2 “Recycled Water” means water that has been reclaimed through treatment appropriate for  
3 its intended use in compliance with applicable regulations.

4 “Regional Disadvantaged Communities Incentive Program” means a program to be  
5 developed by Watermaster in the manner provided in Section II(H) of this Judgment, and  
6 approved by the Court, whereby a portion of the Community Storage Pool is made available to  
7 or for the benefit of Disadvantaged Communities, on a priority basis within the Central Basin.

8 “Replenishment Assessment” means the replenishment assessment imposed by WRD  
9 upon each acre-foot of groundwater extracted from the Central Basin pursuant to WRD’s  
10 enabling act, California Water Code §§ 60000 et seq.

11 “Small Water Producers Group” means a body consisting of parties holding no greater  
12 than 5,000 acre-feet of Allowed Pumping Allocation, as set forth on Appendix 3 hereto and as  
13 may be modified from time to time by the Group’s own procedures and the requirements set  
14 forth in Appendix 3.

15 “Storage Panel” or “Central Basin Storage Panel” means a bicameral constituent body of  
16 Watermaster consisting of (i) the Central Basin Water Rights Panel and (ii) the Board of  
17 Directors of WRD.

18 “Storage Project” means an activity pertaining to the placement, recharge, injection,  
19 storage, transfer, or recapture of Stored Water within the Basin, but does not include actions by  
20 WRD undertaken in connection with its replenishment activities.

21 “Stored Water” means water, including Recycled Water, held within Available  
22 Dewatered Space as a result of spreading, injection, in-lieu delivery, or Carryover Conversion,  
23 where there is an intention to subsequently withdraw the water for reasonable and beneficial use  
24 pursuant to this Judgment.

25 “Total Water Right” is the quantity arrived at in the same manner as in the computation  
26 of “Base Water Right,” but including as if extracted in any particular year the Imported Water  
27 Use Credit, if any, to which a particular party may be entitled.

28 “Water” includes only non-saline water, which is that having less than 1,000 parts of

1 chlorides to 1,000,000 parts of water.

2 “Water Augmentation Project” means pre-approved physical actions and management  
3 activities that provide demonstrated appreciable increases in long-term annual groundwater yield  
4 in the Basin that are initiated as provided in this Judgment after January 1, 2013.

5 “Water Purveyor” means a Party (and successors in interest) which sells water to the  
6 public, whether a regulated public utility, mutual water company or public entity. As that term is  
7 used in Section III(B)(6), “Water Purveyor,” in addition to the foregoing, means a Party which  
8 has a connection or connections for the taking of Imported Water through the Metropolitan  
9 Water District of Southern California (“MWD”), or through a MWD-member agency, or access  
10 to such Imported Water through such connection, and which normally supplies at least a part of  
11 its customers’ water needs with such Imported Water.

12 “Watermaster” is defined in Part II and is comprised of (i) the Administrative Body, (ii)  
13 the Central Basin Water Rights Panel, and (iii) the Central Basin Storage Panel. Watermaster,  
14 and the various constituent bodies of Watermaster, as designated in this Judgment, exist as a  
15 special master pursuant to this Judgment and Watermaster serves at the pleasure of the Court.  
16 Nothing herein shall be construed as creating an independent designation of “Watermaster” as a  
17 public agency subject to the provisions of CEQA, nor does membership or participation as the  
18 designated Watermaster expand any statutory, constitutional, or other powers of the members  
19 serving as part of the Watermaster.

20 “West Coast Basin” is the groundwater basin adjacent to the Central Basin which is the  
21 subject of a separate adjudication of groundwater rights in *California Water Service Company, et*  
22 *al. v. City of Compton, et al.*, Los Angeles Superior Court Case No. 506806.

23 “WRD” or “Water Replenishment District” is the plaintiff herein, the Water  
24 Replenishment District of Southern California, a special district of the State of California, which  
25 brought this action under its former name, “Central and West Basin Water Replenishment  
26 District.”

27 In those instances where any of the above-defined words, terms, phrases or clauses are  
28 utilized in the definition of any of the other above-defined words, terms, phrases and clauses,

1 such use is with the same meaning as is above set forth.

2  
3 NOW THEREFORE, IT IS ORDERED, DECLARED, ADJUDGED AND DECREED  
4 WITH RESPECT TO THE ACTION AND CROSS-ACTION AS FOLLOWS:

5  
6 I. DECLARATION AND DETERMINATION OF WATER RIGHTS OF  
7 PARTIES; RESTRICTION ON THE EXERCISE THEREOF.<sup>1</sup>

8 A. Determination of Rights of Parties.

9 (1) Each party, except defendants The City of Los Angeles and  
10 Department of Water and Power of the City of Los Angeles, whose name is set  
11 forth in Appendix 2 and by this reference made a part hereof, and after whose  
12 name there appears under the column "Total Water Right" a figure other than "0,"  
13 is the owner of and has the right to extract annually groundwater from Central  
14 Basin for beneficial use in the quantity set forth after that party's name under said  
15 column "Total Water Right" as of the close of the Administrative Year ending  
16 June 30, 2012 in accordance with the Watermaster Reports on file with this Court  
17 and the records of the Plaintiff. This tabulation does not take into account  
18 additions or subtractions from any Allowed Pumping Allocation of a producer for  
19 the 2012-2013 Administrative Year, nor other adjustments not representing  
20 change in fee title to water rights, such as leases of water rights, nor does it  
21 include the names of lessees of landowners where the lessees are exercising the  
22 water rights. The exercise of all water rights is subject, however, to the  
23 provisions of this Judgment as hereinafter contained. All of said rights are of the  
24 same legal force and effect and are without priority with reference to each other.  
25 Each party whose name is set forth in the tabulation in Appendix "2" of this

---

26  
27 <sup>1</sup> Headings in the Judgment are for purposes of reference and the language of said headings do not constitute, other  
28 than for such purpose, a portion of this Judgment.

1 Judgment, and after whose name there appears under the column “Total Water  
2 Right” the figure “0,” owns no rights to extract any groundwater from Central  
3 Basin, and has no right to extract any groundwater from Central Basin.

4 (2) Defendant The City of Los Angeles is the owner of the right to  
5 extract fifteen thousand (15,000) acre feet per annum of groundwater from  
6 Central Basin, but it has the right and ability to purchase or lease additional rights  
7 to extract groundwater and increase its Allowed Pumping Allocation. Defendant  
8 Department of Water and Power of the City of Los Angeles has no right to extract  
9 groundwater from Central Basin except insofar as it has the right, power, duty or  
10 obligation on behalf of defendant The City of Los Angeles to exercise the water  
11 rights in Central Basin of defendant The City of Los Angeles. The exercise of  
12 said rights is subject, however, to the provisions of this Judgment hereafter  
13 contained, including but not limited to, sharing with other parties in any  
14 subsequent decreases or increases in the quantity of extractions permitted from  
15 Central Basin, pursuant to continuing jurisdiction of the Court, on the basis that  
16 fifteen thousand (15,000) acre feet (and any increase in its Allowed Pumping  
17 Allocation) bears to the Allowed Pumping Allocations of the other parties.

18 (3) No party to this action is the owner of or has any right to extract  
19 groundwater from Central Basin except as herein affirmatively determined.

20 B. Parties Enjoined as to Quantities of Extractions.

21 (1) Each party, other than The State of California and The City of Los  
22 Angeles and Department of Water and Power of The City of Los Angeles, is  
23 enjoined and restrained in any Administrative Year commencing after the date  
24 this Judgment becomes final from extracting from Central Basin any quantity of  
25 Water greater than the party’s Allowed Pumping Allocation as hereinafter set  
26 forth next to the name of the party in the tabulation appearing in Appendix 2 at  
27 the end of this Judgment, subject to further provisions of this Judgment. Subject  
28 to such further provisions, the officials, agents and employees of The State of

1 California are enjoined and restrained in any such Administrative Year from  
2 extracting from Central Basin collectively any quantity of water greater than the  
3 Allowed Pumping Allocation of The State of California as hereinafter set forth  
4 next to the name of that party in the same tabulation. Each party adjudged and  
5 declared above not to be the owner of and not to have the right to extract  
6 groundwater from Central Basin is enjoined and restrained in any Administrative  
7 Year commencing after the date this Judgment becomes final from extracting any  
8 groundwater from Central Basin, except as may be hereinafter permitted to any  
9 such party under this Judgment.

10 (2) The total extraction right for each party includes a party's Allowed  
11 Pumping Allocation (to the extent not transferred by agreement or otherwise), any  
12 contractual right acquired through lease or other agreement to extract or use the  
13 rights of another party, and any right to extract Stored Water or Carryover as  
14 provided in this Judgment. No party may extract in excess of 140% of the sum of  
15 (i) the party's Allowed Pumping Allocation and (ii) the party's leased water,  
16 except upon prior approval by the applicable body of Watermaster as required  
17 pursuant to Section IV(J) as provided herein. Upon application, the body specified  
18 in Section IV(J) shall approve a party's request to extract water in excess of such  
19 limit, provided there is no Material Physical Harm. Requests to extract water in  
20 excess of such limit shall be reviewed and either approved or denied within thirty  
21 (30) days of such request.

22 (3) Defendant The City of Los Angeles is enjoined and restrained in  
23 any Administrative Year commencing after the date this Judgment becomes final  
24 from extracting from Central Basin any quantity of water greater than fifteen  
25 thousand (15,000) acre feet or its Allowed Pumping Allocation, as recognized by  
26 the Watermaster, if it acquires additional rights to pump groundwater through  
27 purchase or lease, subject to further provisions of this Judgment, including but not  
28 limited to, sharing with other parties in any subsequent decreases or increases in

1 the quantity of extractions permitted from Central Basin by parties, pursuant to  
2 continuing jurisdiction of the Court, on the basis that fifteen thousand (15,000)  
3 acre feet (or the adjusted Allowed Pumping Allocation if additional rights are  
4 acquired) bears to the Allowed Pumping Allocations of the other parties.  
5 Defendant Department of Water and Power of The City of Los Angeles is  
6 enjoined and restrained in any Administrative Year commencing after the date  
7 this Judgment becomes final from extracting from Central Basin any quantity of  
8 water other than such as it may extract on behalf of defendant The City of Los  
9 Angeles, and which extractions, along with any extractions by said City, shall not  
10 exceed that quantity permitted by this Judgment to that City in any Administrative  
11 Year. Whenever in this Judgment the term “Allowed Pumping Allocation”  
12 appears, it shall be deemed to mean as to defendant The City of Los Angeles the  
13 quantity of fifteen thousand (15,000) acre feet unless the City of Los Angeles has  
14 acquired through purchase or lease right to extract additional groundwater. The  
15 limit on extraction as provided in the preceding Section I(B)(1) shall also apply to  
16 The City of Los Angeles.

17 (4) Any rights decreed and adjudicated herein may be transferred,  
18 assigned, licensed or leased by the owner thereof provided, however, that no such  
19 transfer shall be complete until compliance with the appropriate notice procedures  
20 established by Watermaster.

21 (5) Unless a party elects otherwise, production of water from the Basin  
22 for the use or benefit of the parties hereto shall be counted against the party’s total  
23 extraction right in the following order: (i) Increased extractions by certain  
24 qualified water rights holders pursuant to Section IV(K), (ii) Exchange Pool  
25 production, (iii) production of Carryover water, (iv) production of leased water, ,  
26 (v) production of Allowed Pumping Allocation, (vi) production of Stored Water,  
27 (vii) production of Drought Carryover (according to Watermaster’s Rules), and  
28 (viii) production of water under an agreement with WRD during a period of

1 emergency pursuant to Section III(B)(6).

2 C. Parties Enjoined as to Export of Extractions.

3 Except as expressly authorized herein, or upon further order of the Court, all  
4 parties are enjoined and restrained from transporting water extracted from the Central  
5 Basin outside the boundaries of the Central Basin Area. For purposes of this Section,  
6 water supplied by a Water Purveyor to its customers located within any of its service  
7 areas contiguous to the Central Basin or within WRD's service area shall be exempt from  
8 the export prohibition of this Section provided that the Water Purveyor also provides  
9 water to a service area that overlies the Basin in whole or in part. The foregoing  
10 exemption is not made, nor is it related to, a determination of an underflow between the  
11 basins, a cost or benefit allocation, or any other factor relating to the allocation of the  
12 Replenishment Assessment by WRD. Further, this injunction and restriction does not  
13 apply to export of water that will take place pursuant to contractual obligations  
14 specifically identified on Appendix 4, nor does it apply to export of Stored Water not  
15 having its origin in Carryover Conversion. The export identified on Appendix 4 may  
16 continue to the extent that any such extraction does not violate any other provisions of  
17 this Judgment, provided however that no such export identified on Appendix 4 shall  
18 exceed 5,000 acre-feet in any Year.

19  
20 II. APPOINTMENT OF WATERMASTER; WATERMASTER ADMINISTRATION  
21 PROVISIONS.

22 The particular bodies specified below are, jointly, hereby appointed Watermaster,  
23 for an indefinite term, but subject to removal by the Court, to administer this Judgment. Such  
24 bodies, which together shall constitute the "Watermaster," shall have restricted powers, duties  
25 and responsibilities as specified herein, it being the court's intention that particular constituent  
26 bodies of Watermaster have only limited and specified powers over certain aspects of the  
27 administration of this Judgment. The Outgoing Watermaster will exercise reasonable diligence  
28 in the complete transition of Watermaster duties and responsibilities within a reasonable time



1 following entry of this order, and to make available to the new Watermaster all records  
2 concerning Watermaster activities. The chair of the Central Basin Water Rights Panel (defined  
3 below) shall thereafter represent the Watermaster before the Court.

4 A. The Administrative Body.

5 Plaintiff Water Replenishment District of Southern California (“WRD”) is  
6 appointed the Administrative Body of the Central Basin Watermaster (“Administrative  
7 Body”). In order to assist the Court in the administration of the provisions of this  
8 Judgment and to keep the Water Rights Panel and the Court fully advised in the  
9 premises, the Administrative Body shall have the following duties, powers and  
10 responsibilities:

11 (1) To Require Reports, Information and Records.

12 In consultation with the Water Rights Panel, the Administrative Body  
13 shall require the parties to furnish such reports, information and records as may be  
14 reasonably necessary to determine compliance or lack of compliance by any party  
15 with the provisions of this Judgment.

16 (2) Storage Projects.

17 The Administrative Body shall exercise such powers as may be  
18 specifically granted to it under this Judgment with regard to Stored Water.

19 (3) Annual Report.

20 The Administrative Body shall prepare, on or before the 15th day of the  
21 fourth month following the end of the preceding Administrative Year, an annual  
22 report for the consideration of the Water Rights Panel. The Chair of the Water  
23 Rights Panel shall submit to the Court either (1) the annual report prepared by the  
24 Administrative Body, following the adoption by the Water Rights Panel, or (2) an  
25 annual report separately prepared and adopted by the Water Rights Panel. The  
26 annual report prepared by the Administrative Body shall be limited to the  
27 following, unless otherwise required by the Court:

28 (a) Groundwater extractions

- 1 (b) Storage Accounts maintained by each party  
2 (c) Status of the Regional Disadvantaged Community  
3 Incentive Program, if approved by the Court  
4 (d) Exchange Pool operation  
5 (e) Use of Imported Water  
6 (f) Violations of this Judgment and corrective action taken by  
7 bodies of Watermaster having jurisdiction as provided in this  
8 Judgment  
9 (g) Change of ownership of Total Water Rights  
10 (h) Watermaster administration costs  
11 (i) Water spread or imported into the Basin  
12 (j) Water Augmentation Projects  
13 (k) Whether the Administrative Body has become aware of the  
14 development of a Material Physical Harm, or imminent threat of the  
15 development of a Material Physical Harm, as required pursuant to  
16 Section IV(B) of this Judgment  
17 (l) Other matters as agreed with the Water Rights Panel  
18 (m) Recommendations, if any.

19 In consultation with the Water Rights Panel, the Administrative Body shall  
20 provide reasonable notice to all parties of all material actions or determinations by  
21 Watermaster or any constituent body thereof, and as otherwise provided by this  
22 Third Amended Judgment.

23 (4) Annual Budget and Appeal Procedure in Relation Thereto.

24 By April 1 of each Administrative Year, the Administrative Body shall  
25 prepare a proposed administrative budget for the subsequent year stating the  
26 anticipated expense for performing the administrative functions specified in this  
27 Judgment (the “Administrative Budget”). The Administrative Body shall mail a  
28 copy of the proposed Administrative Budget to each of the Parties at least 60 days

1 before the beginning of each Administrative Year. The Administrative Budget  
2 mailed to the Parties shall provide sufficient detail in the Administrative Budget  
3 to demonstrate a separation in accounting between the Administrative Budget and  
4 WRD's Replenishment Assessment and operating budget. For the first  
5 Administrative Year of operation under this Third Amended Judgment, if the  
6 Administrative Body is unable to meet the above time requirement, the  
7 Administrative Body shall mail said copies as soon as possible. The first year the  
8 Administrative Budget is prepared, the amount of that budget shall not exceed an  
9 amount equal to fifty percent (50%) of the 2012-2013 charge for Watermaster  
10 service for the Central Basin collected from Parties by the California Department  
11 of Water Resources. At all times, the Administrative Body shall maintain a  
12 separation in accounting between the Administrative Budget and WRD's  
13 Replenishment Assessment and operating budget. All increases in future budgets  
14 for the Administrative Body above the amount set forth above shall be subject to  
15 approval by the Water Rights Panel following a public meeting to be held prior to  
16 the beginning of the Administrative Year, provided that the approved budget shall  
17 not be less than the amount of the first-year budget for the Administrative Body,  
18 except upon further order of the Court. Any administrative function by WRD  
19 already paid for by the Replenishment Assessment shall not be added as an  
20 expense in the Administrative Budget. Similarly, any expense paid for by the  
21 Administrative Budget shall not be added to WRD's operating budget, or  
22 otherwise added to the calculation of the Replenishment Assessment. While WRD  
23 may approve the proposed Administrative Budget at the same meeting in which  
24 WRD adopts its annual Replenishment Assessment or annual budget, the  
25 Administrative Body's budget shall be separate and distinct from the  
26 Replenishment Assessment imposed pursuant to Water Code §60317 and WRD's  
27 operating budget.

28 If approval by the Water Rights Panel is required pursuant to the

1 foregoing, the Water Rights Panel shall act upon the proposed budget within 15  
2 calendar days after the public meeting. If the Water Rights Panel does not  
3 approve the budget prior to such deadline, the matter may be appealed to the  
4 Court within sixty (60) days. If any Party hereto has any objection to the  
5 Administrative Budget, it shall present the same in writing to Watermaster within  
6 15 days after the date of mailing of said tentative budget by the Administrative  
7 Body. The Parties shall make the payments otherwise required of them to the  
8 Administrative Body even though an appeal of such budget may be pending.  
9 Upon any revision by the Court, the Administrative Body shall either remit to the  
10 Parties their pro rata portions of any reduction in the budget, or shall credit their  
11 accounts with respect to their budget assessments for the next ensuing  
12 Administrative Year, as the Court shall direct.

13 The amount of the Administrative Budget to be assessed to each party  
14 shall be determined as follows: If that portion of the final budget to be assessed to  
15 the Parties is equal to or less than \$20.00 per party then the cost shall be equally  
16 apportioned among the Parties. If that portion of the final budget to be assessed to  
17 Parties is greater than \$20.00 per party then each Party shall be assessed a  
18 minimum of \$20.00. The amount of revenue expected to be received through the  
19 foregoing minimum assessments shall be deducted from that portion of the final  
20 budget to be assessed to the Parties and the balance shall be assessed to the Parties  
21 having Allowed Pumping Allocation, such balance being divided among them  
22 proportionately in accordance with their respective Allowed Pumping Allocation.

23 Payment of the assessment provided for herein, subject to adjustment by  
24 the Court as provided, shall be made by each such party prior to beginning of the  
25 Administrative Year to which the assessment relates, or within 40 days after the  
26 mailing of the tentative budget, whichever is later. If such payment by any Party  
27 is not made on or before said date, the Administrative Body shall add a penalty of  
28 5% thereof to such party's statement. Payment required of any Party hereunder

1 may be enforced by execution issued out of the Court, or as may be provided by  
2 order hereinafter made by the Court, or by other proceedings by the Watermaster  
3 or by any Party on the Watermaster's behalf.

4 Any money unexpended at the end of any Administrative Year shall be  
5 applied to the budget of the next succeeding Administrative Year. The  
6 Administrative Body shall maintain no reserves.

7 Notwithstanding the above, no part of the budget of the Administrative  
8 Body shall be assessed to WRD or to any Party who has not extracted water from  
9 Central Basin for a period of two successive Administrative Years prior to the  
10 Administrative Year in which the tentative budget should be mailed by the  
11 Administrative Body under the provisions of this subparagraph (4).

12 (5) Rules.

13 The Administrative Body may adopt, and amend from time to time, rules  
14 consistent with this Judgment as may be reasonably necessary to carry out duties  
15 under the provisions of this Judgment within its particular area of responsibility.  
16 The Body shall adopt its first set of rules and procedures within three (3) months  
17 following entry of this Third Amended Judgment. The rules shall be effective on  
18 such date after the mailing thereof to the Parties as is specified by the Body, but  
19 not sooner than thirty (30) days after such mailing.

20 B. The Central Basin Water Rights Panel.

21 The Central Basin Water Rights Panel of the Central Basin Watermaster ("Water Rights  
22 Panel") shall consist of seven (7) members, each of which is a Party. The term of each member  
23 of the Panel, with the exception of the seat held by the Small Water Producers Group, as  
24 provided herein, shall be limited to four years. The Court will make the initial appointments to  
25 the Central Basin Water Rights Panel upon motion by Parties consistent with the categories set  
26 forth below at or about the time of entry of this Third Amended Judgment, and shall establish a  
27 procedure for the staggered terms of such members. Thereafter, elections of members of the  
28 Panel shall be held as provided herein. One (1) such member of the Water Rights Panel shall be

1 elected by vote of the Small Water Producers Group conducted in accordance with its own  
2 procedures, provided such Group, as of the date of the election, consists of at least five (5)  
3 members who are Water Purveyors. One (1) such member of the Water Rights Panel shall be  
4 elected by vote of Parties with Allowed Pumping Allocation of less than 5,000 acre-feet who are  
5 not members of the Small Water Producers Group or, if the Small Water Producers Group does  
6 not then qualify following a continuous six-month period of non-qualification as provided  
7 herein, then two (2) such members shall be so selected. One (1) such member of the Water  
8 Rights Panel shall be elected by vote of Parties with Allowed Pumping Allocation of at least  
9 5,000 acre-feet but less than 10,000 acre-feet. Three (3) such members of the Water Rights  
10 Panel shall be elected by vote of Parties with Allowed Pumping Allocation of 10,000 acre-feet or  
11 greater. One (1) such member of the Water Rights Panel shall be elected by a vote of all holders  
12 of Allowed Pumping Allocations, with each such holder being entitled to one vote, such member  
13 to be elected by a plurality of the votes cast, following a nomination procedure to be established  
14 in the Water Rights Panel's rules. In the event of a tie, the seventh member shall be determined  
15 as may be provided in the Water Rights Panel's rules, or otherwise by the court. Except as  
16 otherwise provided in this Section, each such rights holder shall have the right to cast a total  
17 number of votes equal to the number of acre-feet of its Allowed Pumping Allocation (rounded to  
18 the next highest whole number). With the exception of voting for the seventh member, Parties  
19 shall be entitled to vote only for candidates within the category(ies) that represent that Party's  
20 Allowed Pumping Allocation. For example, parties who are members of the Small Water  
21 Producers Group are entitled to vote only for the Small Water Producer Group member and the  
22 seventh member of the Water Rights Panel, and so on. Parties are not permitted to split votes.  
23 The results of such election shall be reported to the Court for confirmation of each member's  
24 appointment to the Water Rights Panel of Watermaster. The elected members of the Water  
25 Rights Panel shall be those candidates receiving the highest vote total in their respective  
26 categories. The Water Rights Panel shall hold its first meeting within thirty (30) days of the date  
27 this Third Amended Judgment becomes final. The Water Rights Panel shall develop rules for its  
28 operation consistent with this Judgment. The Water Rights Panel shall take action, including the

1 election of its Chair, by majority vote of its members. Election of the Chair shall occur every  
2 two years, with no Party serving as Chair for consecutive terms. Members of the Water Rights  
3 Panel shall serve without compensation. All references to Annual Pumping Allocation, as used  
4 herein, are as determined by the last published Watermaster report.

5 (1) The Water Rights Panel shall have the following duties and  
6 responsibilities:

7 (a) Enforcement of Adjudicated Rights. As against the other  
8 bodies of Watermaster, the Water Rights Panel shall have exclusive  
9 authority to move the Court to take such action as may be necessary to  
10 enforce the terms of the Judgment with regard to the extraction of  
11 Allowed Pumping Allocation and the maintenance of adjudicated  
12 groundwater extraction rights as provided in this Judgment.

13 (b) Requirement of Measuring Devices. The Water Rights  
14 Panel shall require all parties owning or operating any facilities for the  
15 extraction of groundwater from Central Basin to install and maintain at  
16 all times in good working order at such party's own expense,  
17 appropriate measuring devices at such times and as often as may be  
18 reasonable under the circumstances and to calibrate or test such  
19 devices.

20 (c) Inspections by Watermaster. The Water Rights Panel may  
21 make inspections of groundwater production facilities, including  
22 aquifer storage and recovery facilities, and measuring devices at such  
23 times and as often as may be reasonable under the circumstances and  
24 to calibrate or test such devices.

25 (d) Reports. Annually, the Water Rights Panel, in cooperation  
26 with the Administrative Body, shall report to the Court, concerning  
27 any or all of the following:

28 (i) Groundwater extractions

- (ii) Exchange Pool operation
- (iii) Status of the Regional Disadvantaged Community Incentive Program, if approved by the Court
- (iv) Violations of this Judgment and corrective action taken or sought
- (v) Change of ownership of Total Water Rights
- (vi) Assessments made by the Water Rights Panel and any costs incurred
- (vii) Whether the Water Rights Panel has become aware of the development of a Material Physical Harm, or imminent threat of the development of a Material Physical Harm, as required pursuant to Section IV(B) of this Judgment
- (viii) Recommendations, if any.

As provided in Section II.A(3), the Water Rights Panel may adopt the annual report prepared by the Administrative Body, and submit the same to the Court, or the Water Rights Panel may prepare, adopt and submit to the Court a separate report. The Chair of the Water Rights Panel shall be responsible for reporting to the Court concerning adjudicated water rights issues in the Basin.

(2) Assessment. The Water Rights Panel shall assess holders of water rights within the Central Basin an annual amount not to exceed \$1.00 per acre-foot of Allowed Pumping Allocation, by majority vote of the members of the Water Rights Panel. The body may assess a higher amount, subject to being overruled by Majority Protest. The assessment is intended to cover any costs associated with reporting responsibilities, any Judgment enforcement action, and the review of storage projects as a component of the “Storage Panel” as provided below. It is anticipated that this body will rely on the Administrative Body’s staff for the functions related to the Administrative Body’s responsibilities, but the



1 Water Rights Panel may engage its own staff if required in its reasonable  
2 judgment. Assessments will constitute a lien on the water right assessed,  
3 enforceable as provided in this Judgment.

4 (3) Rules. The Water Rights Panel may adopt and amend from time to  
5 time, at an open meeting of that Panel, rules consistent with this Judgment as may  
6 be reasonably necessary to carry out duties under the provisions of this Judgment  
7 within its particular area of responsibility. The Panel shall adopt its first set of  
8 rules and procedures within three (3) months following entry of this Third  
9 Amended Judgment. The rules shall be effective on such date after the mailing  
10 thereof to the Parties as is specified by the Panel, but not sooner than thirty (30)  
11 days after such mailing.

12 C. The Storage Panel.

13 The Storage Panel of the Central Basin Watermaster (“Storage Panel”) shall be a  
14 bicameral body consisting of (i) the Water Rights Panel and (ii) the Board of Directors of  
15 WRD. Action by the Storage Panel shall require separate action by a majority of each of  
16 its constituent bodies. The Storage Panel shall have the duties and responsibilities  
17 specified with regard to the Provisions for the Storage and Extraction of Stored  
18 Groundwater as set forth in Part IV and the other provisions of this Judgment.

19 D. Use of Facilities and Data Collected by Other Governmental Agencies.

20 Where practicable, the three bodies constituting the Central Basin Watermaster  
21 should not duplicate the collection of data relative to conditions of the Central Basin  
22 which is then being collected by one or more governmental agencies, but where  
23 necessary each such body may collect supplemental data. Where it appears more  
24 economical to do so, the Watermaster and its constituent bodies are directed to use such  
25 facilities of other governmental agencies as are available to it under either no cost or cost  
26 agreements with respect to the receipt of reports, billings to parties, mailings to parties,  
27 and similar matters.

28 E. Appeal from Watermaster Decisions.

1 Appeals concerning the budget proposed by the Administrative Body shall be  
2 governed by Section II(A)(4) of this Judgment. Appeals concerning decisions by the  
3 Storage Panel shall be governed by Section IV(P) of this Judgment. With respect to all  
4 other objections by a Party to any action or decision by the Watermaster, such objections  
5 will be governed by this Section II(E). Any party interested therein who objects to any  
6 rule, determination, order or finding made by the Watermaster or any constituent body  
7 thereof, may object thereto in writing delivered to the Administrative Body within 30  
8 days after the date the Watermaster, or any constituent body thereof, mails written notice  
9 of the making of such rule, determination, order or finding. Within 30 days after such  
10 delivery the Watermaster, or the affected constituent body thereof, shall consider said  
11 objection and shall amend or affirm his rule, determination, order or finding and shall  
12 give notice thereof to all parties. Any such party may file with the Court within 60 days  
13 from the date of said notice any objection to such rule, determination, order or finding of  
14 the Watermaster, or any constituent body thereof, and bring the same on for hearing  
15 before the Court at such time as the Court may direct, after first having served said  
16 objection upon all other parties. The Court may affirm, modify, amend or overrule any  
17 such rule, determination, order or finding of the Watermaster or its affected constituent  
18 body. Any objection under this paragraph shall not stay the rule, determination, order or  
19 finding of the Watermaster. However, the Court, by *ex parte* order, may provide for a  
20 stay thereof on application of any interested party on or after the date that any such party  
21 delivers to the Watermaster any written objection.

22 F. Effect of Non-Compliance by Watermaster With Time Provisions.

23 Failure of the Watermaster to perform any duty, power or responsibility set forth  
24 in this Judgment within the time limitation herein set forth shall not deprive the  
25 Watermaster or its applicable constituent body of authority to subsequently discharge  
26 such duty, power or responsibility, except to the extent that any such failure by the  
27 Watermaster may have rendered some otherwise required act by a party impossible.

28 G. Limitations on Administrative Body.

1 WRD shall not acquire Central Basin water rights, nor lease Central Basin water  
2 or water rights to or from any Party or third party. However, the foregoing shall (i) not be  
3 interpreted to restrict WRD's ability or authority to acquire water from any source for  
4 purposes of Artificial or Natural Replenishment or for water quality activities, and (ii)  
5 not restrict WRD's authority under California Water Code Section 60000 et seq. to  
6 develop reclaimed, recycled or remediated water for groundwater replenishment  
7 activities.

8 H. Regional Disadvantaged Communities Incentive Program.

9 The Water Rights Panel, acting through the General Manager of WRD, shall  
10 develop a Regional Disadvantaged Communities Incentive Program, pursuant to which a  
11 portion of the Community Storage Pool is reserved for the benefit of Disadvantaged  
12 Communities within the Central Basin. Nothing in this Judgment, nor the establishment  
13 of such a program, shall diminish the rights otherwise granted to Parties under this  
14 Judgment, including but not limited to the right to place water in storage in the  
15 Community Storage Pool. The Water Rights Panel shall meet within thirty (30) days of  
16 its formation to identify and consider potential third-party independent consultants who  
17 may be retained to design the program, including those recommended by the General  
18 Manager of WRD. The Water Rights Panel shall select a consultant within thirty (30)  
19 days thereafter. In the event the General Manager of WRD objects to the selected  
20 consultant, in writing, then the Water Rights Panel and the General Manager of WRD  
21 shall exchange a list of no more than two (2) consultants each for further consideration.  
22 If the Water Rights Panel and the General Manager of WRD are unable to agree to a  
23 consultant within an additional thirty (30) days, then the Chair of the Water Rights Panel  
24 shall file a request with the Court for an order appointing a consultant. Upon selection of  
25 a third-party independent consultant, whether through the Water Rights Panel process or  
26 the court process identified herein, the consultant shall design a detailed program and  
27 deliver it to the Water Rights Panel within ninety (90) days of the consultant's retention.  
28 All costs associated with design of the program shall be paid for out of the Water Rights

1 Panel’s assessment, as provided in Section II.B(2). The Water Rights Panel shall present  
2 the program to the Court for its review and approval within one year of entry of this  
3 Third Amended Judgment. If approved by the Court, the Water Rights Panel, acting  
4 through the General Manager of WRD, shall be responsible for administration of the  
5 Regional Disadvantaged Communities Incentive Program, including insuring that any  
6 funds generated through the program benefit Disadvantaged Communities. Any Storage  
7 Project established pursuant to this Program shall have priority to use up to 23,000 acre-  
8 feet of Available Storage within the Community Storage Pool, as further provided in  
9 Section IV.E(2). Watermaster shall report to the Court concerning such program as a  
10 part of its annual report.  
11

12 III. PROVISIONS FOR PHYSICAL SOLUTION TO MEET THE WATER  
13 REQUIREMENTS IN CENTRAL BASIN.

14 In order to provide flexibility to the injunction set forth in Part I of the Judgment, and to  
15 assist in a physical solution to meet water requirements in Central Basin, the injunction so set  
16 forth is subject to the following provisions.

17 A. Carryover of Portion of Allowed Pumping Allocation.

18 (1) Amount of Carryover.

19 Each party adjudged to have a Total Water Right or water rights and who,  
20 during a particular Administrative Year, does not extract from Central Basin a  
21 total quantity equal to such party’s Allowed Pumping Allocation for the particular  
22 Administrative Year, less any allocated subscriptions by such party to the  
23 Exchange Pool, or plus any allocated requests by such party for purchase of  
24 Exchange Pool water, is permitted to carry over (the “One Year Carryover”) from  
25 such Administrative Year the right to extract from Central Basin in the next  
26 succeeding Administrative Year so much of said total quantity as it did not extract  
27 in the particular Administrative Year, not to exceed (i) the Applicable Percentage  
28 of such party’s Allowed Pumping Allocation for the particular Administrative

1 Year, or 20 acre-feet, whichever of said percentage or 20 acre-feet is the larger,  
2 less (ii) the total quantity of water then held in that party's combined Individual  
3 and Community Storage accounts, as hereinafter defined, but in no event less than  
4 20% of the party's Allowed Pumping Allocation for the particular Administrative  
5 Year. For purposes of this Section, the "Applicable Percentage" shall be as  
6 follows for the years indicated:

7

8 For the Administrative Year in which this	
9 Third Amended Judgment becomes final:	30%
10 For the next Administrative Year:	40%
11 For the next Administrative Year:	50%
12 For the next Administrative Year and years	
13 following:	60%

14 (2) Conversion of Carryover to Stored Water.

15 A party having Carryover may, from time to time, elect to convert all or  
16 part of such party's Carryover to Stored Water as authorized herein ("Carryover  
17 Conversion") upon payment of the Replenishment Assessment to WRD. Such  
18 Stored Water shall be assigned to that party's Individual Storage Allocation, if  
19 available, and otherwise to the Community Storage Pool.

20 (3) Declared Water Emergency.

21 The Board of Directors of WRD may, from time to time, declare a water  
22 emergency upon a determination that conditions within the Central Basin relating  
23 to natural and imported water supplies are such that, without implementation of  
24 the Declared Water Emergency provisions of this subsection, the water resources  
25 of the Central Basin risk degradation. In making such declaration, the Board of  
26 Directors shall consider any information and requests provided by water  
27 producers, purveyors and other affected entities and shall, for that purpose, hold a  
28 public hearing in advance of such declaration. A Declared Water Emergency

1 shall extend to the end of the Administrative Year during which such resolution is  
2 adopted, unless sooner ended by similar resolution.

3 (4) Drought Carryover.

4 Following the declaration of a Declared Water Emergency and until the  
5 Declared Water Emergency ends either by expiration or by resolution of the  
6 Board of Directors of WRD, each party adjudged to have a Total Water Right or  
7 water rights and who, during a particular Administrative Year, does not extract  
8 from Central Basin a total quantity equal to such party's Allowed Pumping  
9 Allocation for the particular Administrative Year, less any allocated subscriptions  
10 by such party to the Exchange Pool, or plus any allocated requests by such party  
11 for purchase of Exchange Pool water, is permitted to carry over (the "Drought  
12 Carryover") from such Administrative Year the right to extract from Central  
13 Basin so much of said total quantity as it did not extract during the period of the  
14 Declared Water Emergency, to the extent such quantity exceeds the One Year  
15 Carryover, not to exceed an additional 35% of such party's Allowed Pumping  
16 Allocation, or additional 35 acre feet, whichever of said 35% or 35 acre feet is the  
17 larger, less the amount of such party's Stored Water. Carryover amounts shall  
18 first be allocated to the One Year Carryover and any remaining carryover amount  
19 for that year shall be allocated to the Drought Carryover.

20 (5) Accumulated Drought Carryover.

21 No further amounts shall be added to the Drought Carryover following the  
22 end of the Declared Water Emergency, provided however that in the event  
23 another Declared Water Emergency is declared, additional Drought Carryover  
24 may be added, to the extent such additional Drought Carryover would not cause  
25 the total Drought Carryover to exceed the limits set forth above. The Drought  
26 Carryover shall be supplemental to and shall not affect any previous drought  
27 carryover acquired by a party pursuant to previous order of the court.

28 B. When Over-Extractions May be Permitted.

1                   (1)     Underestimation of Requirements for Water.

2                   Any party hereto without Stored Water, having an Allowed Pumping  
3 Allocation, and not in violation of any provision of this Judgment may extract in  
4 an Administrative Year an additional quantity of water not to exceed: (a) 20% of  
5 such party's Allowed Pumping Allocation or 20 acre feet, whichever is greater,  
6 and (b) any amount in addition thereto which may be approved in advance by the  
7 Water Rights Panel of Watermaster.

8                   (2)     Reductions in Allowed Pumping Allocations in Succeeding Years  
9 to Compensate for Permissible Overextractions.

10                  Any such party's Allowed Pumping Allocation for the following  
11 Administrative Year shall be reduced by the amount over-extracted pursuant to  
12 paragraph 1 above, provided that if the Water Rights Panel determines that such  
13 reduction in the party's Allowed Pumping Allocation in one Administrative Year  
14 will impose upon such a party an unreasonable hardship, the said reduction in said  
15 party's Allowed Pumping Allocation shall be prorated over a period of five (5)  
16 Administrative Years succeeding that in which the excessive extractions by the  
17 party occurred. Application for such relief to the Water Rights Panel must be  
18 made not later than the 40th day after the end of the Administrative Year in which  
19 such excessive pumping occurred. The Water Rights Panel shall grant such relief  
20 if such over-extraction, or any portion thereof, occurred during a period of  
21 Declared Water Emergency.

22                  (3)     Reductions in Allowed Pumping Allocations for the Next  
23 Succeeding Administrative Year to Compensate for Overpumping.

24                  Whenever, pursuant to Section III(B)(1), a party over-extracts in excess of  
25 such party's Allowed Pumping Allocation plus that party's available One-Year  
26 Carryover and any Stored Water held by that party, and such excess has not been  
27 approved in advance by the Water Rights Panel, then such party's Allowed  
28 Pumping Allocation for the following Administrative Year shall be reduced by an

1 amount equivalent to its total over-extractions in the particular Administrative  
2 Year in which it occurred.

3 (4) Reports of Certain Over-extractions to the Court.

4 Whenever a party over-extracts in excess of 20% of such party's Allowed  
5 Pumping Allocation for the particular Administrative Year plus that party's  
6 available One-Year Carryover and any Stored Water held by that party, without  
7 having obtained prior approval of the Water Rights Panel, such shall constitute a  
8 violation of the Judgment and the Water Rights Panel shall make a written report  
9 to the Court for such action as the Court may deem necessary. Such party shall be  
10 subject to such injunctive and other processes and action as the Court might  
11 otherwise take with regard to any other violation of such Judgment.

12 (5) Effect of Over-extractions on Rights.

13 Any party who over-extracts from Central Basin in any Administrative  
14 Year shall not acquire any additional rights by reason of such over-extractions;  
15 nor shall any required reductions in extractions during any subsequent years  
16 reduce the Total Water Right or water rights of any party to the extent said over-  
17 extractions are in compliance with paragraph 1 above.

18 (6) Pumping Under Agreement With Plaintiff During Periods of  
19 Emergency.

20 Plaintiff WRD overlies Central Basin and engages in activities of  
21 replenishing the groundwaters thereof. Plaintiff by resolution has appropriated  
22 for use during emergencies the quantity of 17,000 acre feet of imported and  
23 reclaimed water replenished by it into Central Basin, and pursuant to such  
24 resolution Plaintiff reserves the right to use or cause the use of such quantity  
25 during such emergency periods for the benefit of Water Purveyors.

26 (a) Notwithstanding any other provision of this Judgment,  
27 parties who are Water Purveyors (including successors in interest) are  
28 authorized to enter into agreements with Plaintiff for extraction of a



1 portion of Plaintiff's 17,000 acre-feet of appropriated water, in excess  
2 of their respective Allowed Pumping Allocations for the particular  
3 Administrative Year when the following conditions are met:

4 (i) Plaintiff is in receipt of a resolution of the  
5 Board of Directors of the Metropolitan Water District of  
6 Southern California ("MWD") that there is an actual or  
7 immediately threatened temporary shortage of MWD's  
8 imported water supply compared to MWD's needs, or a  
9 temporary inability to deliver MWD's imported water  
10 supply throughout its area, which will be alleviated by  
11 overpumping from Central Basin.

12 (ii) The Board of Directors of both Plaintiff and  
13 Central Basin Municipal Water District by resolutions  
14 concur in the resolution of MWD's Board of Directors, and  
15 the Board of Directors of Plaintiff finds in its resolution  
16 that the average minimum elevation of water surface  
17 among those wells in the Montebello Forebay of the  
18 Central Basin designated as Los Angeles County Flood  
19 Control District Wells Nos. 1601T, 1564P, 1615P, and  
20 1626L, is at least 43.7 feet above sea level. This  
21 computation shall be based upon the most recent "static  
22 readings" taken, which shall have been taken not more than  
23 four weeks prior. Should any of the wells designated above  
24 become destroyed or otherwise be in a condition so that  
25 readings cannot be made, or should the owner prevent their  
26 use for such readings, the Board of Directors of the  
27 Plaintiff may, upon appropriate engineering  
28 recommendation, substitute such other well or wells as it

1 may deem appropriate.

2 (iii) In said resolution, Plaintiff's Board of  
3 Directors sets a public hearing, and notice of the time, place  
4 and date thereof (which may be continued from time to  
5 time without further notice) is given by First Class Mail to  
6 the current designees of the Parties, filed and served in  
7 accordance with Section VI(C) of this Judgment. Said  
8 notice shall be mailed at least five (5) days before the  
9 scheduled hearing date.

10 (iv) At said public hearing, parties (including  
11 successors in interest) are given full opportunity to be  
12 heard, and at the conclusion thereof the Board of Directors  
13 of Plaintiff by resolution decides to proceed with  
14 agreements under this Section III(B)(6).

15 (b) All such agreements shall be subject to the following  
16 requirements, and such others as Plaintiff's Board of Directors shall  
17 require:

18 (i) They shall be of uniform content except as  
19 to quantity involved, and any special provisions considered  
20 necessary or desirable with respect to local hydrological  
21 conditions or good hydrologic practice.

22 (ii) They shall be offered to all Water  
23 Purveyors, excepting those which Plaintiff's Board of  
24 Directors determines should not overpump because such  
25 overpumping would occur in undesirable proximity to a sea  
26 water barrier project designed to forestall sea water  
27 intrusion, or within or in undesirable proximity to an area  
28 within Central Basin wherein groundwater levels are at an

1 elevation where overpumping is under all the  
2 circumstances then undesirable.

3 (iii) The maximum terms for the agreements  
4 shall be four (4) months, which agreements shall  
5 commence on the same date and end on the same date (and  
6 which may be executed at any time within the four-month  
7 period), unless an extension thereof is authorized by the  
8 Court, under Part V of this Judgment.

9 (iv) They shall contain provisions requiring that  
10 the Water Purveyor executing the agreement pay to the  
11 Plaintiff a price in addition to the applicable replenishment  
12 assessment determined on the following formula. The  
13 normal price per acre-foot of Central Basin Municipal  
14 Water District's (CBMWD) treated domestic and municipal  
15 water, as "normal" price of such category of water is  
16 defined in Section III(C)(10) (price to be paid for Exchange  
17 Pool Water) as of the beginning of the contract term less  
18 the deductions set forth in said paragraph 10 for the  
19 Administrative Year in which the contract term  
20 commences. The agreement shall provide for adjustments  
21 in the first of said components for any proportional period  
22 of the contract term during which the CBMWD said normal  
23 price is changed, and if the agreement straddles two  
24 administrative years, the said deductions shall be adjusted  
25 for any proportionate period of the contract term in which  
26 the amount thereof or of either subcomponent changes for  
27 purposes of said paragraph 10. Any price for a partial acre-  
28 foot shall be computed pro rata. Payments shall be due and

1 payable on the principle that over extractions under the  
2 agreement are of the last water pumped in the  
3 Administrative Year, and shall be payable as the agreement  
4 shall provide.

5 (v) They shall contain provisions that: (1) All  
6 of such agreements (but not less than all) shall be subject to  
7 termination by Plaintiff if, in the Judgment of Plaintiff's  
8 Board of Directors, the conditions or threatened conditions  
9 upon which they were based have abated to the extent over  
10 extractions are no longer considered necessary; and (2) that  
11 any individual agreement or agreements may be terminated  
12 if the Plaintiff's Board of Directors finds that adverse  
13 hydrologic circumstances have developed as a result of  
14 over extractions by any Water Purveyor(s) which have  
15 executed said agreements, or for any other reason that  
16 Plaintiff's Board of Directors finds good and sufficient.

17 (c) Other matters applicable to such agreements and  
18 overpumping thereunder are as follows, without need for express  
19 provisions in the agreements;

20 (i) The quantity of overpumping permitted shall  
21 be additional to that which the Water Purveyor could  
22 otherwise overpump under this Judgment.

23 (ii) The total quantity of permitted overpumping  
24 under all said agreements during said four months shall not  
25 exceed seventeen thousand (17,000) acre feet, but the  
26 individual Water Purveyor shall not be responsible or  
27 affected by any violation of this requirement. That total is  
28 additional to over extractions otherwise permitted under

1 this Judgment.

2 (iii) Only one four month period may be utilized  
3 by Plaintiff in entering into such agreements, as to any one  
4 emergency or continuation thereof declared by MWD's  
5 Board of Directors under Section III(B)(6)(a).

6 (iv) If any party claims it is being damaged or  
7 threatened with damage by the over extractions by any  
8 party to such an agreement, the first party or the Water  
9 Rights Panel may seek appropriate action of the Court for  
10 termination of any such agreement upon notice of hearing  
11 to the party complaining, to the party to said agreement, to  
12 the plaintiff, and to any parties who have filed a request for  
13 special notice. Any termination shall not affect the  
14 obligation of the party to make payments under the  
15 agreement for over extractions which did occur thereunder.

16 (v) Plaintiff shall maintain separate accounting  
17 of the proceeds from payments made pursuant to  
18 agreements entered into under this Part. Said fund shall be  
19 utilized solely for purposes of replenishment in  
20 replacement of waters in Central Basin and West Basin.  
21 Plaintiff shall as soon as practicable cause replenishment in  
22 Central Basin by the amounts to be overproduced pursuant  
23 to this Paragraph 6, whether through spreading, injection,  
24 or in lieu agreements.

25 (vi) Over extractions pursuant to the agreements  
26 shall not be subject to the "make up" provisions of the  
27 Judgment as amended, provided that if any party fails to  
28 make payments as required by the agreement, Plaintiff may

1 require such “make up” under Section III(B)(3) of this  
2 Judgment.

3 (vii) A Water Purveyor under any such  
4 agreement may, and is encouraged to enter into appropriate  
5 arrangements with customers who have water rights in  
6 Central Basin under or pursuant to this Judgment whereby  
7 the Water Purveyor will be assisted in meeting the  
8 objectives of the agreement.

9 (7) Exemption for Extractors of Contaminated Groundwater.

10 Any party herein may petition WRD for a Non-consumptive Water Use  
11 Permit as part of a project to remedy or ameliorate groundwater contamination. If  
12 the petition is granted as set forth in this paragraph, the petitioner may extract the  
13 groundwater as permitted hereinafter, without the production counting against the  
14 petitioner’s production rights.

15 (a) If the Board of WRD determines by Resolution that there is  
16 a problem of groundwater contamination that a proposed program will  
17 remedy or ameliorate, an operator may make extractions of  
18 groundwater to remedy or ameliorate that problem without the  
19 production counting against the petitioner’s production rights if the  
20 water is not applied to beneficial surface use, its extractions are made  
21 in compliance with all the terms and conditions of the Board  
22 Resolution, and the Board has determined in the Resolution either of  
23 the following:

24 (i) The groundwater to be extracted is unusable and  
25 cannot be economically treated or blended for use with  
26 other water.

27 (ii) The proposed program involves extraction of usable  
28 water in the same quantity as will be returned to the



1 Section III(B)(8) more than five (5) times, may apply to the Storage Panel for the  
2 right to extract all or a portion of that Carryover Conversion in the year such  
3 Conversion occurs. The Storage Panel shall grant such request, providing there is  
4 no Material Physical Harm, if it determines that leased groundwater to meet the  
5 applicant's needs within the Basin cannot be obtained for less than forty-five  
6 percent (45%) of MWD's Imported Water rate for delivery of untreated water to  
7 the Central Basin spreading facilities (which rate is presently MWD's "Full  
8 Service Untreated Volumetric Cost, Tier 1"), and that the applicant will fully  
9 extract its Allowed Pumping Allocation, Carryover, and Stored Water, if any, in  
10 addition to its permitted overextraction under Section III(B)(1), prior to accessing  
11 such Carryover Conversion.

12 Upon such approval, the applicant may thereafter extract such water as  
13 provided herein. A Party so extracting groundwater shall fully restore such  
14 extracted water (either through under-extraction of its rights or through importing  
15 water) during the five-year period following the Year in which the extraction  
16 under this Section occurs. Otherwise, the extracting Party shall pay to the  
17 Watermaster an amount equal to 100% of MWD's Imported Water rate for  
18 purchase and delivery of untreated water to the Central Basin spreading facilities  
19 (which rate is presently MWD's "Full Service Untreated Volumetric Cost, Tier  
20 1") whether or not such water is available that year, for the year during which is  
21 the fifth anniversary of the year during which such Carryover Conversion  
22 extraction occurs, multiplied by the amount of Carryover Conversion so extracted  
23 and not restored during such five-year period. Payment shall be made within  
24 thirty (30) days of demand by Watermaster. No Replenishment Assessment shall  
25 be due on Carryover Conversion so extracted. However, the Party must deposit  
26 with the Watermaster an amount equal to the Replenishment Assessment that  
27 would otherwise be imposed by WRD upon such extraction. If the party restores  
28 the water within the 5-year repayment period, then the Watermaster shall



1 promptly return the deposit to the Party, without interest. If the Party does not  
2 restore the water within the 5-year repayment period, the deposit shall be credited  
3 towards the Party's obligation to pay 100% of MWD's Imported Water rate as  
4 required herein.

5 Should there be multiple requests to so extract Carryover Conversion in  
6 the same year, the Storage Panel shall allocate such extraction right such that each  
7 requesting party may extract a pro rata portion of the available Carryover  
8 Conversion for that year. No party may extract in excess of 2,500 acre feet of  
9 groundwater pursuant to this Section III(B)(8) in a single Year. Amounts paid to  
10 Watermaster hereunder shall be used by WRD solely for purchase of water for  
11 replenishment in the Basin. Watermaster, through the Storage Panel, shall give  
12 reasonable notice to the Parties of any application to so extract Carryover  
13 Conversion in such manner as the Storage Panel shall determine, including,  
14 without limitation, notice by electronic mail or by website posting, at least ten  
15 (10) days prior to consideration of any such application.

16 C. Exchange Pool Provisions.

17 (1) Definitions.

18 For purposes of these Exchange Pool provisions, the following words and  
19 terms have the following meanings:

20 (a) "Exchange Pool" is the arrangement hereinafter set forth  
21 whereby certain of the parties, ("Exchangees") may, notwithstanding  
22 the other provisions of the Judgment, extract additional water from  
23 Central Basin to meet their needs, and certain other of the parties  
24 ("Exchangors"), reduce their extractions below their Allowed Pumping  
25 Allocations in order to permit such additional extractions by others.

26 (b) "Exchangor" is one who offers, voluntarily or otherwise,  
27 pursuant to subsequent provisions, to reduce its extractions below its  
28 Allowed Pumping Allocation in order to permit such additional

1 extractions by others.

2 (c) “Exchangee” is one who requests permission to extract  
3 additional water from Central Basin.

4 (d) “Undue hardship” means unusual and severe economic or  
5 operational hardship, other than that arising (i) by reason of any  
6 differential in quality that might exist between water extracted from  
7 Central Basin and water available for importation or (ii) by reason of  
8 any difference in cost to a party in subscribing to the Exchange Pool  
9 and reducing its extractions of water from Central Basin in an  
10 equivalent amount as opposed to extracting any such quantity itself.

11 (2) Parties Who May Purchase Water Through the Exchange Pool.

12 Any party not having existing facilities for the taking of imported water as  
13 of the beginning of any Administrative Year, and any party having such facilities  
14 as of the beginning of any Administrative Year who is unable, without undue  
15 hardship, to obtain, take, and put to beneficial use, through its distribution system  
16 or systems existing as of the beginning of the particular Administrative Year,  
17 imported water in a quantity which, when added to its Allowed Pumping  
18 Allocation for that particular Administrative Year, will meet its estimated needs  
19 for that particular Administrative Year, may purchase water from the Exchange  
20 Pool, subject to the limitations contained in this Section III(C) (Subpart “C”  
21 hereinafter).

22 (3) Procedure for Purchasing Exchange Pool Water.

23 Not later than the 40th day following the commencement of each  
24 Administrative Year, each such party desiring to purchase water from the  
25 Exchange Pool shall file with the Watermaster a request to so purchase, setting  
26 forth the amount of water in acre feet that such party estimates that it will require  
27 during the then current Administrative Year in excess of the total of:

28 (a) Its Allowed Pumping Allocation for that particular

1 Administrative Year; and

2 (b) The imported water, if any, which it estimates it will be  
3 able, without undue hardship, to obtain, take and put to beneficial use,  
4 through its distribution system or systems existing as of the beginning  
5 of that particular Administrative Year.

6 Any party who as of the beginning of any Administrative Year has  
7 existing facilities for the taking of imported water and who makes a request to  
8 purchase from the Exchange Pool must provide with such request substantiating  
9 data and other proof which, together with any further data and other proof  
10 requested by the Water Rights Panel, establishes that such party is unable without  
11 undue hardship, to obtain, take and put to beneficial use through its said  
12 distribution system or systems a sufficient quantity of imported water which,  
13 when added to its said Allowed Pumping Allocation for the particular  
14 Administrative Year, will meet its estimated needs. As to any such party, the  
15 Water Rights Panel shall make a determination whether the party has so  
16 established such inability, which determination shall be subject to review by the  
17 court under the procedure set forth in Part II of this Judgment. Any party making  
18 a request to purchase from the Exchange Pool shall either furnish such  
19 substantiating data and other proof, or a statement that such party had no existing  
20 facilities for the taking of imported water as of the beginning of that  
21 Administrative Year, and in either event a statement of the basis for the quantity  
22 requested to be purchased.

23 (4) Subscriptions to Exchange Pool.

24 (a) Required Subscription. Each party having existing  
25 facilities for the taking of imported water as of the beginning of any  
26 Administrative Year hereby subscribed to the Exchange Pool for  
27 purposes of meeting Category (a) requests thereon, as more  
28 particularly defined in paragraph 5 of this Subpart C, twenty percent

1 (20%) of its Allowed Pumping Allocation, or the quantity of imported  
2 water which it is able, without undue hardship, to obtain, take and put  
3 to beneficial use through its distribution system or systems existing as  
4 of the beginning of the particular Administrative Year in addition to  
5 such party's own estimated needs for imported water during that  
6 Administrative Year, whichever is the lesser. A party's subscription  
7 under this subparagraph (a) and subparagraph (b) of this paragraph 4 is  
8 sometimes hereinafter referred to as a "required subscription."

9 (b) Report to Watermaster Water Rights Panel by Parties with  
10 Connections and Unable to Subscribe 20%. Any party having existing  
11 facilities for the taking of imported water and estimating that it will be  
12 unable, without undue hardship, in that Administrative Year to obtain,  
13 take and put to beneficial use through its distribution system or  
14 systems existing as of the beginning of that Administrative Year,  
15 sufficient imported water to further reduce its extractions from the  
16 Central Basin by twenty percent (20%) of its Allowed Pumping  
17 Allocation for purposes of providing water to the Exchange Pool must  
18 furnish not later than the 40th day following the commencement of  
19 such Administrative Year substantiating data and other proof which,  
20 together with any further data and other proof requested by the Water  
21 Rights Panel, establishes said inability or such party shall be deemed  
22 to have subscribed twenty percent (20%) of its Allowed Pumping  
23 Allocation for the purpose of providing water to the Exchange Pool.  
24 As to any such party so contending such inability, the Water Rights  
25 Panel shall make a determination whether the party has so established  
26 such inability, which determination shall be subject to review by the  
27 Court under the procedure set forth in Part II of this Judgment.

28 (c) Voluntary Subscriptions. Any party, whether or not having

1 facilities for the taking of imported water, who desires to subscribe to  
2 the Exchange Pool a quantity or further quantity of its Allowed  
3 Pumping Allocation, may so notify the Water Rights Panel in writing  
4 of the quantity of such offer on or prior to the 40th day following the  
5 commencement of the particular Administrative Year. Such  
6 subscriptions are referred to hereinafter as “voluntary subscriptions.”  
7 Any Exchangor who desires that any part of its otherwise required  
8 subscription not needed to fill Category (a) requests shall be available  
9 for Category (b) requests may so notify the Water Rights Panel in  
10 writing on or prior to said 40th day. If all of that Exchangor’s  
11 otherwise required subscription is not needed in order to fill Category  
12 (a) requests, the remainder of such required subscription not so used,  
13 or such part thereof as such Exchangor may designate, shall be deemed  
14 to be a voluntary subscription.

15 (5) Limitations on Purchases of Exchange Pool Water and Allocation  
16 of Requests to Purchase Exchange Pool Water Among Exchangors.

17 (a) Categories of Requests. Two categories of Exchange Pool  
18 requests are established as follows:

19 (i) Category (a) requests. The quantity requested by  
20 each Exchangee, whether or not that Exchangee has an  
21 Allowed Pumping Allocation, which quantity is not in  
22 excess of 150% of its Allowed Pumping Allocation, if any,  
23 or 100 acre feet, whichever is greater. Requests or portions  
24 thereof within the above criteria are sometimes hereinafter  
25 referred to as “Category (a) requests.”

26 (ii) Category (b) requests. The quantity requested by  
27 each Exchangee having an Allowed Pumping Allocation to  
28 the extent the request is in excess of 150% of that Allowed

1 Pumping Allocation or 100 acre feet, whichever is greater,  
2 and the quantity requested by each Exchangee having no  
3 Allowed Pumping Allocation to the extent the request is in  
4 excess of 100 acre feet. Portions of requests within the  
5 above criteria are sometimes hereinafter referred to as  
6 “Category (b) requests.”

7 (b) Filling of Category (a) Requests. All Exchange Pool  
8 subscriptions, required and voluntary, shall be available to fill  
9 Category (a) requests. Category (a) requests shall be filled first from  
10 voluntary subscriptions, and if voluntary subscriptions should be  
11 insufficient to fill all Category (a) requests required subscriptions shall  
12 be then utilized to fill Category (a) requests. All Category (a) requests  
13 shall be first filled before any Category (b) requests are filled.

14 (c) Filling of Category (b) Requests. To the extent that  
15 voluntary subscriptions have not been utilized in filling Category (a)  
16 requests, Category (b) requests shall be filled only out of any  
17 remaining voluntary subscriptions. Required subscriptions will then  
18 be utilized for the filling of any remaining Category (b) requests.

19 (d) Allocation of Requests to Subscriptions When Available  
20 Subscriptions Exceed Requests. In the event the quantity of  
21 subscriptions available for any category of requests exceeds those  
22 requests in that category, or exceeds the remainder of those requests in  
23 that category, such requests shall be filled out of such subscriptions  
24 proportionately in relation to the quantity of each subscription.

25 (e) Allocation of Subscriptions to Category (b) Requests in the  
26 Event of Shortage of Subscriptions. In the event available  
27 subscriptions are insufficient to meet Category (b) requests, available  
28 subscriptions shall be allocated to each request in the proportion that

1                   the particular request bears to the total requests of the particular  
2                   category.

3                   (6)    Additional Voluntary Subscriptions.

4                   If subscriptions available to meet the requests of Exchangees are  
5                   insufficient to meet all requests, additional voluntary subscriptions may be  
6                   solicited and received from parties by the Water Rights Panel. Such additional  
7                   subscriptions shall be allocated first to Category (a) requests to the extent unfilled,  
8                   and next to Category (b) requests to the extent unfilled. All allocations are to be  
9                   otherwise in the same manner as earlier provided in paragraph 5 (a) through 5 (e)  
10                  inclusive.

11                  (7)    Effect if Category (a) Requests Exceed Available Subscriptions,  
12                  Both Required and Voluntary.

13                  In the event that the quantity of subscriptions available to fill Category (a)  
14                  requests is less than the total quantity of such requests, the Exchangees may,  
15                  nonetheless, extract the full amount of their Category (a) requests otherwise  
16                  approved by the Water Rights Panel as if sufficient subscriptions were available.  
17                  The amounts received by the Water Rights Panel on account of that portion of the  
18                  approved requests in excess of the total quantities available from Exchangors  
19                  shall be paid by the Water Rights Panel to WRD in trust for the purpose of  
20                  purchasing imported water and spreading the same in Central Basin for  
21                  replenishment thereof. Thereafter WRD may, at any time, withdraw said funds or  
22                  any part thereof so credited in trust for the aforesaid purpose, or may by the 40th  
23                  day of any Administrative Year utilize all or any portion of said funds for the  
24                  purchase of water available from subscriptions by Exchangors in the event the  
25                  total quantity of such subscriptions exceeds the total quantity of approved  
26                  requests by parties to purchase Exchange Pool water. To the extent that there is  
27                  such an excess of available subscriptions over requests and to the extent that the  
28                  existing credit in favor of WRD is sufficient to purchase such excess quantity at

1 the price established for Exchange Pool purchases during that Administrative  
2 Year, the money shall be paid to the Exchangors in the same manner as if another  
3 party had made such purchase as an Exchangee. WRD shall not extract any such  
4 Exchange Pool water so purchased.

5 (8) Additional Pumping by Exchangees Pursuant to Exchange Pool  
6 Provisions.

7 An Exchangee may extract from Central Basin in addition to its Allowed  
8 Pumping Allocation for a particular Administrative Year that quantity of water  
9 which it has requested to purchase from the Exchange Pool during that  
10 Administrative Year and which has been allocated to it pursuant to the provisions  
11 of paragraphs 5, 6 and 7. The first pumping by an Exchangee in any  
12 Administrative Year shall be deemed to be pumping of the party's allocation of  
13 Exchange Pool water.

14 (9) Reduction in Pumping by Exchangors.

15 Each Exchangor shall in each Administrative Year reduce its extractions  
16 of water from Central Basin below its Allowed Pumping Allocation for the  
17 particular year in a quantity equal to the quantity of Exchange Pool requests  
18 allocated to it pursuant to the provisions of paragraphs 4, 5, 6 and 7 of this  
19 Subpart C.

20 (10) Price to be Paid for Exchange Pool Water.

21 The price to be paid by Exchangees and to be paid to Exchangors per acre  
22 foot for required and voluntary subscriptions of Exchangors utilized to fill  
23 requests on the Exchange Pool by Exchangees shall be the dollar amount  
24 computed as follows by the Water Rights Panel for each Administrative Year.  
25 The "normal" price as of the beginning of the Administrative Year charged by  
26 Central Basin Municipal Water District (CBMWD) for treated MWD  
27 (Metropolitan Water District of Southern California) water used for domestic and  
28 municipal purposes shall be determined, and if on that date there are any changes



1 scheduled during that Administrative Year in CBMWD’s “normal” price for such  
2 category of water, the weighted daily “normal” CBMWD price shall be  
3 determined and used in lieu of the beginning such price; and there shall be  
4 deducted from such beginning or weighted price, as the case may be, the  
5 “incremental cost of pumping water in Central Basin” at the beginning of the  
6 Administrative Year and any then current rate or rates, of assessments levied on  
7 the pumping of groundwater in Central Basin by Plaintiff District and any other  
8 governmental agency. The “normal” price charged by CBMWD shall be the  
9 highest price of CBMWD for normal service excluding any surcharge or higher  
10 rate for emergency deliveries or otherwise failing to comply with CBMWD rates  
11 and regulations relating to earlier deliveries. The “incremental cost of pumping  
12 water in Central Basin” as of the beginning of the Administrative Year shall be  
13 deemed to be the Southern California Edison Company Schedule No. PA-1 rate  
14 per kilowatt-hour, including all adjustments and all uniform authorized additions  
15 to the basic rate, multiplied by 560 kilowatt-hours per acre-foot, rounded to the  
16 nearest dollar (which number of kilowatt-hours has been determined to represent  
17 the average energy consumption to pump an acre-foot of water in Central Basin).  
18 In applying said PA-1 rate the charge per kilowatt-hour under the schedule shall  
19 be employed and if there are any rate blocks then the last rate block shall be  
20 employed. Should a change occur in Edison schedule designations, the Water  
21 Rights Panel shall employ that applicable to motors used for pumping water by  
22 municipal utilities.

23 (11) Carry-over of Exchange Pool Purchases by Exchangees.

24 An Exchangee who does not extract from Central Basin in a particular  
25 Administrative Year a quantity of water equal to the total of (a) its Allowed  
26 Pumping Allocation for that particular Administrative Year, reduced by any  
27 authorized amount of carryover into the next succeeding Administrative Year  
28 pursuant to the provisions of Section III(A) of this Judgment, and (b) the quantity

1 that it purchased from the Exchange Pool for that particular Administrative Year,  
2 may carry over into the next succeeding Administrative Year the right to extract  
3 from Central Basin a quantity equal to the difference between said total and the  
4 quantity actually extracted in that Administrative Year, but not exceeding the  
5 quantity purchased from the Exchange Pool for that Administrative Year. Any  
6 such carryover shall be in addition to that provided in said Section III(A).

7 If the "Basinwide Average Exchange Pool Price" in the next succeeding  
8 Administrative Year exceeds the "Exchange Pool Price" in the previous  
9 Administrative Year any such Exchangee exercising such carryover rights  
10 hereinabove provided shall pay to the Watermaster, forthwith upon the  
11 determination of the "Exchange Pool Price" in said succeeding Administrative  
12 Year, and as a condition to such carryover rights, an additional amount  
13 determined by multiplying the number of acre feet of carryover by the difference  
14 in "Exchange Pool Price" as between the two Administrative Years. Such  
15 additional payment shall be miscellaneous income to the Watermaster which shall  
16 be applied by it against that share of the Watermaster's Administrative Body's  
17 budget to be paid by the parties to this Agreement for the second Administrative  
18 Year succeeding that in which the Exchange Pool water was so purchased. For  
19 purposes of this paragraph, the term Basinwide Average Exchange Pool Price  
20 means the average price per acre foot paid for Exchange Pool water produced  
21 within the Central Basin during the year for which such determination is to be  
22 made, taking into account all Exchange Pool transactions consummated during  
23 that year.

24 (12) Notification by Watermaster to Exchangors and Exchangees of  
25 Exchange Pool Requests and Allocations Thereof and Price of Exchange Pool  
26 Water.

27 Not later than the 65th day after the commencement of each  
28 Administrative Year, the Administrative Body of Watermaster shall determine

1 and notify all Exchangors and Exchangees of the total of the allocated requests for  
2 Exchange Pool water and shall provide a schedule divided into categories of  
3 requests showing the quantity allocated to each Exchangee and a schedule of the  
4 allocation of the total Exchange Pool requirements among the Exchangors. Such  
5 notification shall also advise Exchangors and Exchangees of the prices to be paid  
6 to Exchangors for subscriptions utilized and the Exchange Pool Price for that  
7 Administrative Year as determined by the Water Rights Panel. The  
8 determinations of the Watermaster in this regard shall be subject to review by the  
9 Court in accordance with the procedure set forth in Part II of this Judgment.

10 (13) Payment by Exchangees.

11 Each Exchangee shall, on or prior to last day of the third month of each  
12 Administrative Year, pay to the Watermaster one-quarter of said price per acre-  
13 foot multiplied by the number of acre feet of such party's approved request and  
14 shall, on or before the last day of each of the next succeeding three months, pay a  
15 like sum to the Watermaster. Such amounts must be paid by each Exchangee  
16 regardless of whether or not it in fact extracts or uses any of the water it has  
17 requested to purchase from the Exchange Pool.

18 (14) Payments to Exchangors.

19 As soon as possible after receipt of moneys from Exchangees, the  
20 Watermaster shall remit to the Exchangors their pro rata portions of the amount so  
21 received in accordance with the provisions of paragraph 10 above.

22 (15) Delinquent Payments.

23 Any amounts not paid on or prior to any due date above shall carry interest  
24 at the rate of 1% per month or any part of a month. Any amounts required to be  
25 so paid may be enforced by the equitable powers of the Court, including, but not  
26 limited to, the injunctive process of the Court. In addition thereto, the  
27 Watermaster, as Trustee for the Exchangors and acting through the Water Rights  
28 Panel, may enforce such payment by any appropriate legal action, and shall be

1 entitled to recover as additional damages reasonable attorneys' fees incurred in  
2 connection therewith. If any Exchangee shall fail to make any payments required  
3 of it on or before 30 days after the last payment is due, including any accrued  
4 interest, said party shall thenceforward not be entitled to purchase water from the  
5 Exchange Pool in any succeeding Administrative Year except upon order of the  
6 Court, upon such conditions as the Court may impose.

7  
8 IV. PROVISIONS FOR THE STORAGE OF WATER AND THE EXTRACTION  
9 OF STORED WATER.

10 A. Adjudication of Available Dewatered Space, Storage Capacity and  
11 Storage Apportionment.

12 There exists within the Basin a substantial amount of available space which has  
13 not been optimally utilized for basin management and for storage of native and imported  
14 waters. The Court finds and determines that (i) there is 330,000 acre feet of Available  
15 Dewatered Space in the Basin; (ii) use of this Available Dewatered Space will increase  
16 reasonable and beneficial use of the Basin by permitting the more efficient procurement  
17 and management of Replenishment Water, conjunctive use, and for direct and in-lieu  
18 recharge, thereby increasing the prudent storage and recovery of Stored Water for later  
19 use by parties to this Judgment, conservation of water and reliability of the water supply  
20 available to all Parties; and (iii) use of the Available Dewatered Space pursuant to the  
21 terms and conditions of this Judgment will not result in Material Physical Harm.

22 B. Avoidance of Material Physical Harm.

23 It is essential that the use of the Available Dewatered Space be undertaken for the  
24 greatest public benefit pursuant to uniform, certain, and transparent regulation that  
25 encourages the conservation of water and reliability of the water supply, avoids Material  
26 Physical Harm, and promotes the reasonable and beneficial use of water. Accordingly,  
27 in the event Watermaster becomes aware of the development of a Material Physical  
28 Harm, or imminent threat of the development of a Material Physical Harm, relating to the

1 use of the Available Dewatered Space, Watermaster shall, within thirty (30) days  
2 thereafter, notice a hearing before the Court and concurrently file a report with the Court,  
3 served on all parties, which shall explain the relevant facts then known to Watermaster  
4 relating to the Material Physical Harm, or imminent threat thereof, including without  
5 limitation, the location of the occurrence, the source or cause, existing and potential  
6 physical impacts or consequences of the identified or threatened material Physical Harm,  
7 and any recommendations to remediate the identified or threatened Material Physical  
8 Harm.

9 C. Apportionment of Available Dewatered Space.

10 To fairly balance the needs of the divergent interests of parties having water rights  
11 in the Basin, on the one hand, and the replenishment functions of WRD on the other  
12 hand, and in consideration of the shared desire and public purpose of removing  
13 impediments to the voluntary conservation, storage, exchange and transfer of water, all  
14 of the Available Dewatered Space is hereby adjudicated and apportioned into  
15 complimentary classifications of Stored Water and a Basin Operating Reserve as set  
16 forth in this Part IV. The apportionment contemplates flexible administration of storage  
17 capacity where use is apportioned among competing needs, while allowing all Available  
18 Dewatered Space to be used from time to time on a “space available” basis, subject to the  
19 priorities specified in this Judgment, and as further defined in Section IV(I) of this  
20 Judgment. The Court further finds and determines that, of the Available Dewatered  
21 Space, there is 220,000 acre-feet of storage capacity in the Central Basin which is  
22 presently available (“Adjudicated Storage Capacity”). The use of Adjudicated Storage  
23 Capacity as provided in this Judgment will not adversely affect the efficient operation of  
24 the Basin or the recharge of water necessary for the production of the parties’ respective  
25 Allowed Pumping Allocations. The apportionment of Adjudicated Storage Capacity as  
26 provided herein will allow for flexible administration of groundwater storage within the  
27 Basin. The Adjudicated Storage Capacity is hereby assigned to Individual Storage  
28 Allocations and Community Storage as provided herein, provided however that if all

1 space in a particular classification is fully occupied then, on a “space available” basis, to  
2 available space within the other classifications of Adjudicated Storage Capacity and,  
3 only then, to available space within Basin Operating Reserve.

4 The Court further finds and determines that, out of the Available Dewatered  
5 Space, there is 110,000 acre feet that should be set aside for use by WRD as a Basin  
6 Operating Reserve, provided in Section IV(L), and subject to temporary occupancy by  
7 Stored Water as permitted hereunder.

8 No storage of water shall occur in the Basin except in conformity with this  
9 Judgment.

10 D. Individual Storage Allocation.

11 Each Party having an adjudicated groundwater extraction right hereunder shall  
12 have a priority right to store water in an Individual Storage Account, through conversion  
13 of Carryover to Stored Water as provided herein, or by any means authorized by this  
14 Judgment, up to a maximum of 50% of such party’s Allowed Pumping Allocation. The  
15 cumulative quantity of Adjudicated Storage Capacity subject to individual storage  
16 allocation is 108,750 acre-feet. In recognition of prior importation of water which was  
17 introduced into the Basin as Stored Water, and which has not yet been extracted, the  
18 Court finds and determines that, as of the date of this Order, the following Parties have  
19 occupied a portion of their respective Individual Storage Allocations and have all  
20 associated rights therein, as follows:

21	City of Long Beach:	13,076.8 acre-feet
22	City of Lakewood:	500 acre-feet
23	City of Downey:	500 acre-feet
24	City of Cerritos	500 acre-feet

25 E. Community Storage; Regional Disadvantaged Communities Incentive  
26 Program.

27 In addition to Individual Storage Allocation, a Party that has fully occupied its  
28 Individual Storage allocation may, on a first in time, first in right basis (subject to the

1 limits expressed below) place water into storage in the “Community Storage Pool.” The  
2 cumulative quantity of Adjudicated Storage Capacity allocated to Community Storage  
3 shall be 111,250 acre-feet. So long as there is available capacity in the Community  
4 Storage Pool, any Party may store water in the Community Storage Pool through  
5 conversion of Carryover to Stored Water as provided herein, or by any other means  
6 authorized by this Judgment, provided such Party has first fully occupied that party’s  
7 available Individual Storage Allocation.

8 (1) Parties to this Judgment which, as of January 1, 2013, held  
9 Allowed Pumping Allocation of not greater than 5,000 acre-feet shall have a first  
10 priority right to occupy, in the aggregate, up to 10,000 acre-feet of storage space  
11 within the Central Basin Community Storage Pool, on the basis of first in time,  
12 first in right.

13 (2) Water stored pursuant to the Regional Disadvantaged  
14 Communities Incentive Program shall have a second priority right to occupy up to  
15 23,000 acre-feet within the Community Storage Pool, on such terms as shall be  
16 determined by the Court.

17 (3) Any further storage in excess of the maximum quantity of  
18 Community Storage will be on a “space-available” interim basis. From time to  
19 time, and on a “space-available” basis, the total quantity of water available for  
20 storage is permitted to exceed Adjudicated Storage Capacity for the Community  
21 Storage Pool on an interim basis. This interim storage may occur if storage  
22 capacity exists as a result of unused Adjudicated Storage Capacity within other  
23 classifications, or available space exists in the Basin Operating Reserve. Such  
24 interim storage, however, is subject to priority rights to such Dewatered Space as  
25 provided in this Judgment. A party that seeks to convert the water temporarily  
26 held in interim storage to a more firm right, may contract for the use of another  
27 party’s Individual Storage Allocation, or may add such water to the Community  
28 Storage Pool once space therein becomes available.

1 (4) After a party occupies available storage capacity within the  
2 Community Storage Pool and then withdraws water from the Community Storage  
3 Pool, the storing party will be allowed a period of twenty-four (24) months to  
4 refill the evacuated storage before the capacity will be determined excess and  
5 available for use by other parties. Once the Basin's Community Storage Pool has  
6 been filled for the first time, a party may exercise its twenty-four (24) month refill  
7 priority only once, and then only provided there is then capacity available to  
8 permit that party to refill the vacated space. Except to the extent Community  
9 Storage space may be subject to such priority right to re-fill, all space therein shall  
10 be occupied on a first in time, first in right basis.

11 (5) A party that has occupied storage in the Community Storage Pool  
12 for ten (10) consecutive years shall be deemed to extract its Stored Water first in  
13 subsequent years (notwithstanding the order of water production set forth in  
14 Section I(B)(3)) until its entire Community Storage account has been extracted,  
15 but thereafter may again make use of Community Storage on the same terms  
16 available to other parties on a first in time, first in right, space-available basis.

17 (6) Any quantity of water held in the Community Storage Pool for a  
18 term greater than ten (10) consecutive years shall be assessed an annual water loss  
19 equal to 5% of the lowest quantity of water held within the party's Community  
20 Storage Pool account at any time during the immediately preceding ten-year  
21 period. The lowest quantity means the smallest amount of water held by the Party  
22 in the Community Storage Pool during any of the preceding ten (10) years, with a  
23 new loss calculation being undertaken every year. Water subject to the loss  
24 assessment will be deemed dedicated to the Basin Operating Reserve in  
25 furtherance of the physical solution without compensation. Water lost to the  
26 Basin shall constitute water replenished into the Central Basin for the benefit of  
27 all parties

28 F. Limit on Storage.



1 Irrespective of the category of storage utilized, each party to this Judgment may  
2 not cumulatively have in storage at any time Stored Water totaling more than two  
3 hundred percent (200%) of that party's Allowed Pumping Allocation. Subject to the  
4 foregoing, the right to produce Stored Water may be freely transferred to another party to  
5 this Judgment, or as otherwise permitted herein.

6 G. Extractions of Stored Water; Exemption from Replenishment Assessment.

7 The Court finds and declares that the extraction of Stored Water as permitted  
8 hereunder does not constitute "production of groundwater" within the meaning of Water  
9 Code Section 60317 and that no Replenishment Assessment shall be levied on the  
10 extraction of Stored Water. WRD has stipulated to the same. This determination reflects  
11 the practical application of certain provisions of this Judgment concerning storage of  
12 water, including, without limitation, understanding the following: (1) payment of the  
13 Replenishment Assessment is required upon the conversion of Carryover Water into  
14 storage, and; (2) developed water introduced into the Basin for storage by or on behalf of  
15 a Party through spreading or injection need not be replenished by WRD and should not  
16 be subject to the Replenishment Assessment.

17 H. Storage Procedure.

18 The Administrative Body shall (i) prescribe forms and procedures for the orderly  
19 reporting of Stored Water, (ii) maintain records of all water stored in the Basin, and (iii)  
20 undertake monitoring and modeling of Stored Water as may be reasonably required. As  
21 to any Storage Projects that will require review and approval by the Storage Panel, the  
22 Administrative Body shall provide appropriate applications, and shall work with project  
23 applicants to complete the application documents for presentation to the Storage Panel.  
24 The Administrative Body shall be responsible for conducting any groundwater modeling  
25 necessary to evaluate a proposed Storage Project. The proponent of a proposed project  
26 will bear all costs associated with the review of the application for approval of the project  
27 and all costs associated with its implementation. Nothing in this Judgment shall alter the  
28 applicant(s) duty to comply with CEQA or to meet other legal requirements as to any

1 proposed Storage Project. Within thirty (30) days after final submission of the storage  
2 application documents, the Administrative Body shall provide notice of the storage  
3 application (either by electronic mail or U.S. postal mail), together with a copy of the  
4 application documents, to all parties possessing an Allowed Pumping Allocation, and to  
5 any other person requesting notice thereof. Following notice, any necessary hearings  
6 before the Storage Panel shall be conducted as provided in Section IV(O) of this  
7 Judgment.

8 I. Loss of Stored Water/Relative Priority.

9 To balance the need to protect priority uses of storage and to encourage the full  
10 utilization of Adjudicated Storage Capacity and Basin Operating Reserve where it can be  
11 accommodated without interference with priority uses, and except as otherwise provided  
12 in this Judgment, no water held in any authorized storage account will be deemed lost  
13 from that storage account unless the cumulative quantity of water held as Stored Water  
14 plus the quantity of water held within the Basin Operating Reserve exceeds 330,000  
15 acre-feet. Where all Adjudicated Storage Capacity and Basin Operating Reserve has  
16 been occupied, the first Stored Water to be deemed lost shall be the last water stored as  
17 Community Storage. Upon receipt of a bona fide request by another use entitled to  
18 priority hereunder, Watermaster shall issue a notice requiring the other parties to  
19 evacuate their Stored Water. Any Stored Water that is not evacuated shall be deemed  
20 dedicated to the Basin Operating Reserve in furtherance of the physical solution without  
21 compensation and accounted for accordingly.

22 J. Limits on Extraction.

23 Anything in this Judgment to the contrary notwithstanding, no party shall extract  
24 greater than 140% of the sum of (i) the party's Allowed Pumping Allocation and (ii) the  
25 party's leased water, except upon prior approval by the Water Rights Panel. For this  
26 purpose, a party's total extraction right for a particular year shall include that party's  
27 Allowed Pumping Allocation and any contractual right through lease or other means to  
28 utilize the adjudicated rights of another party. Where such proposed extraction would

1 occur within the Central Basin Pressure Area as defined by Watermaster consistent with  
2 historical records, the Water Rights Panel shall submit such request for review by the  
3 Board of WRD. The Water Rights Panel shall not approve any request for over-  
4 extraction within the Pressure Area without a written finding by the Board of WRD that  
5 such over-extraction will not cause Material Physical Harm. The role of the Board of  
6 WRD in this process shall not be read to expand or restrict WRD's statutory authority.  
7 Consideration shall be on an expedited basis.

8 K. Increased Extractions in the Central Basin for Certain Water Purveyors.

9 (1) This Court also maintains continuing jurisdiction over the West  
10 Coast Basin, which bounds the Central Basin to the west.

11 (2) Certain Water Purveyors are parties to both this Amended  
12 Judgment and the judgment governing the West Coast Basin and serve  
13 communities overlying both the Central Basin and the West Coast Basin.

14 (3) Certain Water Purveyors may exceed their Allowed Pumping  
15 Allocation in any Administrative Year, subject to all of the following conditions:

16 (a) The Water Purveyor is one of the following eligible Parties:

17 (i) City of Los Angeles

18 (ii) Golden State Water Company

19 (iii) California Water Service Company.

20 (b) Increased extractions pursuant to this Section shall not  
21 exceed 5,000 acre-feet per Water Purveyor for the particular  
22 Administrative Year.

23 (c) Increased extractions pursuant to this Section shall not  
24 exceed the Water Purveyor's unused "Adjudicated Rights" in the West  
25 Coast Basin.

26 (d) Increased extractions pursuant to this Section shall not  
27 result in Material Physical Harm.

28 (4) Notwithstanding the foregoing, nothing herein permits extraction

1 of water within the Central Basin in excess of 140% of Allowed Pumping  
2 Allocation for the particular Administrative Year, except as otherwise permitted  
3 under this Judgment.

4 (5) Replenishment of any water extracted from the Central Basin  
5 pursuant to this Section shall occur exclusively in the Central Basin.

6 (6) The benefits of this Section are made available only to the certain  
7 Water Purveyors that serve communities overlying the Central Basin and  
8 communities overlying the West Basin, in recognition of the management of  
9 water resources by those Water Purveyors to serve such overlying communities.  
10 It is not made, nor is it related to, a determination of an underflow between the  
11 basins, a cost or benefit allocation, or any other factor relating to the allocation of  
12 the Replenishment Assessment.

13 L. Special Provisions for Temporary Storage within Community Storage  
14 Pool.

15 The Central Basin Municipal Water District (“CBMWD”) shall take such action  
16 as may be necessary to reduce its Allowed Pumping Allocation to five (5) acre-feet or  
17 fewer by December 31, 2018, and has agreed, by stipulation, not to acquire any  
18 additional Central Basin water rights. Upon application by CBMWD, the Storage Panel  
19 may, after making each of the findings required in this subsection, approve storage of  
20 water by CBMWD within the Community Storage Pool subject to the stated conditions.  
21 The Storage Panel may only authorize such storage after finding each of the following to  
22 be true as of the date of such approval:

23 (1) CBMWD (a) then owns five (5) acre-feet or fewer of Allowed  
24 Pumping Allocation, and (b) has not produced water utilizing any extraction  
25 rights it holds within the Basin but has only engaged in the sale or leasing of those  
26 rights to others.

27  
28 (2) There is available space for Storage within the Community Storage

1 Pool.

2  
3 (3) CBMWD has identified a source of imported water that may be  
4 brought into the Basin and stored underground.

5 (4) The water identified for storage (a) is unlikely to be acquired by  
6 other parties through surface delivery for use within the Basin, and (b) was  
7 offered to WRD to purchase for replenishment purposes at the same price that  
8 CBMWD otherwise sells imported water to WRD and WRD declined to purchase  
9 said water, within a reasonable period of time.

10  
11 (5) There will be no Material Physical Harm associated with the  
12 introduction of the water into storage, or its extraction, in the manner approved by  
13 the Storage Panel.

14  
15 The condition expressed in Section IV(L)(1)(a) above shall not be operative until  
16 January 1, 2019, or upon reduction of CBMWD's Allowed Pumping Allocation  
17 to five (5) acre-feet or fewer, whichever first occurs. CBMWD may not extract  
18 the Stored Water, and may instead only transfer that Stored Water to a party  
19 having extraction rights, or to WRD for replenishment purposes only. Such  
20 Stored Water not so transferred within three (3) years following its storage may  
21 be purchased by WRD, at its option, for replenishment purposes only, at a price  
22 not exceeding the actual cost incurred by CBMWD in importing and storing the  
23 water in the first instance, plus a reasonable administrative charge for overhead  
24 not exceeding five percent (5%) of the price paid by CBMWD for the water with  
25 no other fees or markups imposed by CBMWD. Except as otherwise permitted in  
26 this Section, any such Stored Water held by CBMWD for a term greater than  
27 three (3) years shall be assessed an annual water loss equal to 10% of the amount  
28 of such Stored Water at the end of each year. Water subject to the loss

1 assessment will be deemed dedicated to the Basin Operating Reserve in  
2 furtherance of the physical solution without further compensation. The Storage  
3 Panel shall grant CBMWD one or more extensions of such term, not exceeding  
4 total extensions of three (3) additional years, following public hearing, if the  
5 Storage Panel determines that the Stored Water has been actively marketed by  
6 CBMWD for transfer to Parties on reasonable terms in the previous year. The  
7 Storage Panel may impose such additional reasonable conditions as it determines  
8 to be appropriate. Any review by the Storage Panel hereunder shall only occur at  
9 a public hearing held following at least 15 days' (but not more than 30 days')  
10 mailed notice to all Parties to this Judgment, at which hearing an opportunity for  
11 public comment shall be afforded in advance of any such decision. However, the  
12 Storage Panel may consider an application on shorter notice under exigent  
13 circumstances, including the potential loss of the water proposed to be stored if  
14 action is not taken sooner. CBMWD shall have the right to appeal any action or  
15 inaction by the Storage Panel to this court. The storage and extraction of Stored  
16 Water hereunder shall otherwise be subject to all other provisions of this  
17 Judgment. The court finds and declares that this subsection constitutes a "court  
18 order issued by a court having jurisdiction over the adjudication of groundwater  
19 extraction rights within the groundwater basin where storage is sought" within the  
20 meaning of Water Code §71610(b)(2)(B). Nothing in this provision impedes  
21 CBMWD's ability to store water pursuant to a contract with an adjudicated  
22 groundwater extraction rights holder as permitted by Water Code  
23 § 71610(b)(2)(A) and otherwise in accordance with this Judgment.

24 M. Basin Operating Reserve.

25 It is in the public interest and in furtherance of the physical solution for WRD to  
26 prudently exercise its statutory discretion to purchase, spread, and inject Replenishment  
27 Water, to provide for in-lieu replenishment, and otherwise to fulfill its replenishment  
28 function within the Basin as provided in Water Code Section 60000 et. seq. Hydrologic,

1 regulatory and economic conditions now prevailing within the State require that WRD be  
2 authorized to exercise reasonable discretion and have flexibility in the accomplishment  
3 of its replenishment function. Accordingly, WRD may pre-purchase or defer the  
4 purchase of Replenishment Water, and may otherwise purchase and manage available  
5 sources of Replenishment Water under the most favorable climatic and economic  
6 conditions as it may determine reasonable and prudent under the circumstances. It is the  
7 intent of the parties to preserve space for such replenishment activities, including capture  
8 of natural inflows during wet years, recapture of water when possible, and artificial  
9 replenishment when water is available at discounted rate, for the benefit of the Basin and  
10 the parties to the Judgment. The Basin Operating Reserve is intended to allow WRD to  
11 meet its replenishment needs to make APA available for extraction by all water rights  
12 holders. Accordingly, WRD shall have a priority right to occupy up to 110,000 acre-feet  
13 of the Available Dewatered Space as the “Basin Operating Reserve” for the acquisition  
14 and replenishment of water, or to ensure space remains available in the Basin to capture  
15 natural inflows during wet years for the benefit of the parties to the Judgment, to offset  
16 over-production. The priority right is not intended to allow WRD to sell or lease stored  
17 water, storage, or water rights. To the extent WRD does not require the use of all of such  
18 Basin Operating Reserve, that portion of the Basin Operating Reserve that is not then  
19 being used shall be available to other Parties to store water on a temporary and space-  
20 available basis. No Party may use any portion of the Basin Operating Reserve for space-  
21 available storage unless that Party has already maximized its allowed Storage pursuant to  
22 its Individual Storage Allocation and all available Community Storage is already in use.  
23 WRD’s failure to use any portion of its Basin Operating Reserve shall not cause  
24 forfeiture or create a limitation of its right to make use of the designated space in the  
25 future. WRD’s first priority right to this category of space shall be absolute. To the  
26 extent that there is a conflict between WRD and a third party regarding the availability of  
27 and desire to use any portion of the space available for replenishment up to the maximum  
28 limits set forth in this section, the interests of WRD will prevail. If a party other than

1 WRD is using the Basin Operating Reserve space on a “space available” basis and a  
2 conflict develops between WRD and the storing party, the storing party will, upon notice  
3 from WRD, evacuate the Stored Water within ninety (90) days thereafter. In such event,  
4 temporary occupancy within the Basin Operating Reserve shall be first in time, first in  
5 right, and the last Party to store water shall be required to evacuate first until adequate  
6 space shall be made available within the Basin Operating Reserve to meet WRD’s needs.  
7 The storing party or parties assume all risks of waste, spill and loss regardless of the  
8 hardship. Stored Water that is not evacuated following WRD’s notice of intent to occupy  
9 the Basin Operating Reserve will be deemed dedicated to the Basin Operating Reserve in  
10 furtherance of the physical solution without compensation and accounted for  
11 accordingly. Nothing herein shall permit WRD to limit or encumber, by contract or  
12 otherwise, its right to use the Basin Operating Reserve for Replenishment purposes for  
13 any reason, or to make space therein available to any person by any means.  
14 Notwithstanding the foregoing, to the extent excess space is available, water evacuated  
15 from the Basin Operating Reserve as provided in this Section shall be deemed added to  
16 available space within the Individual Storage Allocations and Community Storage Pool,  
17 subject to the priority rights otherwise provided in this Judgment.

18 N. Water Augmentation.

19 The parties, in coordination with WRD, may undertake projects that add to the  
20 long-term reliable yield of the Basin. Innovations and improvements in practices that  
21 increase the conservation and maximization of the reasonable and beneficial use of water  
22 should be promoted. To the extent that Parties to the Judgment, in coordination with  
23 WRD, implement a project that provides additional long-term reliable water supply to the  
24 Central Basin, the annual extraction rights in the Central Basin will be increased  
25 commensurately in an amount to be determined by the Storage Panel to reflect the actual  
26 yield enhancement associated with the project. Augmented supplies of water resulting  
27 from such a project may be extracted or stored as permitted in this Judgment in the same  
28 manner as other water. Participation in any Water Rights Augmentation Project shall be



1 voluntary. A party may elect to treat a proposed project as a Water Augmentation  
2 Project (for the purpose of seeking an increase in that party’s Allowed Pumping  
3 Allocation) or may elect to treat such a project as a Storage Project under the other  
4 provisions of this Judgment. The terms of participation in any Water Augmentation  
5 Project will be at the full discretion of the participating parties. All Water Augmentation  
6 Projects will be approved by the Storage Panel.

7 (1) Participating Parties.

8 Parties who propose a Water Augmentation Project (“Project Leads”) may  
9 do so in their absolute discretion, upon such terms as they may determine. All  
10 other parties to this Judgment will be offered an opportunity to participate in the  
11 Water Augmentation Project on condition that they share proportionally in  
12 common costs and benefits, and assume the obligation to bear exclusively the cost  
13 of any improvements that are required to accommodate their individual or  
14 particular needs. Notice shall be provided which generally describes the project  
15 and the opportunity to participate with sufficient time for deliberation and action  
16 by any of these parties who could potentially participate. Disputes over the  
17 adequacy of notice shall be referred to the Storage Panel, and then to the Court  
18 under its continuing jurisdiction. Parties who elect to participate (“Project  
19 Participants”) may do so provided they agree to offer customary written and  
20 legally binding assurances that they will bear their proportionate costs attributable  
21 to the Water Rights Augmentation Project, or provide other valuable  
22 consideration deemed sufficient by the Project Leads and the Project Participants.

23 (2) Determination of Additional Extraction Rights.

24 The amount of additional groundwater extraction as a result of a Water  
25 Augmentation project will be determined by the Storage Panel, subject to review  
26 by the Court. The determination will be based upon substantial evidence which  
27 supports the finding that the Water Augmentation project will increase the long-  
28 term sustainable yield of the respective Basin by an amount at least equal to the

1 proposed increase in extraction rights.

2 (3) Increase in Extraction Rights.

3 A party that elects to participate and pays that party's full pro-rata share of  
4 costs associated with any Water Augmentation Project and/or reaches an  
5 agreement with other participants based upon other valuable consideration  
6 acceptable to the Project Leads and Project Participants, will receive a  
7 commensurate increase in extraction rights. Non-participating parties will not  
8 receive an increase or a decrease in extraction rights. Any party that elects not to  
9 participate will not be required to pay any of the costs attributable to the particular  
10 Water Augmentation Project, whether directly or indirectly as a component of the  
11 WRD Replenishment Assessment.

12 (4) Nominal Fluctuations.

13 Because water made available for Water Rights Augmentation will be  
14 produced annually, fluctuations in groundwater levels will be temporary, nominal  
15 and managed within the Basin Operating Reserve.

16 (5) Availability of New Water.

17 The amount of additional groundwater extraction established as a result of  
18 a Water Augmentation Project shall be equal to the quantity of new water in the  
19 Basin that is attributable to that Water Augmentation Project. No extraction shall  
20 occur and no extraction right shall be established until new water has been  
21 actually introduced into the Basin as a result of the Project. Any approval for a  
22 Water Augmentation Project shall include provisions (a) requiring regular  
23 monitoring to determine the actual amount of such new water made available, (b)  
24 requiring make-up water or equivalent payment therefor to the extent that actual  
25 water supply augmentation does not meet projections, and (c) adjusting extraction  
26 rights attributable to the Water Augmentation Project to match the actual water  
27 created. The right to extract augmented water from the Basin resulting from a  
28 party's participation in a Water Augmentation Project shall be accounted for

1 separately and shall not be added to a party's Allowed Pumping Allocation. No  
2 Replenishment Assessment shall be levied against the extraction of augmented  
3 water.

4 (6) Limitation.

5 Notwithstanding the foregoing, WRD will not obtain any water rights or  
6 extraction rights under this Judgment by virtue of its participation in a Water  
7 Augmentation Project. If WRD participates in a Water Rights Augmentation  
8 Project through funding or other investments, its allocation of new water from the  
9 project shall be used to offset its replenishment responsibilities.

10 O. Limits on Watermaster Review.

11 It shall not be necessary for Watermaster, or any constituent body thereof, to  
12 review or approve any of the following before the affected Party may proceed: (i)  
13 exercise of adjudicated water rights consistent with this Judgment, except for extraction  
14 above 140% of a Party's extraction right as set out in Section IV(J) of this Judgment; (ii)  
15 replenishment of the Basin with Replenishment Water by WRD consistent with Water  
16 Code Section 60000 et seq., including replenishment of water produced by water rights  
17 holders through the exercise of adjudicated water rights; (iii) WRD's operations within  
18 the Basin Operating Reserve; (iv) Carryover Conversion or other means of the filling of  
19 the Individual Storage Accounts and the Community Storage Pool, as provided in this  
20 Judgment, as long as existing water production, spreading, or injection facilities are used;  
21 and (v) individual transfers of the right to produce Stored Water as permitted in Section  
22 IV(F). All other Storage Projects and all Water Augmentation Projects shall be subject  
23 to review and approval as provided herein, including (i) material variances to substantive  
24 criteria governing projects exempt from the review and approval process, (ii)  
25 modifications to previously approved Storage Projects and agreements, (iii) a party's  
26 proposal for Carryover Conversion in quantities greater than the express apportionment  
27 of Adjudicated Storage Capacity on a non-priority, space-available, interim basis, and  
28 (iv) Storage, by means other than Carryover Conversion, when new production,

1 spreading, or injection facilities are proposed to be utilized.

2 P. Hearing Process For Watermaster Review.

3 The following procedures shall be followed by Watermaster where Watermaster  
4 review of storage or extraction of Stored Water is required or permitted under this  
5 Judgment:

6 (1) No later than thirty (30) days after notice has been issued for the  
7 storage application, the matter shall be set for hearings before the Storage Panel.  
8 A staff report shall be submitted by WRD staff in conjunction with the completed  
9 storage application documents and the Water Rights Panel may prepare an  
10 independent staff report, if it elects to do so.

11 (2) The Board of WRD and the Water Rights Panel (sitting jointly as  
12 the Storage Panel) shall conduct a joint hearing concerning the storage  
13 application.

14 (3) All Watermaster meetings shall be conducted in the manner  
15 prescribed by the applicable Rules and Regulations. The Rules shall provide that  
16 all meetings of Watermaster shall be open to water rights holders and that  
17 reasonable notice shall be given of all meetings.

18 (4) The Board of WRD and the Water Rights Panel shall each adopt  
19 written findings explaining its decision on the proposed Storage Project, although  
20 if both entities reach the same decision on the Storage Project, they shall work  
21 together to adopt a uniform set of findings.

22 (5) Unless both the Board of WRD and the Water Rights Panel  
23 approve the Storage Project, the Storage Project application shall be deemed  
24 denied (a "Project Denial"). If both the Board of WRD and the Water Rights  
25 Panel approve the Storage Project, the Storage Project shall be deemed approved  
26 (a "Project Approval").

27 Q. Trial Court Review

28 (1) The applicant may seek the Storage Panel's reconsideration of a

1 Project Denial. However, there shall be no process for mandatory reconsideration  
2 or mediation of a Project Approval or a Project Denial either before the  
3 Administrative Body, or before the Water Rights Panel.

4 (2) Any Party may file an appeal from a Project Approval or Project  
5 Denial with this Court, as further described in Section II(F).

6 (3) In order to (a) promote the full presentation of all relevant  
7 evidence before the Storage Panel in connection with its consideration of any  
8 proposed Storage Project, (b) achieve an expeditious resolution of any appeal to  
9 the Court, and (c) accord the appropriate amount of deference to the expertise of  
10 the Storage Panel, the appeal before the Court shall be based solely on the  
11 administrative record, subject only to the limited exception in California Code of  
12 Civil Procedure section 1094.5(e).

13 (4) If both the WRD Board and the Water Rights Panel each vote to  
14 deny or approve a proposed Storage Project, it shall be an action by the Storage  
15 Panel and that decision shall be accorded by the Court deference according to the  
16 substantial evidence test. If one of the reviewing bodies votes to approve the  
17 proposed Storage Project and the other reviewing body votes to deny the proposed  
18 storage project, then the Court's review shall be *de novo*, although still restricted  
19 to the administrative record. In the case of any *de novo* Trial Court review, the  
20 findings made by the respective Watermaster bodies shall not be accorded any  
21 weight independent of the evidence supporting them.

22 R. Space Available Storage, Relative Priority, and Dedication of "Spilled"  
23 Water.

24 To balance the need to protect priority uses of storage and to encourage the full  
25 utilization of Available Dewatered Space within the Adjudicated Storage Capacity and  
26 the Basin Operating Reserve, any Party may make interim, temporary use of then  
27 currently unused Available Dewatered Space within any category of Adjudicated Storage  
28 Capacity, and then if all Adjudicated Storage Capacity is being fully used for Stored

1 Water within the Basin Operating Reserve (“Space-Available Storage”), subject to the  
2 following criteria:

3 (1) Any Party may engage in Space-Available Storage without prior  
4 approval from Watermaster provided that the storing Party or Parties shall assume  
5 all risks of waste, spill, and loss regardless of the hardship. Whenever the Storage  
6 Panel determines that a Party is making use of excess Available Dewatered Space  
7 for Space-Available Storage, the Storage Panel shall issue written notice to the  
8 Party informing them of the risk of spill and loss.

9 (2) Whenever the Available Dewatered Space is needed to  
10 accommodate the priority use within a respective category of Adjudicated Storage  
11 Capacity, or WRD seeks to make use of its priority right to the Basin Operating  
12 Reserve to fulfill its replenishment function, the Storage Panel shall issue a notice  
13 to evacuate the respective category of Adjudicated Storage Capacity or Basin  
14 Operating Reserve, as applicable, within the time-periods set forth within this  
15 Amended Judgment. To the extent the Stored Water is not timely evacuated such  
16 Stored Water will be placed into any other excess Available Dewatered Space,  
17 first within the Adjudicated Storage Capacity, if available, and then if all  
18 Adjudicated Storage Capacity is being fully used for Stored Water within the  
19 Basin Operating Reserve. If no excess Available Dewatered Space is available  
20 within the Basin Operating Reserve, then the Stored Water shall be deemed  
21 spilled and will be deemed dedicated to the Basin Operating Reserve in  
22 furtherance of the physical solution without compensation and accounted for  
23 accordingly. A Party that seeks to convert the Stored Water temporarily held in  
24 interim storage as Space-Available Storage to a more firm right, may in its  
25 discretion, contract for the use of another Party’s Individual Storage Allocation,  
26 or may add such water to the Community Storage Pool once space therein  
27 becomes available.

28 (3) No Stored Water will be deemed abandoned unless the cumulative

1 quantity of water held as Stored Water plus the quantity of water held in the Basin  
2 Operating Reserve exceeds 330,000 (three hundred and thirty thousand) acre-feet  
3 in the Central Basin.  
4

5 V. CONTINUING JURISDICTION OF THE COURT.

6 The Court hereby reserves continuing jurisdiction and upon application of any interested  
7 party, or upon its own motion, may review and redetermine the following matters and any  
8 matters incident thereto:

9 A. Its determination of the permissible level of extractions from Central  
10 Basin in relation to achieving a balanced basin and an economic utilization of Central  
11 Basin for groundwater storage, taking into account any then anticipated artificial  
12 replenishment of Central Basin by governmental agencies for the purpose of alleviating  
13 what would otherwise be annual overdrafts upon Central Basin and all other relevant  
14 factors.

15 B. Whether in accordance with applicable law any party has lost all or any  
16 portion of his rights to extract groundwater from Central Basin and, if so, to ratably  
17 adjust the Allowed Pumping Allocations of the other parties and ratably thereto any  
18 remaining Allowed Pumping Allocation of such party.

19 C. To remove any Watermaster or constituent body appointed from time to  
20 time and appoint a new Watermaster; and to review and revise the duties, powers and  
21 responsibilities of the Watermaster or its constituent bodies and to make such other and  
22 further provisions and orders of the Court that may be necessary or desirable for the  
23 adequate administration and enforcement of the Judgment.

24 D. To revise the price to be paid by Exchangees and to Exchangors for  
25 Exchange Pool purchases and subscriptions.

26 E. In case of emergency or necessity, to permit extractions from Central  
27 Basin for such periods as the Court may determine: (i) ratably in excess of the Allowed  
28 Pumping Allocations of the parties; or (ii) on a non-ratable basis by certain parties if

1           either compensation or other equitable adjustment for the benefit of the other parties is  
2           provided. Such overextractions may be permitted not only for emergency and necessity  
3           arising within Central Basin area, but to assist the remainder of the areas within The  
4           Metropolitan Water District of Southern California in the event of temporary shortage or  
5           threatened temporary shortage of its imported water supply, or temporary inability to  
6           deliver the same throughout its area, but only if the court is reasonably satisfied that no  
7           party will be irreparably damaged thereby. Increased energy cost for pumping shall not  
8           be deemed irreparable damage. Provided, however, that the provisions of this  
9           subparagraph will apply only if the temporary shortage, threatened temporary shortage,  
10          or temporary inability to deliver was either not reasonably avoidable by the Metropolitan  
11          Water District, or if reasonably avoidable, good reason existed for not taking the steps  
12          necessary to avoid it.

13                 F.     To review actions of the Watermaster.

14                 G.     To assist the remainder of the areas within The Metropolitan Water  
15          District of Southern California within the parameter set forth in subparagraph (e) above.

16                 H.     To provide for such other matters as are not contemplated by the Judgment  
17          and which might occur in the future, and which if not provided for would defeat any or  
18          all of the purposes of this Judgment to assure a balanced Central Basin subject to the  
19          requirements of Central Basin Area for water required for its needs, growth and  
20          development.

21           The exercise of such continuing jurisdiction shall be after 30 days' notice to the parties,  
22          with the exception of the exercise of such continuing jurisdiction in relation to subparagraphs E  
23          and G above, which may be *ex parte*, in which event the matter shall be forthwith reviewed  
24          either upon the Court's own motion or the motion of any party upon which 30 days' notice shall  
25          be so given. Within ten (10) days of obtaining any *ex parte* order, the party so obtaining the  
26          same shall mail notice thereof to the other parties. If any other party desires Court review  
27          thereof, the party obtaining the *ex parte* order shall bear the reasonable expenses of mailing  
28          notice of the proceedings, or may in lieu thereof undertake the mailing. Any contrary or



1 modified decision upon such review shall not prejudice any party who relied on said *ex parte*  
2 order.

3  
4 VI. GENERAL PROVISIONS.

5 A. Judgment Constitutes Inter Se Adjudication.

6 This Judgment constitutes an inter se adjudication of the respective rights of all  
7 parties, except as may be otherwise specifically indicated in the listing of the water rights  
8 of the parties of this Judgment, or in Appendix “2” hereof. All parties to this Judgment  
9 retain all rights not specifically determined herein, including any right, by common law  
10 or otherwise, to seek compensation for damages arising out of any act or omission of any  
11 person. This Judgment constitutes a “court order” within the meaning of Water Code  
12 Section 71610(B)(2)(b).

13 B. Assignment, Transfer, Etc., of Rights.

14 Subject to the other provision of this Judgment, and any rules and regulations of  
15 the Watermaster requiring reports relative thereto, nothing herein contained shall be  
16 deemed to prevent any party hereto from assigning, transferring, licensing or leasing all  
17 or any portion of such water rights as it may have with the same force and effect as  
18 would otherwise be permissible under applicable rules of law as exist from time to time.

19 C. Service Upon and Delivery to Parties of Various Papers.

20 Service of the Judgment on those parties who have executed that certain  
21 Stipulation and Agreement for Judgment or who have filed a notice of election to be  
22 bound by the Exchange Pool provisions shall be made by first class mail, postage  
23 prepaid, addressed to the designee and at the address designated for that purpose in the  
24 executed and filed Counterpart of the Stipulation and Agreement for Judgment or in the  
25 executed and filed “Notice of Election to be Bound by Exchange Pool Provisions,” as the  
26 case may be, or in any substitute designation filed with the Court.

27 Each party who has not heretofore made such a designation shall, within 30 days  
28 after the Judgment shall have been served upon that party, file with the Court, with proof

1 of service of a copy upon the Watermaster, a written designation of the person to whom  
2 and the address at which all future notices, determinations, requests, demands, objections,  
3 reports and other papers and processes to be served upon that party or delivered to that  
4 party are to be so served or delivered.

5 A later substitute designation filed and served in the same manner by any party  
6 shall be effective from the date of filing as to the then future notices, determinations,  
7 requests, demands, objections, reports and other papers and processes to be served upon  
8 or delivered to that party.

9 Delivery to or service upon any party by the Watermaster, by any other party, or  
10 by the Court, or any item required to be served upon or delivered to a party under or  
11 pursuant to the Judgment may be by deposit in the mail, first class, postage prepaid,  
12 addressed to the designee and at the address in the latest designation filed by that party.

13 D. Judgment Does Not Affect Rights, Powers, Etc., of Plaintiff District.

14 Nothing herein constitutes a determination or adjudication which shall foreclose  
15 Plaintiff District from exercising such rights, powers, privileges and prerogatives as it  
16 may now have or may hereafter have by reason of provisions of law.

17 E. Continuation of Order under Interim Agreement.

18 The order of Court made pursuant to the “Stipulation and Interim Agreement and  
19 Petition for Order” shall remain in effect through the Administrative Year in which this  
20 Judgment shall become final (subject to the reserved jurisdiction of the Court).

21 F. Effect of Extractions by Exchangees; Reductions in Extractions.

22 With regard to Exchange Pool purchases, the first extractions by each Exchangee  
23 shall be deemed the extractions of the quantities of water which that party is entitled to  
24 extract pursuant to his allocation from the Exchange Pool for that Administrative Year.  
25 Each Exchangee shall be deemed to have pumped his Exchange Pool request so allocated  
26 for and on behalf of each Exchangor in proportion to each Exchangor’s subscription to  
27 the Exchange Pool which is utilized to meet Exchange Pool requests. No Exchangor  
28 shall ever be deemed to have relinquished or lost any of its rights determined in this

1 Judgment by reason of allocated subscriptions to the Exchange Pool. Each Exchangee  
2 shall be responsible as between Exchangors and that Exchangee, for any tax or  
3 assessment upon the production of groundwater levied for replenishment purposes by  
4 WRD or by any other governmental agency with respect to water extracted by such  
5 Exchangee by reason of Exchange Pool allocations and purchases. No Exchangor or  
6 Exchangee shall acquire any additional rights, with respect to any party to this action, to  
7 extract waters from Central Basin pursuant to Water Code Section 1005.1 by reason of  
8 the obligations pursuant to and the operation of the Exchange Pool.

9 G. Judgment Binding on Successors, Etc.

10 This Judgment and all provisions thereof are applicable to and binding upon not  
11 only the parties to this action, but as well to their respective heirs, executors,  
12 administrators, successors, assigns, lessees, licensees and to the agents, employees and  
13 attorneys in fact of any such persons.

14 H. Costs.

15 No party shall recover its costs herein as against any other party.

16 I. Intervention of Successors in Interest and New Parties.

17 Any person who is not a party (including but not limited to successors or parties  
18 who are bound by this Judgment) and who proposes to produce water from the Basin,  
19 store water in the Basin, or exercise water rights of a predecessor may seek to become a  
20 party to this Judgment through a Stipulation in Intervention entered into with the  
21 Plaintiff. Plaintiff may execute said Stipulation on behalf of the other parties herein, but  
22 such Stipulation shall not preclude a party from opposing such intervention at the time of  
23 the court hearing thereon. Said Stipulation for Intervention must thereupon be filed with  
24 the Court, which will consider an order confirming said intervention following thirty (30)  
25 days' notice to the parties. Thereafter, if approved by the Court, such intervenor shall be  
26 a party bound by this Judgment and entitled to the rights and privileges accorded under  
27 the physical solution herein.

28 J. Effect of this Amended Judgment on Orders Filed Herein.



**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX J**

**RECYCLED WATER SYSTEM**



# Cerritos Recycled Water Distribution System



year anniversary  
1988~2008

**CITY OF CERRITOS**  
RECYCLED WATER DISTRIBUTION SYSTEM





**Verdant parks**, median strips with blooming flowers and lush grass surrounding meandering sidewalks create a park-like atmosphere in the City of Cerritos.

To irrigate its 200 acres of attractively landscaped public property, the City of Cerritos constructed a Recycled Water Distribution System. By using recycled water for irrigation, the City and its customers save some 713 million gallons of drinking water every year. During the first 20 years of the system's operation, the City saved \$5,969,470 as recycled water is less costly than drinking water. In addition, the Recycled Water Distribution System ensures an adequate supply of water for irrigation purposes, even during Southern California's drought years.

Cerritos receives its recycled water from the Sanitation Districts of Los Angeles County's Los Coyotes Water Reclamation Plant. The plant is located next to the 605 Freeway in Cerritos, and produces up to 37.5 million gallons of recycled water every day.











## Sites irrigated with recycled water

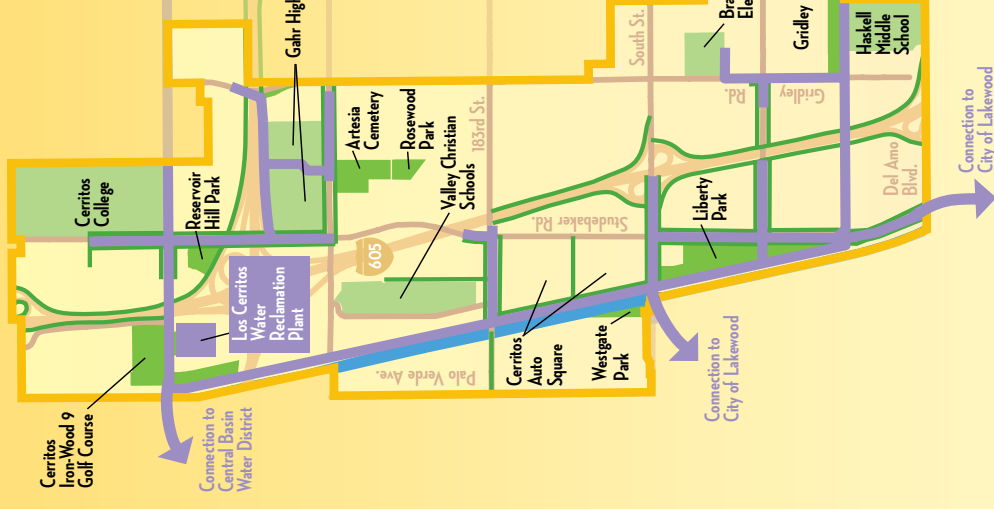
In addition to the City's neighborhood parks, community centers, landscaped medians and parkways, the Recycled Water Distribution System transports water to the agencies listed below. Each gallon of recycled water used by government agencies and private property owners saves one gallon of precious drinking water. The agencies and the City collectively save 634,902,400 gallons of drinking water every year by using recycled water for irrigation.

Agency	Gallons of Drinking Water Saved Annually	Agency	Gallons of Drinking Water Saved Annually
ABC Unified School District	151,131,156	Cerritos College	46,838,264
Artesia Cemetary District	9,879,584	Cerritos Post Office	3,195,456
Caltrans	52,275,476	Cerritos Regional Park	34,954,788
Central Basin Municipal Water District	176,937,156	City of Lakewood	143,251,724
		Valley Christian Schools	16,438,796

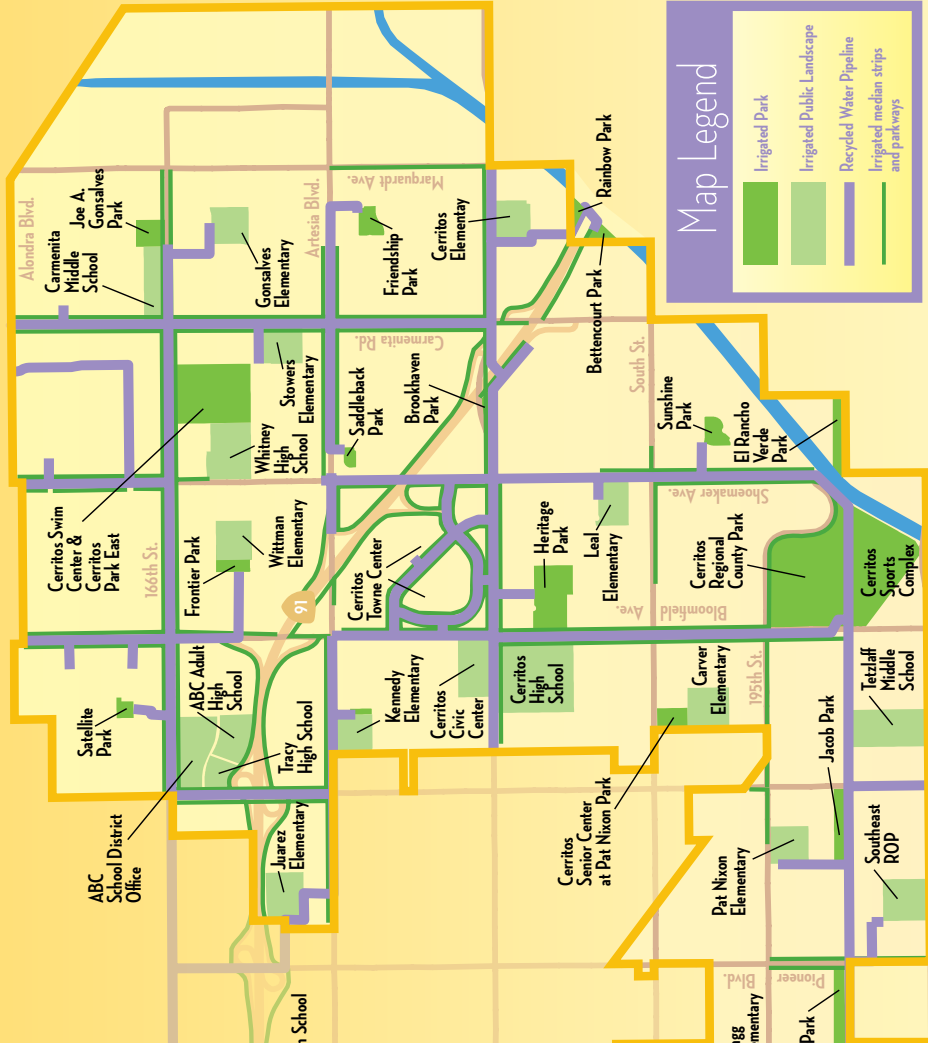
Since 1988, the use of recycled water from the Cerritos system has saved 11.8 billion gallons of drinking water. Private property owners also purchase recycled water from the City. Landscaping at Cerritos Towne Center, portions of Cerritos Auto Square and some churches, nurseries and housing developments in the City is irrigated with recycled water.

In addition, recycled water costs are significantly less than those of drinking water, and users are not required to purchase a minimum amount. From 2002 to 2007, agencies in Cerritos saved \$2,357,378 in drinking water costs.

# City of Cerritos



# Recycled Water Distribution System Map

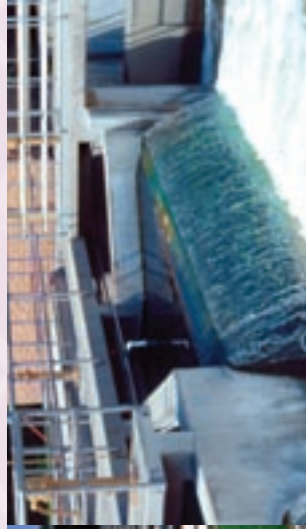
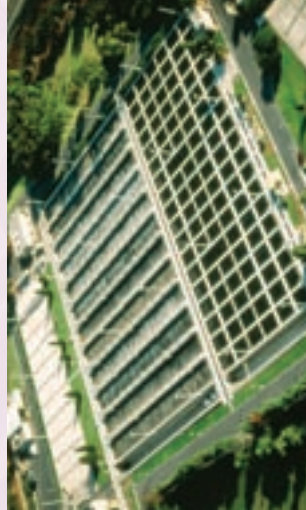
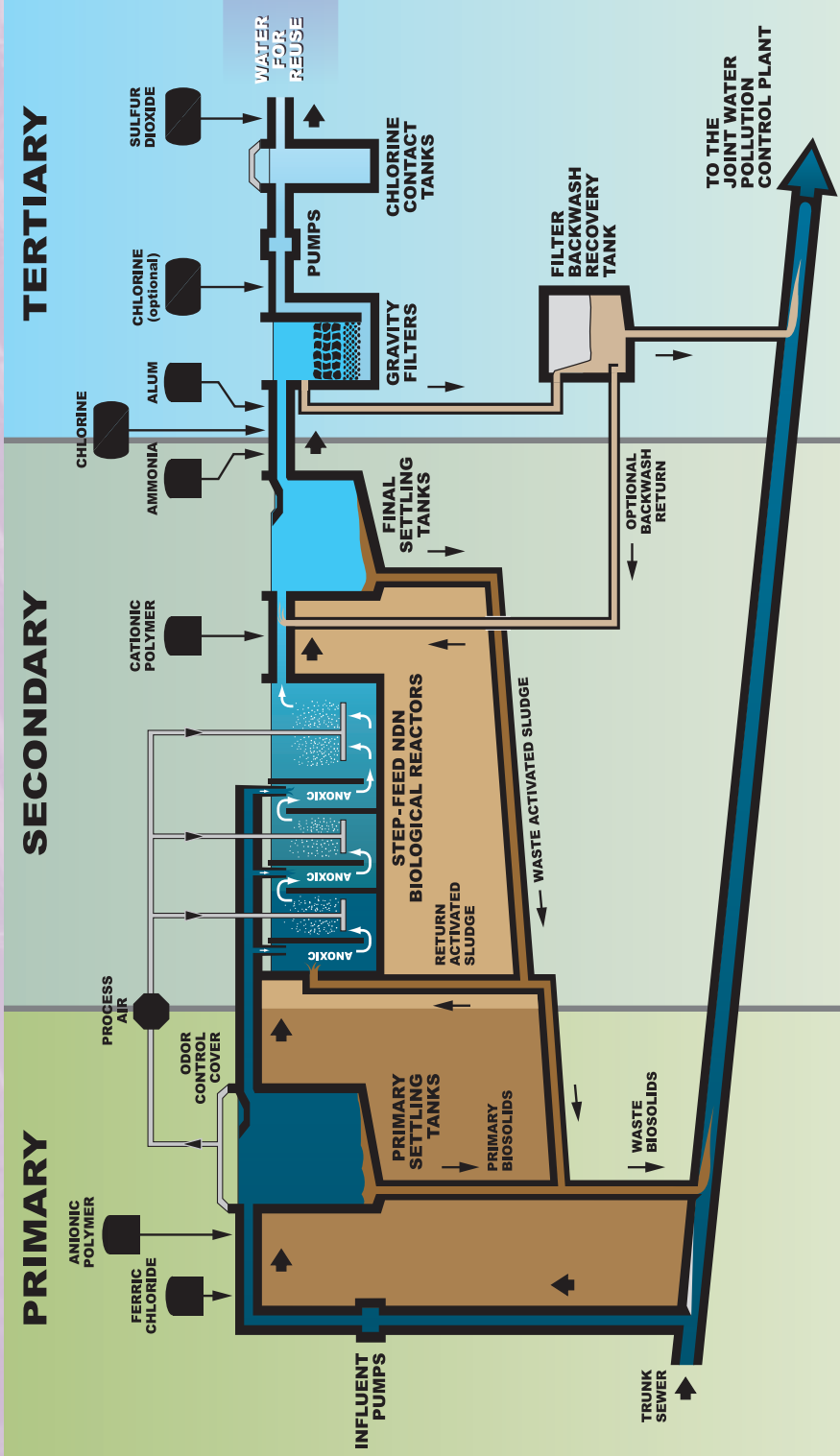


## Map Legend

- Irrigated Park
- Irrigated Public Landscape
- Recycled Water Pipeline
- Irrigated median strips and pathways



# Los Coyotes Water Reclamation Plant 2008







## Recycled water process

Recycled water is derived from a three-stage process. The first stage is primary settling, in which solid materials are removed from the wastewater as they settle to the bottom or float to the top of the primary settling tank. These solids are returned to the sewer to be treated at the main Sanitation Districts' treatment plant. After primary settling, the water still contains dissolved and suspended organic material, which is removed in the second stage.

During the second stage of the process, a dense biological culture of bacteria and microbes breaks down and feeds on the remaining organic material in the wastewater. After the organic material is consumed, the fattened bacteria and other organisms still suspended in the water form clumps and are carried into a final settling tank where they settle to the bottom and are removed and returned to the sewer to be treated at the main Sanitation Districts' treatment plant.

In the third stage, the water flows through filters composed of anthracite coal on top of sand, which remove suspended particles that remain in the water. The filtered water is then pumped into chlorination tanks to kill any harmful organisms. It is then delivered to the City and its customers for landscape irrigation.

More than 99 percent of the suspended solids and color are removed during the three-stage treatment process. After the water is treated, it is suitable for public contact, but not drinking, and is monitored in accordance with Health Department requirements.

## Benefits to plant life

Compared to drinking water, recycled water contains higher levels of potassium, phosphorus and nitrogen. These nutrients are excellent for plants, and reduce the need for fertilizer. Recycled water also has a higher salinity level, so the City has planted salt-tolerant landscaping such as tif green and paspalum vegetatum (Australian salt grass). Colorful gazanias and ice plants also thrive on recycled water.



## History of the system

Located adjacent to the Los Coyotes Water Reclamation Plant, Cerritos Iron-Wood Nine Golf Course was the first City site irrigated with recycled water. After switching to recycled water at the golf course in 1978, the City saved \$4,800 per year in irrigation expenses.

Based on this success, and concerned by California's drought in the 1970s, the City began researching the feasibility of constructing a system to transport recycled water to irrigate other public areas. In May 1980, the City was awarded a \$4.5 million grant from the State Office of Water Recycling to design and construct a recycled water distribution system.

In 1984, the City Council authorized construction of a system which would transport up to 4,000 acre feet of recycled water annually to irrigate public landscaping in Cerritos. The City also entered into a 20-year agreement with the Los Angeles County Sanitation Districts to purchase up to 4,000 acre feet of recycled water per year from the Los Coyotes Water Reclamation Plant.

Construction of the system was completed in 1988 and a dedication ceremony was held on January 23, 1988. The recycled water pipeline consists of a main loop and laterals which total approximately 22 miles of underground piping ranging in size from 4 inches to 24 inches in diameter. Construction costs for these water lines, along with a water pumping facility at the Los Coyotes Sanitation Plant, totaled \$8.9 million, excluding engineering and inspection services. The City and the Cerritos Redevelopment Agency funded costs not covered by the \$4.5 million grant.

For more information about the Cerritos Recycled Water Distribution System, call the City's Water Operations Division at (562) 916-1223.



year anniversary  
1988 ~ 2008

**CITY OF CERRITOS**  
RECYCLED WATER DISTRIBUTION SYSTEM

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX K**

**WATER LEASE RECORDS**



**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



August 19, 2020

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703-3130  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensor:	Downey, City of
Licensee:	Cerritos, City of
Lease dated:	July 24, 2020
Date received:	August 10, 2020
Lease amount:	2,000.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Remain with Licensor
Applicable for period:	July 1, 2022 through June 30, 2023
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

A handwritten signature in purple ink, appearing to read "Ted Johnson", is written over a faint, larger version of the same signature.

Theodore A. Johnson, PG, CHg  
Assistant General Manager/CAO/Watermaster

cc: City of Downey  
11111 Brookshire Ave  
Downey, CA 90241  
Attn: Dan Mueller, Director of Public Works

**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



November 12, 2019

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensee:	Cerritos, City of
Licensor:	ABC Unified School District
Lease dated:	August 9, 2019
Date received:	November 4, 2019
Lease amount:	250.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Shall go to Licensee
Applicable for period:	July 1, 2021 through June 30, 2022
Watermaster service area:	Central Basin

Your lease transaction is confirmed. For further assistance regarding this water right lease agreement, please contact me at [tjohnson@wrdd.org](mailto:tjohnson@wrdd.org) or at (562) 275-4240.

Sincerely,

A handwritten signature in black ink, appearing to read "Ted", with a long horizontal flourish extending to the right.

Theodore A. Johnson, PG, CHg  
Assistant General Manager/CAO/Watermaster

cc: ABC Unified School District  
16700 S. Norwalk Blvd.  
Cerritos, CA 90703  
Attn: Toan Nguyen, Assistant Superintendent-  
Business Services/Chief Financial Officer



**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



August 19, 2020

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703-3130  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensor:	Downey, City of
Licensee:	Cerritos, City of
Lease dated:	July 24, 2020
Date received:	August 10, 2020
Lease amount:	2,000.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Remain with Licensor
Applicable for period:	July 1, 2022 through June 30, 2023
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

Theodore A. Johnson, PG, CHg  
Assistant General Manager/CAO/Watermaster

DEPT. OF WATER & POWER  
WATER DIVISION

AUG 25 2020

RECEIVED

cc: City of Downey  
11111 Brookshire Ave  
Downey, CA 90241  
Attn: Dan Mueller, Director of Public Works

**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



August 19, 2020

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703-3130  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensor:	Downey, City of
Licensee:	Cerritos, City of
Lease dated:	July 24, 2020
Date received:	August 10, 2020
Lease amount:	2,000.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Remain with Licensor
Applicable for period:	July 1, 2020 through June 30, 2021
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Johnson", is written over the typed name of Theodore A. Johnson.

Theodore A. Johnson, PG, CHg  
Assistant General Manager/CAO/Watermaster

DEPT. OF WATER & POWER  
WATER DIVISION

AUG 25 2020

RECEIVED

cc: City of Downey  
11111 Brookshire Ave  
Downey, CA 90241  
Attn: Dan Mueller, Director of Public Works

CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY



August 19, 2020

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703-3130  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensor:	Downey, City of
Licensee:	Cerritos, City of
Lease dated:	July 24, 2020
Date received:	August 10, 2020
Lease amount:	2,000.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Remain with Licensor
Applicable for period:	July 1, 2021 through June 30, 2022
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

Theodore A. Johnson, PG, CHg  
Assistant General Manager/CAO/Watermaster

DEPT. OF WATER & POWER  
WATER DIVISION

AUG 25 2020

RECEIVED

cc: City of Downey  
11111 Brookshire Ave  
Downey, CA 90241  
Attn: Dan Mueller, Director of Public Works

CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY



July 1, 2020

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703-3130  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Bob Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensors:	Corning Trust
Licensee:	Cerritos, City of
Lease dated:	June 8, 2020
Date received:	June 29, 2020
Lease amount:	3.75 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Shall go to Licensee
Applicable for period:	July 1, 2020 through June 30, 2021
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Johnson", is written over a horizontal line.

Theodore A. Johnson, PG, CHG  
Assistant General Manager/CAO/Watermaster

DEPT. OF WATER & POWER  
WATER DIVISION

JUL 13 2019

RECEIVED

cc: Corning Trust  
4907 Marlin Way  
Oxnard, CA 93035-2830  
Attn: Nancy Keane, Trustee

CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY



July 1, 2020

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703-3130  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Bob Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensor:	Artesia Cemetery District
Licensee:	Cerritos, City of
Lease dated:	June 8, 2020
Date received:	June 29, 2020
Lease amount:	12.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Shall go to Licensee
Applicable for period:	July 1, 2020 through June 30, 2021
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Johnson", is written over a horizontal line.

Theodore A. Johnson, PG, CHg  
Assistant General Manager/CAO/Watermaster

DEPT. OF WATER & POWER  
WATER DIVISION  
JUL 13 2019  
RECEIVED

cc: Artesia Cemetery District  
11142 Artesia Blvd  
Cerritos, CA 90703  
Attn: Antonio Mendoza, District Manager

**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



November 12, 2019

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensee:	Cerritos, City of
Licensor:	ABC Unified School District
Lease dated:	August 9, 2019
Date received:	November 4, 2019
Lease amount:	250.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Shall go to Licensee
Applicable for period:	July 1, 2020 through June 30, 2021
Watermaster service area:	Central Basin

Your lease transaction is confirmed. For further assistance regarding this water right lease agreement, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or at (562) 275-4240.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Johnson", is written over a horizontal line.

Theodore A. Johnson, PG, CHg  
Assistant General Manager/CAO/Watermaster

cc: ABC Unified School District  
16700 S. Norwalk Blvd.  
Cerritos, CA 90703  
Attn: Toan Nguyen, Assistant Superintendent-  
Business Services/Chief Financial Officer

**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



July 1, 2020

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703-3130  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Bob Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensors:	Nancy Dee Keane Living Trust
Licensee:	Cerritos, City of
Lease dated:	June 8, 2020
Date received:	June 29, 2020
Lease amount:	4.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Shall go to Licensee
Applicable for period:	July 1, 2020 through June 30, 2021
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

Theodore A. Johnson, PG, CHG  
Assistant General Manager/CAO/Watermaster

DEPT. OF WATER & POWER  
WATER DIVISION

JUL 13 2019

RECEIVED

cc: Nancy Dee Keane Living Trust  
4907 Marlin Way  
Oxnard, CA 93035-2830  
Attn: Nancy Keane, Trustee

**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



April 4, 2019

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703  
Attn: Bob Ortega, Water Superintendent


Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensee:	Cerritos, City of
Licensors:	PABCO Building Products
Lease dated:	March 8, 2019
Date received:	March 25, 2019
Lease amount:	500.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Shall go to Licensee
Applicable for period:	July 1, 2020 through June 30, 2021
Watermaster service area:	Central Basin

Your lease transaction is confirmed. For further assistance regarding this water right lease agreement, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or at (562) 275-4240.

Sincerely,



Theodore A. Johnson, PG, CHG  
Chief Hydrogeologist

DEPT. OF WATER & POWER  
WATER DIVISION  
APR - 9 2019  
RECEIVED

cc: PABCO Building Products, LLC  
4460 Pacific Blvd.  
Vernon, CA 90058  
Attn: William Fraser, Plant Manager



**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



April 4, 2019

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensee:	Cerritos, City of
Licensor:	PABCO Building Products
Lease dated:	March 8, 2019
Date received:	March 25, 2019
Lease amount:	500.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Shall go to Licensee
Applicable for period:	July 1, 2021 through June 30, 2022
Watermaster service area:	Central Basin

Your lease transaction is confirmed. For further assistance regarding this water right lease agreement, please contact me at [tjohnson@wrdd.org](mailto:tjohnson@wrdd.org) or at (562) 275-4240.

Sincerely,

A handwritten signature in black ink, appearing to read "Ted Johnson", written over a horizontal line.

Theodore A. Johnson, PG, CHG  
Chief Hydrogeologist

cc: PABCO Building Products, LLC  
4460 Pacific Blvd.  
Vernon, CA 90058  
Attn: William Fraser, Plant Manager

**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



October 9, 2020

South Gate, City of  
4244 Santa Ana St  
South Gate, CA 90280  
Attn: Chris Castillo, Water Division Manager

Dear Mr. Castillo:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensors:	South Gate, City of
Licensee:	Cerritos, City of
Lease dated:	September 22, 2020
Date received:	October 9, 2020
Lease amount (3-Years):	1,000.00 acre-feet (af) of Allowed Pumping Allocation (APA) for Administrative Year (AY) 2020-2021 1,000.00 af of APA for AY 2021-2022 1,000.00 af of APA for AY 2022-2023
Carryover flexibility right:	Remain with Licensor
Applicable for period:	July 1, 2020 through June 30, 2023
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Johnson", is written over a horizontal line.

Theodore A. Johnson, PG, CHG  
Assistant General Manager/CAO/Watermaster

**CENTRAL BASIN WATERMASTER  
ADMINISTRATIVE BODY**



June 29, 2020

Cerritos, City of  
P.O. Box 3130  
Cerritos, CA 90703  
Attn: Bob Ortega, Water Superintendent

Dear Mr. Ortega:

The Administrative Body of the Central Basin Watermaster has received, recorded, and filed your water right lease agreement that includes the information shown below.

Licensee:	Cerritos, City of
Licensors:	Buell, Mary Dolores
Lease dated:	June 8, 2020
Date received:	June 26, 2020
Lease amount:	1.00 acre-feet of Allowed Pumping Allocation
Carryover flexibility right:	Shall go to Licensee
Applicable for period:	July 1, 2020 through June 30, 2021
Watermaster service area:	Central Basin

Your lease transaction is confirmed. To view the new balances of your water rights, please log on to our website at <https://rights.wrd.org/> after allowing for approximately one week for processing. If you have any questions regarding this transaction, please contact me at [tjohnson@wrd.org](mailto:tjohnson@wrd.org) or (562) 275-4240.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Johnson", is written over a horizontal line.

Theodore A. Johnson, PG, CHg  
Assistant General Manager/CAO/Watermaster

DEPT. OF WATER & POWER  
WATER DIVISION

JUL - 6 2020

RECEIVED

cc: Mary Dolores Buell  
10730 E. Artesia Blvd  
Cerritos, CA 90701  
Attn: Robert D. Buell, Designee

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX L**

**WATER WASTE RESOLUTIONS**

CITY OF CERRITOS

RESOLUTION NO. 91-6

A RESOLUTION OF THE CITY COUNCIL OF THE  
CITY OF CERRITOS IMPLEMENTING PHASE I AND  
II OF THE EMERGENCY WATER CONSERVATION PLAN

WHEREAS, on May 2, 1990, the City Council of the City of Cerritos adopted Resolution No. 90-14 entitled "A Resolution of the City Council of the City of Cerritos Adopting a Program of Voluntary Water Conservation to Reduce Water Consumption by Ten (10) Percent"; and,

WHEREAS, the City Council of the City of Cerritos has established an Emergency Water Conservation Plan in light of the current drought conditions in Southern California, particularly in Cerritos, and desires to rescind Resolution No. 90-14.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF CERRITOS DOES RESOLVE AS FOLLOWS:

SECTION 1. Scope. Phase I and II of City of Cerritos Emergency Water Conservation Plan are hereby implemented, effective February 21, 1991.

SECTION 2. Purpose. The City Council hereby declares that a water shortage emergency exists, and this Emergency Water Conservation Plan shall be implemented to provide a vehicle to protect public peace, health and safety by significantly and equitably reducing the consumption of potable water over an extended period. The Conservation Plan shall remain in effect until the Council declares that the water shortage emergency has ended.

SECTION 3. Application. The provisions of this Conservation Plan shall apply to all customers and property receiving potable water from the City wherever situated, and shall also apply to all property and facilities owned, maintained, operated or under the jurisdiction of the various officials, bureaus or agencies of the City of Cerritos. The provisions of this Conservation Plan shall not apply to the use of reclaimed water.

SECTION 4. Authorization. The various officials, bureaus, and agencies of the City are hereby authorized and directed to implement immediately the applicable provisions of this Conservation Plan upon the effective date of the implementation of any Phase.

SECTION 5. Water Conservation Phases. No customer of the City shall make, cause, use, or permit the use of water from the City for residential, commercial, industrial, agricultural, governmental, or any other purpose in a manner contrary to any provision of, or in an amount in excess of that use permitted by the Phase then in effect pursuant to action taken by the City Council. The City Council shall determine by resolution which Phase is necessary to accomplish water conservation, based on the severity of the water shortage emergency.

SECTION 6. Phase I. The following occurrences shall be deemed improper water use:

- (a) Washing of walkways, driveways, or parking areas with a hose;
- (b) Using water to clean, fill, or maintain levels in decorative fountains unless a recycling system is used;
- (c) Serving drinking water to any customer in a restaurant or other public place where food is served, sold, or offered for sale unless expressly requested by the customer;
- (d) Failing to repair all water leaks as soon as possible;
- (e) Watering or irrigating lawns, turf, or landscape areas between the hours of 10:00 A.M. and 4:00 P.M.;
- (f) Watering or irrigating lawns, turf, or landscape areas beyond saturation causing runoff;
- (g) Allowing a hose to run continuously while washing vehicles;
- (h) Allowing sprinklers to direct water to areas other than landscape causing runoff.

SECTION 7. Notice of Improper Water Use. For each occurrence of improper water use, the City shall send to the customer where the improper use occurred a notice of Improper Water use specifying the subsection or subsections of Section 6 that apply. Where possible, a copy of said Notice shall be given to the individual who has improperly used water in addition to being given as required in Section 11.

(A) Failure to Comply

- (1) First Violation: The City shall issue a written notice of the improper water use to the customer.

- (2) Second Violation: For a second violation during any one water shortage emergency, the City shall impose a \$25.00 penalty, payable with the next subsequent water bill.
- (3) Third and Subsequent Violations. For a third and each subsequent violation during any one water shortage emergency, the City shall install a flow restricting device of one (1) gallon per minute capacity for services up to one and one-half (1-1/2) inch size, and comparatively sized for larger services, on the service of the customer at the premises at which the violation occurred for a period of not less than forty-eight (48) hours. The City shall charge the customer the reasonable costs incurred for installing and for restoration of normal service. The charge shall be paid before normal service can be restored.
- (4) Failure to pay penalties described in subsection (2) and (3) will result in discontinuation of water service until all previous penalties are paid in full. In addition, a reactivation fee will be imposed.

#### SECTION 8. Phase II

(A) Section 6 and 7 of the Conservation Plan shall apply in Phase II.

(B) Bimonthly, each 5/8" x 3/4" or 1" water meter shall be billed at a base consumption of 30 units, under the current water rate structure. All billing units of water used over the aforementioned base consumption will be billed at one and one half times the quantity rate in existence in the current rate structure.

(C) Bimonthly, each 1-1/2" water meter shall be billed at a base consumption of 119 units under the current water rate structure.

Bimonthly, each 2" water meter shall be billed at a base consumption of 277 units under the current water rate structure.

Bimonthly, each 3" water meter shall be billed at a base consumption of 511 units under the current water rate structure.

Bimonthly, each 4" water meter shall be billed at a base consumption of 1080 units under the current water rate structure.

Under each condition in Section C, if the bimonthly usage exceeds the aforementioned base consumption, a comparison to the previous years water consumption, during a similar bimonthly period will be made. The customer will be allowed ninety percent (90%) of the previous years use. Any water used in excess of the greater of the following, will be billed at one and one half times the quantity rate in existence under the current rate structure:

(a) the base consumption for a 1-1/2", 2", 3" or 4" meter as applicable, or

(b) ninety percent (90%) of the previous years use comparison.

SECTION 9. Exceptions. The improper use of water specified in Section 6 of this Conservation Plan are not applicable to that use of water necessary for public health and safety or for essential governmental services such as police, fire, and other similar emergency services.

SECTION 10. Failure to Comply. A flow restricting device may be installed for a period of three (3) months in the water service of any customer whose bill shows an excess rate, as established in Section 8 above, for three (3) consecutive months. The charge for installation and removal of the flow restricting device shall be as established in Section 7.

SECTION 11. Notice. Except as otherwise provided in this Conservation Plan, all notices required or desired to be given under the Conservation Plan shall be in writing and personally served or deposited in the U.S. Postal Service, first class, postage prepaid, addressed to the billing address of the customer and to the City of Cerritos, P. O. Box 3130, Cerritos, CA 90703, Attn: Water Superintendent. Notice shall be effective on the date personal service is obtained or the date on which the notice is deposited in the mail. If the customer is absent from this residence or place of business so that personal service cannot be obtained, notice may be given by leaving a copy thereof with some responsible person at either place and then sending a copy by regular mail addressed to the customer at his billing address, or if the residence or place of business cannot be ascertained or a responsible



person cannot be found there, then notice may be given by affixing a copy thereof in a conspicuous place on the property where the improper water use occurred and delivering a copy thereof to a person residing there if such person can be found and sending a copy thereof by regular mail addressed to the customer at his or her billing address.

SECTION 12. Relief from Compliance.

(A) Administrative Hearing. A customer shall have the right to a hearing to obtain relief from compliance with the Conservation Plan by filing a written request for hearing within fifteen (15) days after receipt of a Notice of Improper Water Use or receipt of a bill whichever is later. To the extent possible, the hearing shall be held by the Water Superintendent or designee within fifteen (15) days after receipt of the request therefor. In determining whether or not relief shall be granted, the Water Superintendent shall consider all relevant factors including but not limited to:

- (1) The fact that reduction in water consumption will result in unemployment;
- (2) Increased number of employees in commercial or industrial business, and governmental offices;
- (3) The existence of emergency health or safety hazards;
- (4) The existence of family health problems;
- (5) The fact that the current customer was not a customer at the water service address during the base period and the nature of the current customer's water use is substantially different from the use during the base period;
- (6) Special needs of medical care facilities or schools.

The Water Superintendent or designee shall give the customer notice of his decision, including notice of the customer's right to appeal the decision to the City Council. No customer shall appeal to the City Council prior to receipt of a decision from the Water Superintendent or designee.

(B) Appeal to Council. A customer shall have the right to appeal the decision of the Water Superintendent or designee to the City Council by filing a written request for appeal within fifteen (15) days after receipt of said decision. To the extent possible, the City Council shall hear the appeal at its first regular meeting occurring after the expiration of fifteen (15) days of receipt of the request for appeal. The decision of the City Council shall be final.

SECTION 13. General Provisions.

(A) Reduction in Water Supplied. If any customer fails to comply with any provision of this Conservation Plan, the City may reduce the amount of water provided to that customer to the level which that customer would be using if he were complying with the provisions of this Conservation Plan. The provisions of this subsection shall be applied in lieu of, or in addition to, any of the other provisions of this Conservation Plan, in the discretion of the City and shall be applied without regard to the status or nature of the customer.

(B) Public Health and Safety Not to be Affected. Nothing contained in this Conservation Plan shall be construed to require the City to curtail the supply of water to any customer when, in the discretion of the Council, such water is required by that customer to maintain an adequate level of public health and safety.

(C) Base Period. The base period shall be the historic period designated by the Council and is hereby established as the period June 1989 through May 1990.

SECTION 14. Severability. If any section, subsection, sentence, clause and phrase in this Conservation Plan or the application thereof to any person or circumstances is for any reason held invalid, the validity of the remainder of the Conservation Plan or the application of such provisions to other persons or circumstances shall not be affected thereby. The City Council declares that it would have passed this Conservation Plan and each section, subsection, sentence, clause, and phrase thereof irrespective of the fact that one or more sections, subsections, sentences, clauses, or phrases or the application thereof to any person or circumstances be held invalid.

SECTION 15. Resolution No. 90-14 is hereby rescinded.

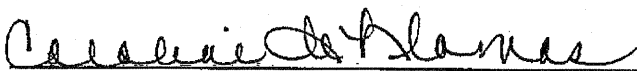
SECTION 16. The City Clerk of the City of Cerritos shall certify to the approval of this Resolution cause the same to be published one time only in a newspaper of general

circulation in Cerritos, which publication shall be made on or after the effective date of the Resolution of the City Council approving this Resolution.

PASSED, APPROVED and ADOPTED this 21st day of February, 1991.

  
MAYOR

ATTEST:

  
CITY CLERK

STATE OF CALIFORNIA )  
COUNTY OF LOS ANGELES ) ss  
CITY OF CERRITOS )

I, Caroline deLlamas, City Clerk of the City of Cerritos, California, DO HEREBY CERTIFY that the foregoing Resolution No. 91-6 was duly adopted by the City Council of said City and was approved by the Mayor of said City at a regular meeting of said City Council held on the 21st day of February, 1991, and that it was so adopted as follows:

AYES: COUNCILMEMBERS - Crawley, Kappe, Wong, Bowlen and Joynt.

NOES: COUNCILMEMBERS - None.

ABSENT: COUNCILMEMBERS - None.

ABSTAIN: COUNCILMEMBERS - None.

  
\_\_\_\_\_  
city Clerk of the City of Cerritos

DATED: February 22, 1991

**CITY OF CERRITOS**

**RESOLUTION NO. 2015-16**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CERRITOS  
IMPLEMENTING EMERGENCY WATER CONSERVATION REGULATIONS**

WHEREAS, On January 17, 2014, Governor Jerry Brown declared a state of emergency in California and called for a 20 percent reduction in water use due to the ongoing drought conditions throughout the state; and Governor Brown issued an executive order on April 25 calling on California residents to refrain from wasting water; and

WHEREAS, On May 5, 2015, the State Water Resources Control Board adopted revised emergency water conservation regulations in response to Governor Brown's executive order; and

WHEREAS, The adopted regulations require the City of Cerritos to reduce its water consumption by 28%; and

WHEREAS, the City of Cerritos City Council adopted an Emergency Water Conservation Ordinance in February 1991;

WHEREAS, said ordinance authorizes the City Council to declare the implementation of water conservation measures by resolution; and

WHEREAS, it is necessary to comply with the State of California Water Resources Control Board regulations.

NOW, THEREFORE, THE CITY OF CERRITOS CITY COUNCIL DOES FIND, DETERMINE AND DECLARE AS FOLLOWS:

**Section 1.** Except when necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency, the following actions are prohibited:

a. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots or structures. Water runoff is defined as water accumulation sufficient to cause a flow of water off of landscaped areas; and

b. Use of potable water for irrigation during and 48 hours following measurable precipitation;

c. The use of a hose that dispenses potable water to wash a motor vehicle, except when the hose is equipped with a shut-off nozzle; and

d. The application of potable water to driveways and sidewalks; and

e. The use of potable water in a fountain or other decorative water feature, unless the water is part of a recirculating system.

**Section 2.** Residential and commercial landscape areas shall be watered between the hours of 5 p.m. and 9 a.m. for no more than ten (10) minutes per station. Watering shall be limited to two (2) times per week during the months of June through September, and one (1) time per week during the months of October through May. Landscape irrigation for commercial nurseries and growers, fire and erosion protection, the protection of endangered species, environmental mitigation projects, and properties using reclaimed water are exempt from this provision. Watering using a handheld container; a hose equipped with a shut off nozzle; or the use of an irrigation system for short durations to make repairs are also exempt from the provision; and

**Section 3.** Use of a drip irrigation system shall be subject to State mandated restrictions; and

**Section 4.** Violation of the regulations is an infraction punishable by a fine of up to five hundred dollars (\$500) per day; and

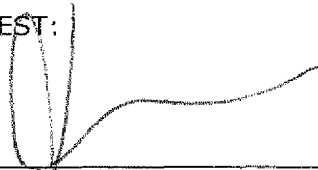
**Section 5.** The emergency regulations will remain in effect until the state mandated restrictions expire, at which time the City Council shall review the water supply conditions to determine the need for continued mandatory conservation measures.

**PASSED, APPROVED and ADOPTED this 11th day of June 2015.**



\_\_\_\_\_  
Carol K. Chen, Mayor

ATTEST:



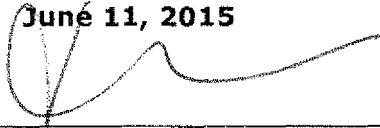
\_\_\_\_\_  
Vida Barone, City Clerk

STATE OF CALIFORNIA     )  
COUNTY OF LOS ANGELES   ) ss.  
CITY OF CERRITOS         )

I, Vida Barone, City Clerk of the City of Cerritos, California, DO HEREBY CERTIFY that the foregoing **Resolution No. 2015-16** was duly adopted by the City Council of the City of Cerritos at a Regular Meeting held on the **11<sup>th</sup> Day of June, 2015**, and that it was so adopted as follows:

AYES:           Councilmembers - **Chen, Edwards, Pulido, Ray, Solanki**  
NOES:           Councilmembers - None.  
ABSENT:         Councilmembers - None.  
ABSTAIN:        Councilmembers - None.

DATED: **June 11, 2015**



---

Vida Barone, City Clerk

**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX M**

**CITY OF CERRITOS HAZARD MITIGATION PLAN**





# City of Cerritos Hazard Mitigation Plan October 2016



Prepared By:



300 Goddard, Suite 200 ♦ Irvine, California 92618 ♦ 949/262-0123 ♦ [www.RMPCorp.com](http://www.RMPCorp.com)

# Table of Contents

**PLAN ADOPTION**

**EXECUTIVE SUMMARY**

ES.1 Plan Requirements and Objectives ..... ES-1

ES.2 Mitigation Definition ..... ES-4

ES.3 Planning Process Summary..... ES-5

ES.4 Hazard Analysis ..... ES-6

ES.5 Mitigation Strategies and Implementation Plan..... ES-8

ES.6 Monitoring, Evaluating, and Updating the Plan..... ES-14

**CHAPTER 1: PLANNING PROCESS**

1.1 Narrative Description of the Planning Process ..... 1-1

1.2 Steering Committee & Public Involvement ..... 1-7

1.2.1 Steering Committee Participant Solicitation ..... 1-7

1.2.2 Steering Committee Participants..... 1-8

1.2.3 Steering Committee Meeting Descriptions ..... 1-12

1.2.4 Public Meetings & Outreach ..... 1-16

1.3 Review and Incorporation of Existing Plans..... 1-18

<b>CHAPTER 2: PLANNING AREA PROFILE</b>	
2.1 Region Description.....	2-1
2.2 Development Trends.....	2-2
2.3 Population.....	2-9
<b>CHAPTER 3: RISK ASSESSMENT</b>	
3.1 Risk Assessment.....	3-3
3.2 Hazard Identification and Profiling.....	3-6
3.2.1 Hazard Profiling.....	3-8
3.3 Earthquake Hazard Profile.....	3-10
3.3.1 Earthquake Hazard Information and Background.....	3-10
3.3.2 Earthquake History.....	3-14
3.3.3 Earthquake Probability, Frequency, and Magnitude.....	3-22
3.4 Urban Fire Hazard Profile.....	3-32
3.4.1 Hazard Information and Background.....	3-32
3.4.2 Urban Fire Hazard History.....	3-34
3.4.3 Urban Fire Hazard Probability, Frequency, and Magnitude.....	3-36
3.5 Transportation Accident/ Incident Hazard Profile.....	3-39
3.5.1 Transportation Accident/ Incident Hazard Information and Background.....	3-39
3.5.2 Transportation Accident/ Incident History.....	3-40
3.5.3 Transportation Accident/ Incident Probability, Frequency, and Magnitude.....	3-41
3.6 Flood/ Dam Failure Hazard Profile.....	3-43
3.6.1 Flood/ Dam Failure Hazard Information and Background.....	3-43
3.6.2 Flood/ Dam Failure History.....	3-45
3.6.3 Flood/ Dam Failure Probability, Frequency, and Magnitude.....	3-49
3.7 Pipeline Failure/ Hazardous Material Release Hazard Profile.....	3- 51
3.7.1 Pipeline Failure/ Hazardous Material Release Information and Background.....	3-51
3.7.2 Pipeline Failure/ Hazardous Material Release History.....	3-54
3.7.3 Pipeline Failure/ Hazardous Material Release Probability, Frequency, and Magnitude.....	3-55
3.8 Drought Hazard Profile.....	3-58
3.8.1 Drought Information and Background.....	3-58
3.8.2 Drought History.....	3- 60
3.8.3 Drought Probability, Frequency, and Magnitude.....	3-62
3.9 Terrorism Hazard Profile.....	3-63
3.9.1 Terrorism Hazard Information and Background.....	3-63
3.9.2 Terrorism Hazard History.....	3-65
3.9.3 Terrorism Hazard Probability, Frequency, and Magnitude.....	3-66
3.10 Windstorm Hazard Profile.....	3-67
3.10.1 Windstorm Hazard Information and Background.....	3-67
3.10.2 Windstorm History.....	3-68
3.10.3 Windstorm Probability, Frequency, and Magnitude.....	3-70
3.11 Climate Change.....	3-71
3.12 Asset Inventory.....	3-72
3.13 Loss Estimates.....	3-88
3.14 Information Sources.....	3-106
<b>CHAPTER 4: MITIGATION STRATEGIES</b>	
4.1 Mitigation Goals and Objectives.....	4-1
4.2 Identification of Mitigation Recommendations.....	4-6
4.3 National Flood Insurance Program Compliance.....	4-11
4.4 Prioritization of Mitigation Recommendations.....	4-13
4.5 Implementation Strategy.....	4-20

**CHAPTER 5: PLAN MAINTENANCE**

**5.1 Mitigation Progress Monitoring** .....5-1

**5.2 Planning Mechanisms** .....5-2

5.2.1 Process to Incorporate the Mitigation Strategy into Other Planning Mechanisms.....5-2

5.2.2 Available Planning Mechanisms to Incorporate Mitigation Requirements.....5-3

**5.3 Periodic Assessment Requirements**.....5-5

**5.4 Update Requirements**.....5-6

5.4.1 Plan Update.....5-7

5.4.2 Continued Public Involvement .....5-7

**APPENDICES**

**Appendix A: Glossary and HAZUS Models**

**Appendix B: Regulations**

**Appendix C: Hazard Analysis**

**Appendix D: Public Participation & Planning Process Documentation**

**Appendix E: Benefit-Cost Analysis**

**ES EXECUTIVE SUMMARY**

**Table of Contents**

ES.1 Plan Requirements and Objectives .....ES-1

ES.2 Mitigation Definition .....ES-4

ES.3 Planning Process Summary .....ES-5

ES.4 Hazard Analysis .....ES-6

ES.5 Mitigation Strategies and Implementation Plan.....ES-8

ES.6 Monitoring, Evaluating, and Updating the Plan.....ES-14

**List of Tables**

Table ES.1: City of Cerritos Hazard Ranking Summary.....ES-6

Table ES.2: Loss Estimate Summary .....ES-7

Table ES.3: Mitigation Action Summary .....ES-10

## ES.1 Plan Requirements and Objectives

The City of Cerritos Hazard Mitigation Plan is a living document that reflects ongoing hazard mitigation activities. Hazard mitigation involves strategies to reduce short- and long-term vulnerability to identified hazards. This document serves as the framework for the ongoing identification and implementation of hazard mitigation strategies developed in the City.

The City of Cerritos adopted its original Natural Hazards Mitigation Plan in 2004. This serves as an update to the original Plan.

### Background Information

In 2000, the United States Congress determined that disasters and, more importantly, lack of preparedness for disasters, were significant causes of loss of life, human suffering, loss of income, and property loss and damage. Furthermore, because disasters often disrupt the normal functioning of governments and communities and adversely affect individuals and families with great severity, special measures designed to assist the efforts of the affected States in expediting the rendering of aid, assistance, and emergency services, and the reconstruction and rehabilitation of devastated areas, were necessary. As a result, Congress passed the Disaster Mitigation Act of 2000 (DMA 2000), or Public Law 106-390, to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act. This provides an opportunity for States, Tribal governments, and local jurisdictions to apply for assistance from the Federal government in carrying out their responsibilities to alleviate the suffering and damage which results from such disasters by:

- a. revising and broadening the scope of existing disaster relief programs;
- b. encouraging the development of comprehensive disaster preparedness and assistance plans, programs, capabilities, and organizations by the States and by local governments;
- c. achieving greater coordination and responsiveness of disaster preparedness and relief programs;
- d. encouraging individuals, States, and local governments to protect themselves by obtaining insurance coverage to supplement or replace governmental assistance;
- e. encouraging hazard mitigation measures to reduce losses from disasters, including development of land use and construction regulations; and

- f. providing Federal assistance programs for both public and private losses sustained in disasters.

DMA 2000 allows State, Tribal, and local jurisdictions to obtain Federal assistance through pre-disaster hazard mitigation planning. As part of the requirements for receiving Federal grants for improving a locality's resistance to disasters, each locality must determine their existing vulnerabilities and develop a plan to reduce or eliminate these vulnerabilities and must have this plan approved by the appropriate State officials. Upon approval of this plan, each locality is eligible to receive various types of disaster-related assistance through FEMA's Hazard Mitigation Assistance (HMA) Program. This includes the Pre-Disaster Mitigation (PDM) program and Hazard Mitigation Grant Program (HMGP) which releases grant funds before and after a hazard event as well as the Flood Mitigation Assistance Grant (FMA) Program which appropriates funds for projects and planning that will reduce long-term risk of flood damage to structures insured under the National Flood Insurance Program (NFIP).

The PDM program provides funds for hazard mitigation planning and the implementation of mitigation actions prior to a disaster event. These grants are funded and approved through the Federal Emergency Management Agency (FEMA) on a competitive basis. The HMGP provides grants to implement long-term hazard mitigation measures after a major disaster declaration. These grants are funded by FEMA, but are distributed by the State. In California, that agency is the Governor's Office of Emergency Services (Cal OES).

FEMA has developed guidance to assist communities in developing both the vulnerability assessments and plans to reduce or eliminate their vulnerabilities to disasters. These tools, coupled with techniques from the safety and security industries were used to develop the City's Hazard Mitigation Plan. Additional information regarding the HMGP and PDM programs can be found in FEMA's "Hazard Mitigation Assistance Unified Guidance" document, located in FEMA's Hazard Mitigation Assistance portal (<http://www.fema.gov/hazard-mitigation-assistance>). Additional information including guidance and regulations can be found at the Cal OES's Local Hazard Mitigation Planning Program portal ([http://hazardmitigation.calema.ca.gov/plan/local\\_hazard\\_mitigation\\_plan\\_lhmp](http://hazardmitigation.calema.ca.gov/plan/local_hazard_mitigation_plan_lhmp)).

In order to be eligible for certain Federal disaster assistance and mitigation funding, the City of Cerritos is required to have a Cal OES- and FEMA-approved Hazard Mitigation Plan in place. As a result, the City obtained grant funding to update this document to fulfill Cal OES and FEMA requirements and provide direction and guidance on implementing

hazard mitigation actions on a hazard-level, probability, and cost-priority basis. The overall goal of the Hazard Mitigation Plan is to reduce the potential for damage to critical assets from natural and man-made hazards. In addition, the plan describes past and current hazard mitigation activities and philosophies, and outlines future mitigation goals and strategies.

#### **FEMA Requirements**

FEMA requires that the Hazard Mitigation Plan meet certain requirements. First, the planning process must be open and public, and must allow the public to have an opportunity to comment during the drafting stage and prior to plan approval. Second, the process must allow other local jurisdictions to be involved in the planning process. Third, the Plan must incorporate, if appropriate, existing plans, studies, reports, and technical information.

FEMA expects that each Hazard Mitigation Plan have the following information:

1. Documentation of the **planning process** used to develop the plan
2. A **risk assessment** that provides a factual basis for upgrades and recommendations
3. A **description of the natural hazards** that can affect the jurisdiction
4. A **description of the jurisdiction's vulnerability** to these hazards
5. A **description of land usage**, and an **estimate of losses** should a disaster occur
6. A **mitigation strategy**
7. A plan **maintenance process**
8. **Documentation** that the plan has been adopted by the jurisdiction's governing body
9. **Review** by the State Hazard Mitigation Officer

## **ES.2 Mitigation Definition**

Mitigation is the ongoing effort to prevent or lessen future emergency or disaster incidents, and the impacts they might have on people, property, and the environment. Examples of mitigation activities include the following:

- Legislation, laws and regulations;
- Variances;
- Zoning and land use management;
- Engineering and building codes;
- Hazard mitigation plans & teams;
- Technical guidance & assistance;
- Financial assistance;
- Hazard Identification;
- Risk Analysis;
- Evaluation;
- Research; and
- Education.

Mitigation decreases the demand for emergency response resources, reduces the principal causes of injuries and deaths, enables a quicker lifesaving response and economic recovery because the community infrastructure remains intact, and reduces the societal impacts of the emergency because it results in less disruption to the social environment. In essence, mitigation is the foundation of sustainable community development.

### ES.3 Planning Process Summary

Hazard mitigation planning is a dynamic process built on realistic assessments of past and present information that enables the City to anticipate future hazards and provide mitigation strategies to address possible impacts and identified needs. The overall approach to the Hazard Mitigation Plan included developing a baseline understanding of natural and man-made hazards, determining ways to reduce those risks, and prioritizing mitigation recommendations for implementation.

To complete these objectives, the City of Cerritos compiled a qualified team with various expertise, including risk management, public safety and health, engineering and public works, water infrastructure, and emergency response agencies to participate on a Steering Committee to guide the development of the City's comprehensive Hazard Mitigation Plan. In addition, the Steering Committee solicited public involvement throughout the planning process, including the release of a public survey through the City's newsletter and website, allowing the public to comment during the drafting stage, and making the draft Plan available to allow the public to comment on its content. Chapter 1: Planning Process, contains descriptions of the Planning process, including information on the Steering Committee and public involvement.

### ES.4 Hazard Analysis

The City of Cerritos is vulnerable to a wide range of natural and man-made hazards that threaten life and property. In order to identify the hazards that the City and neighboring communities perceive as the largest threat, each member of the Steering Committee participated in the Hazard Identification Workshop during the first Steering Committee Meeting. The Steering Committee brainstormed potential hazards based on past incidents that have impacted the City and information incorporated from other studies. (Incorporated Plans and studies are described in Section 1.3 "Review and Incorporation of Existing Plans"). Each identified hazard was then qualitatively ranked based upon hazard probability/frequency, consequence/severity, and the City's overall vulnerability using an interactive model. Section 3.2 Hazard Identification, contains detailed information regarding the hazard ranking. Table ES.1 provides a summary of the hazard ranking.

Table ES.1: City of Cerritos Hazard Ranking Summary

Hazard Rank
<b>High</b> Earthquake
<b>Moderately High</b>
<b>Moderate</b> Urban Fire Transportation Accident/ Incident
<b>Moderately Low</b> Flood/ Dam Failure Pipeline Failure/ Hazardous Material Release Drought
<b>Low</b> Terrorism Windstorm

### Asset Inventory and Loss Estimates

In addition to the hazard profiles, the Risk Assessment contains a detailed asset inventory that lists the City's assets, such as buildings, parks, public facilities, and critical non-City assets, such as hospitals and schools. This asset inventory was used in the vulnerability assessment to estimate potential losses for each hazard. The Steering Committee reviewed each hazard and assigned a potential percentage of damage expected. This also included loss of function values for lifeline and emergency service interruptions. Section 3.17 Loss Estimates, includes a detailed breakdown of the vulnerability assessment calculations.

**Table ES.2: Loss Estimate Summary**

Hazard	Estimated Losses
Earthquake	\$215,942,195
Urban Fire	\$189,894,048
Transportation Accident / Incident	\$44,282,367
Flood/ Dam Failure	\$92,304,356
Pipeline Failure/ Hazardous Material Release	\$44,486,769
Drought	\$14,887,213
Terrorism	\$68,452,924
Windstorm	\$18,204,978

Note: A total value is not included since it is not expected for all hazards to occur simultaneously. Loss estimate values were determined through an in-person exercise. Supporting data can be found in Section 3.13 "Loss Estimates"

## ES.5 Mitigation Strategies and Implementation Plan

### Plan Goals and Objectives

As part of the development process, Plan goals and objectives were revalidated to provide a framework for mitigating hazards and proposing potential mitigation actions. The goals are consistent with the California State Hazard Mitigation Plan and the Los Angeles County Hazard Mitigation Plan and were developed by the Steering Committee. The City's overall Plan goals are to:

1. Protect Life, Property, and Commerce
2. Promote Public Awareness
3. Protect the Environment
4. Develop and Expand Partnerships and Implementation
5. Enhance Emergency Services Capabilities

In addition to the overall Plan goals, individual objectives were developed that more specifically address mitigation strategies. Section 4.1 Mitigation Goals and Objectives contains the full list of the Plan goals and objectives.

### Mitigation Strategies

Mitigation strategies are administrative and/or engineering project recommendations to reduce the vulnerability to the identified hazards. The Steering Committee identified specific mitigation actions to reduce the impact or likelihood of the hazards. The specific objectives served as a starting point for developing the mitigation actions, and additional actions were taken from the Safety Element of the City's General Plan.

### Implementation Plan

Following the identification of mitigation actions, a simplified Benefit-Cost Review was applied in order to prioritize the mitigation actions for implementation. The priority for implementing mitigation actions depended upon the overall cost effectiveness of the action, when taking into account monetary and non-monetary costs and benefits associated with each action. Additionally, the following questions were considered when developing the Benefit-Cost Review:

- How many people will benefit from the action?
- How large of an area is impacted?
- How critical are the facilities that benefit from the action?



- Environmentally, does it make sense to do this project for the overall community? The Benefit-Cost Review yielded a relative priority ranking (High, Medium, or Low) for each mitigation action. Each ranking was defined as follows.
- High: Benefits are perceived to exceed costs without further study or evaluations; or the action is critical.
- Medium: Benefits are perceived to exceed costs, but may require further study or evaluation prior to implementation.
- Low: Benefits and costs require evaluation prior to implementation.

Mitigation actions identified as high-priority are typically implemented before lower ranked actions. Results from the Benefit-Cost Review are located in Chapter 4.4 Prioritization of Mitigation Recommendations. The Steering Committee considered responsible departments, funding resources, and estimated implementation timeframe when developing the implementation plan.

Chapter 4 Mitigation Strategies contains additional information regarding the mitigation strategies and implementation plan. Table ES.3 on the following pages provides a summary of each mitigation action, including the hazard(s) mitigated, responsible agency/department, and relative priority rank taken from the Benefit-Cost Review.

**Table ES.3: Mitigation Action Summary**

Action ID	Mitigation Action	Hazards Mitigated	Responsible Agency/Department	Priority
2015.HMP.0 1	Establish a formal role for the City of Cerritos Hazard Mitigation Steering Committee for implementing, monitoring, and evaluating citywide mitigation activities.	Multi-Hazard	Administration	High
2015.HMP.0 2	Develop public and private partnerships to foster hazard mitigation program coordination and collaboration in the City of Cerritos.	Multi-Hazard	Community Safety	High
2015.HMP.0 3	Conduct evaluations of critical facilities to develop inventories of at-risk buildings and identify areas for improvement. This includes, but is not limited to, incorporating alternative power sources and identifying vulnerabilities to fire and earthquake. Initiate mitigation projects accordingly.	Multi-Hazard	Engineering	High
2015.HMP.0 4	Strengthen emergency services preparedness and response by linking emergency services with hazard mitigation programs and enhancing public education on a regional scale.	Multi-Hazard	Community Safety	Medium
2015.HMP.0 5	Conduct annual tabletop multi-hazard disaster exercises with local law enforcement, emergency managers, town and county officials, the Local Emergency Planning Committee (LEPC) and other disaster response agencies to identify vulnerabilities in emergency services and response.	Multi-Hazard	Community Safety	High
2015.HMP.0 6	Retrofit traffic signals for coordination with Emergency Vehicles to decrease response time during a hazard event.	Multi-Hazard	Engineering	Low



Action ID	Mitigation Action	Hazards Mitigated	Responsible Agency/Department	Priority
2015.HMP.0 7	Develop a Business Continuity Planning display. The display will be designed to raise awareness of why it is important to have a Business Continuity Plan, how to develop a Plan, and will encourage businesses to make sure their Plan aligns with the County's Plan. The display will be appropriate for use at local Chamber of Commerce meetings and activities, civic group gatherings, and other business-related gatherings.	Multi-Hazard	Community Development	Medium
2015.HMP.0 8	Work with the U.S. Geological Survey (USGS) to verify current GIS earthquake hazard mapping data is accurate for the City of Cerritos and utilize technical analysis of earthquake hazards to identify vulnerabilities in accordance with the Safety Element of the City's General Plan (SAF-2.3).	Earthquake	GIS Division	High
2015.HMP.0 9	In accordance with the Safety Element of the City's General Plan (SAF-2.3), conduct new seismic strength evaluations of critical City facilities built before 1980 to identify vulnerabilities and initiate improvement projects accordingly. These evaluations should highlight potential mitigation actions that would improve public infrastructure and reinforce critical facilities to meet current seismic standards.	Earthquake	Engineering	Low
2015.HMP.1 0	In accordance with the Safety Element of the City's General Plan (SAF-2.1), create and distribute outreach materials that will increase public awareness and encourage the initiation of nonstructural and structural projects to minimize vulnerability to earthquakes in the local community.	Earthquake	Communications	Medium

City of Cerritos Hazard Mitigation Plan

ES-11

Action ID	Mitigation Action	Hazards Mitigated	Responsible Agency/Department	Priority
2015.HMP.1 1	Provide information to new home and property buyers on earthquake, fire and multi-hazard safety and encourage the public sector to identify vulnerabilities and initiate improvement projects.	Urban Fire	Communications	High
2015.HMP.1 2	Coordinate with County and State (e.g. LEPC) representatives to maintain awareness about current trends in illegal transportation of hazardous materials within the City or potentially impacting the City.	Transportation Accident/Hazmat Release	Community Safety	High
2015.HMP.1 3	In accordance with the Safety Element of the City's General Plan (SAF-1.4 & SAF-1.2), conduct evaluations of flood controls within the City to ensure efficient operations and identify potential storm drain improvements. Then, identify key areas to initiate improvement projects accordingly.	Flood/ Dam Failure	Public Works Department	Medium
2015.HMP.1 4	In accordance with the Safety Element of the City's General Plan (SAF-5.3), ensure current maps of underground pipelines are up-to-date and educate the public for pipeline safety (Dig Alert).	Pipeline Failure/Hazardous Materials Release	Communications/Community Development	High
2015.HMP.1 5	Continue to add recycled water channels to the City's water system to help conserve potable water.	Drought	Public Works	Low
2015.HMP.1 6	Continue public outreach on water conservation.	Drought	Public Works	High
2015.HMP.1 7	Continue public education regarding "See Something-Say Something" for terrorism.	Terrorism	Communications	Low

City of Cerritos Hazard Mitigation Plan

ES-12

## ES.6 Monitoring, Evaluating, and Updating the Plan

The Hazard Mitigation Plan is a living document that reflects ongoing hazard mitigation activities and requires monitoring, evaluating, and updating to ensure the mitigation actions are implemented. To facilitate the Hazard Mitigation Planning process and adhere to regulatory requirements, the Plan will be reviewed annually and any major revisions will be incorporated into the five-year update. In addition, public involvement will be requested when applicable. Chapter 5: Plan Maintenance outlines the update requirements and planning mechanisms the City has in place for ongoing hazard mitigation.

Action ID	Mitigation Action	Hazards Mitigated	Responsible Agency/Department	Priority
2015.HMP.18	Coordinate with existing high-profile, private facilities to ensure security and anti-terrorism safety features are in use.	Terrorism	Sheriff's Department	Medium
2015.HMP.19	Update the General Plan to include anti-terrorism requirements for new high-profile, private building projects. Anti-terrorism requirements should include, but are not limited to, adequate escape routes for pedestrians & motorists and built-in security systems.	Terrorism	Community Development	Low
2015.HMP.20	Continue to update the City's tree inventory and identify vulnerabilities. All trees should be maintained according to the standards in the City's Municipal Code to minimize potential hazards.	Windstorm	Public Works	High

# 1 PLANNING PROCESS

## Table of Contents

1.1	Narrative Description of the Planning Process	1-1
1.2	Steering Committee & Public Involvement	1-7
1.2.1	Steering Committee Participant Solicitation	1-7
1.2.2	Steering Committee Participants	1-8
1.2.3	Steering Committee Meeting Descriptions	1-12
1.2.4	Public Meetings & Outreach	1-16
1.3	Review and Incorporation of Existing Plans	1-18

## List of Tables

Table 1.1:	Steering Committee Participants	1-9
Table 1.2:	City Council Meeting Attendees	1-16

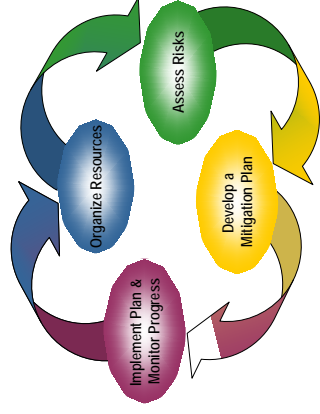
## 1.1 Narrative Description of the Planning Process

**§201.6(b):** In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
- (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

**§201.6(c)(1):** [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Hazard mitigation planning is a dynamic process built on realistic assessments of past and present information that engages the City of Cerritos (the City) to anticipate future hazards and provide meaningful strategies to address possible impacts and identified needs. The hazard mitigation planning process involves the following tasks.



- Organizing resources
- Assessing risks
- Developing mitigation strategies, goals, and priorities
- Adopting a plan
- Implementing the plan
- Monitoring progress
- Revising the plan as necessary

The overall approach to updating the Hazard Mitigation Plan included building off the baseline understanding of the natural hazards as defined in the original 2004 Natural Hazards Mitigation Plan, determining ways to continue reducing those risks, and

prioritizing those recommendations for implementation. The following task descriptions provide a detailed narrative of the overall project progression.

### Organize Resources

#### Identify Stakeholders and Compile Steering Committee

Rebecca Scott, Management Analyst for the City, invited and coordinated participation for a Steering Committee from the appropriate law enforcement, emergency response, health organizations, City personnel, and local government representatives. The Steering Committee was responsible for providing essential insight into the past hazard events, current hazard vulnerability (including specific locations), critical assets, and possible mitigation projects. The following groups were invited to participate in the plan development:

- City of Cerritos Key Personnel (Finance, City Planning, Emergency Preparedness, Community Safety, Water, Administration, and Recreation)
- Los Angeles County Fire Department
- The American Red Cross
- Los Angeles County Sheriff's Department
- Disaster Management Area Personnel
- ABC Unified School District
- Los Angeles County Office of Emergency Management
- Surrounding City Personnel

#### Public Process

The Disaster Mitigation Act of 2000 requires an "Open and Public Process" for developing the Hazard Mitigation Plan. This process requires, at a minimum, that the public be allowed to comment on the Hazard Mitigation Plan during the drafting phase and prior to adoption. To meet this requirement, the City published a public survey to allow for the public comment during the drafting stage of the Hazard Mitigation Plan prior to submittal of the Hazard Mitigation Plan for FEMA review. The public survey was published in the January 2015 issue of the City newsletter and on the City's website. Documentation of public outreach is provided in Appendix D.

### Risk Assessment

#### Identify Hazards

This task was designed to identify all the natural and man-made hazards that *might* affect the City and then narrow the list to the hazards that are most likely to occur. The hazards included natural, technical, and human-caused events, with an emphasis on the effect of disasters on the City's critical facilities. In order to compile the list, the Project Team built upon the list of hazards identified in the 2004 Natural Hazards Mitigation Plan and then continued to research newspapers, historical records, and websites to determine any additional hazards. In addition, the Steering Committee reviewed a list of hazards that have affected the City in the past with specific information regarding frequency, magnitude, and associated consequences. A Hazard Identification Workshop was conducted during the first Steering Committee Meeting to identify and evaluate each selected hazard. The following hazards were included in the Hazard Mitigation Plan:

- Earthquake,
- Urban Fire,
- Transportation Accident/ Incident,
- Flood/ Dam Failure,
- Pipeline Failure/ Hazardous Material Release,
- Drought,
- Terrorism, and
- Windstorm.

This list is not all-inclusive to the hazards discussed during the Hazard Identification Workshop. Hazards not thought to pose significant risk to the City were not included. In addition, some items were captured as sub-items of the hazards listed above. For example, climate change is discussed with hazards where the impact of changes in weather patterns could act as a catalyst for those scenarios.

#### Profile Hazard Events

The hazard event profiles consist of either a map indicating the area impacted by each hazard or an important piece of data regarding the characteristics of hazard events within the City and surrounding area. To update the detailed hazard profiles, the Project Team researched and reviewed relevant open-source natural hazard studies and mapping projects. In addition, the City supplied any hazard studies that have been developed specifically for the City. This task determined the hazard magnitude, frequency, and

location characteristics (e.g., predicted ground acceleration values, fault locations, flood plains, etc.) that were used as the design-basis for the loss estimates and hazard ranking.

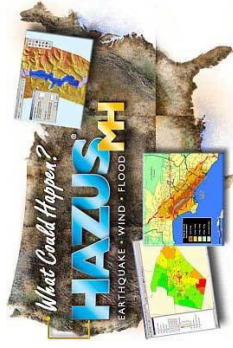
#### **Asset Inventory**

The purpose of this task was to determine the quantity of City facilities and assets that lie in the different hazard areas and what proportion of the City this represents. The asset inventory was completed by reviewing a list of City assets from the 2004 Natural Hazards Mitigation Plan during a Steering Committee meeting and including any new or recently acquired facilities.

This inventory was augmented with critical non-City assets, such as hospitals, schools, and sheriff stations, in order to capture the vulnerability of other facilities within Cerritos that may provide emergency response services. The completed asset inventory enabled the Steering Committee to estimate losses resulting from hazard events and to determine where resources should be allocated to address mitigation issues.

#### **Loss Estimates**

FEMA developed a standardized natural hazard loss estimation methodology containing models for estimating potential losses from earthquake, wind (hurricanes, thunderstorms, tornadoes, and extra-tropical cyclones), and flood (river basin and coastal) hazards. The City used HAZUS-MH, a PC-based software, which implements the FEMA-developed methodology and runs on a Geographic Information System (GIS) platform, to map and display earthquake hazard data, as well as the results of earthquake damage and economic loss estimates for buildings and infrastructure within the City.



HAZUS-MH contains baseline data such as:

- Demographic data (population, age, ethnicity, and income);
- General building stock (square footage of occupancy classes for each census tract);
- Emergency response facilities (fire, police, emergency operations centers);
- Dams;
- Hazardous materials facilities;
- Roads, airports, and other transportation facilities; and

- Electric power, oil, and gas lines and other utility facilities.

In estimating losses, HAZUS-MH takes into account various impacts of a hazard event including:

- Physical damage: damage to residential and commercial buildings, schools, critical facilities, and infrastructure;
- Economic loss: business interruptions, repair and reconstruction costs; and
- Social impacts: impacts to people, including potential loss of potable water and sanitation services.

In addition to the earthquake HAZUS assessments, the Project Team developed loss assessment tables for each specific hazard that identified potential damages within the City, including population at risk, critical infrastructure, and buildings. This task was critical in determining which assets are subject to the greatest potential damages and which hazard event is likely to produce the greatest potential losses. The conclusion of this step precipitated a comprehensive loss estimate (vulnerability assessment) for each identified hazard for each specific asset in terms of damages, economic loss, and the associated consequences.

#### **Mitigation Strategy Development**

##### **Development of Mitigation Goals and Objectives**

The Project Team, based upon information provided by the Steering Committee, discussed the mitigation features and resources that the City currently has in place. These mitigation features provided a framework to determine where practical improvements could be made and where sufficient improvements would be prohibitive due to cost, schedule, or impracticality of implementation.

For each of the hazard events, mitigation goals and objectives were developed with the intention of reducing or eliminating the potential hazard impacts. The mitigation goals and objectives were developed at a Steering Committee Meeting to provide the basis for determining the associated mitigation projects.

##### **Identify and Prioritize Mitigation Actions**

Mitigation strategies are administrative and/or engineering project recommendations to reduce the vulnerability to the identified hazards. It was imperative to have engineers and vital City employees involved in this phase of the Plan in order to develop strategies and projects that will mitigate the hazards cost-effectively, as well as ensure consistency with

the City's long-term mitigation goals and capital improvements. At a Steering Committee Meeting, a team-based approach was used to brainstorm mitigation projects based on the identified hazards and associated loss estimates. The evaluation and prioritization of the mitigation actions produced a list of recommended mitigation actions to incorporate into the Hazard Mitigation Plan. A separate Steering Committee meeting was held to conduct a Benefit-Cost Review for each proposed mitigation action to determine the relative priority level of the recommendation.

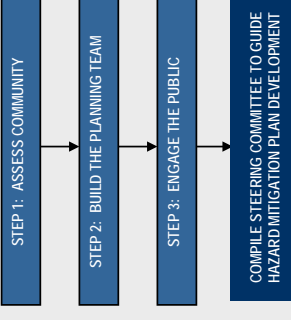
### Implementation & Monitoring

#### Preparation of Implementation Strategy

The Project Team developed an action plan to detail how the mitigation recommendations will be prioritized, implemented, and administered by the City. During the Hazard Mitigation Plan creation process, the Project Team coordinated with the Steering Committee to determine the mitigation project implementation strategy (including identifying responsible departments, funding resources, and estimated implementation timeframe).

## 1.2 Steering Committee & Public Involvement

While the City and Risk Management Professionals had lead responsibility for the update of the City's Hazard Mitigation Plan, neighboring communities, agencies, businesses, and other interested parties were invited to participate on the Steering Committee to review the Hazard Mitigation Plan during each phase of the document development. In order to compile a list of Steering Committee participants, the Project Team assessed community support through active community leaders, built a planning Team, and engaged the public participants during the Project Initiation and Hazard Identification meeting. Each member of the Steering Committee had the opportunity to participate in all aspects of the planning process.



**§201.6(b):** In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- (2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and

**§201.6(c)(1):** [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

### 1.2.1 Steering Committee Participant Solicitation

The City solicited participation in the Hazard Mitigation Plan Steering Committee by contacting both internal and external stakeholders. Internal stakeholders included members of the various City departments. External stakeholders were comprised of representatives from local agencies and neighboring communities, including the Los Angeles County Fire and Sheriff's Departments, the Red Cross, ABC Unified School District and Disaster Area Management.

### 1.2.2 Steering Committee Participants

The City brought together personnel from management, finance, City planning, engineering, public safety, and recreation departments to ensure the Steering Committee included a variety of departments and provided a mechanism for receiving input from each participant. Additionally, the City compiled historical hazard data, provided relevant planning documents for incorporation into the Hazard Mitigation Plan, and coordinated participation with the public. Each draft chapter was reviewed by the Steering Committee and specific comments and input were incorporated into the plan. The multidisciplinary Steering Committee enabled the City to work together and incorporate each individual's expertise to provide for a comprehensive Hazard Mitigation Plan.

The Hazard Mitigation Plan was developed with assistance and advice from participants from the City and several neighboring agencies. Table 1.1 provides a list of the Steering Committee participants. Individuals are listed in alphabetical order by last name.

Table 1.1: Steering Committee Participants

Name	Affiliation	Title	SCM 1	SCM 2	SCM 3	SCM 4	SCM 5
Joaquin Aceves	Los Angeles County Fire Department	Fire Fighter				X	
Jonathon Alba	Los Angeles County Fire Department	Fire Fighter Specialist		X			
Albert Ateaga	City of Cerritos	Engineering Aide	X	X			X
Ryan Bray	Risk Management Professionals	Project Coordinator	X	X	X	X	X
Brenda Cabrera	City of Cerritos	Assistant City Clerk	X			X	
Tim Catlin	ABC Unified School District	Child Welfare Attendance Supervisor		X			
Bob Coffin	Los Angeles County Fire Department	Captain	X	X			
Yvette Countee	Los Angeles County Office of Emergency Management	Program Manager	X	X			
Cynthia Doss	City of Cerritos	Management Analyst	X	X	X		
Charles Emig	City of Cerritos	Water Superintendent	X	X	X	X	
Mike Guthrie	Los Angeles Sheriff's Department	Sergeant		X			X
Tom Hamilton	City of Cerritos	Technical Operations Director	X				

Name	Affiliation	Title	SCM 1	SCM 2	SCM 3	SCM 4	SCM 5
Nick Hipsley-Coxe	American Red Cross	Disaster Program Manager	X	X			
Mark Jimenez	Los Angeles County Fire Department	Fire Fighter				X	
Klaus Kreimann	Los Angeles County Office of Emergency Management	Community Development Planner		X			
Edwin Malonzo	City of Cerritos	Accountant	X	X			
Emely Merina	City of Cerritos	Community Services Supervisor	X		X		X
Scott Miller	Los Angeles County Fire Department	Captain				X	
Joe Nunez	Los Angeles County Sheriff's Department	Captain					X
Richard Ortiz	Los Angeles County Fire Department	Fire Fighter		X			
Ciro Racowski	Los Angeles County Sheriff's Department	Operations Sergeant					X
Sharon Rutledge	City of Cerritos	Code Enforcement Officer		X			
Colin Scholtz	Risk Management Professionals	Senior Engineer	X	X	X	X	X
Rebecca Scott	City of Cerritos	Management Analyst	X	X	X	X	X
Alan Strickland	City of Cerritos	House Manager	X	X	X	X	X

Name	Affiliation	Title	SCM 1	SCM 2	SCM 3	SCM 4	SCM 5
Sherré Titus	City of Cerritos	Recreation Superintendent	X	X	X	X	X
Raquel Vernola	City of Norwalk/ Area E Disaster Management	Emergency Services Manager/ Disaster Management Area Coordinator		X		X	X
Mike Warner	City of Cerritos	Building Maintenance Engineer		X	X		
Phil Wendel	American Red Cross	Volunteer Ambassador		X			
Eric Wosick	City of Norwalk	Emergency Preparedness Officer					X



The Steering Committee met five times during the course of the project to discuss project progress and obtain valuable input and information for documenting the Hazard Mitigation Plan. The meetings are detailed over the subsequent pages. Appendix D – Public Participation contains copies of the presentations used at each meeting, specific meeting handouts, and attendance records.

### 1.2.3 Steering Committee Meeting Descriptions

#### Steering Committee Meeting #1 – Project Initiation, Hazard Identification, and Information Collection

**Date: July 31, 2014**

During the Project Initiation, Hazard Identification, and Information Collection Meeting, Risk Management Professionals presented an overview presentation that detailed the objectives and scope of the project. After a review of the project schedule and key tasks, the Steering Committee participants' areas of expertise, consultant member responsibilities, and the community meeting process was discussed.

The Steering Committee Meeting also served as a mechanism to determine the hazards to profile in detail. To effectively characterize the City's risk and vulnerability, Risk Management Professionals facilitated a discussion of the historical hazards with the Steering

HAZARD IDENTIFICATION AND RISK RANKING		
Hazard Rank Factor	Hazard Rank	Risk Rank
Earthquake	10	10
Wildfire	10	10
Flood	10	10

Committee members during this meeting. This meeting also served as a forum to discuss information for the background information and asset inventory.

The Steering Committee determined the initial hazard profile ranking through a facilitated workshop using an automated interactive spreadsheet that asked specific questions on potential hazards and then assigned a relative value to each potential hazard accordingly, including numerical rankings (1-5) of the following criteria:

- **Consequence/Severity** – How widespread is the impact area?

- **Secondary Effects** – Could the event trigger another event and separate response?
- **Probability/Frequency** – Historical view of how often this type of event occurs locally and projected recurrence intervals.
- **Warning/Onset** – Advance warning of the event, or none.
- **Duration** – Length of elapsed time where response resources are active.
- **Recovery** – Length of time until lives and property return to normal.

Chapter 3: Risk Assessment outlines the methodology used for hazard rankings. Additionally, all Steering Committee participants were requested to provide existing plans and technical studies, GIS data, and identify existing mitigation features as part of a detailed information request.

#### Steering Committee Meeting #2 – Hazard Risk Rank Review, Mitigation Goals and Objectives

**Date: October 9, 2014**

The hazard risk ranking from Steering Committee Meeting #1 was reviewed, updated and validated with the Steering Committee with a review of the hazard profiles. Additionally, the Plan's mitigation goals and objectives were updated with the intention of reducing or eliminating the potential hazard impacts, which also provided the basis for determining the associated mitigation projects. The Steering Committee reviewed the goals and objects from the City's 2004 Natural Hazards Mitigation Plan, the California State Multi-Hazard Mitigation Plan, and the Los Angeles County Hazard Mitigation Plan as a baseline for determining the City's current mitigation goals and objectives.

#### Steering Committee Meeting #3 – Asset Inventory and Vulnerability Assessment

**Date: February 9, 2015**

The asset inventory was developed to determine the quantity of buildings, facilities, and other assets in the City that lie in the different hazard areas and what proportion of the City this represents. The asset inventory included locations and specifications for general buildings: city well sites, civic buildings, parks, hospitals, schools and other facilities. The asset inventory was reviewed with the Steering Committee for completeness and assignments were given to those who could retrieve missing information.

Asset Inventory Summary - City of Cerritos								
Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
Public Buildings	Performing Arts Center	12700 Center Ct Dr S., Cerritos, CA 90703	150,000	NA	78,607,287	NA	16,425,997	\$95,033,284
Public Buildings	Library	18025 Bloomfield Ave Cerritos, CA	86,780	NA	65,724,027	NA	10,161,708	\$76,875,735
City Property	Cerritos Park East (CPE)	13234 E 169th St, Cerritos, CA 90703	15,500	NA	7,535,621	NA	885,083	\$8,420,704
City Property	City Hall	18125 Bloomfield Ave, Cerritos, CA 90709	53,288	NA	14,522,888	NA	4,880,262	\$19,403,150
City Property	City Yard	16540 Marquardt Ave, Cerritos, CA 90703	24,257	NA	3,064,373	NA	1,345,684	\$4,410,057
Fire Building	Fire Station	13717 Artesa Boulevard, Cerritos, CA 90703	10,575	NA	3,188,966	100%	3,188,966	\$6,377,932

The asset inventory was then used to develop loss estimates for all hazard scenarios. The hazard probabilities and recurrence intervals were applied to the City assets to determine which assets were subject to the greatest potential damages and which hazard events were likely to produce the greatest potential losses.

Additionally, each Steering Committee participant was given a Mitigation Activity Identification worksheet to document potential projects to be discussed during Steering Committee Meeting #4.

#### Steering Committee Meeting #4 – Mitigation Action Identification

Date: May 7, 2015

The purpose of this meeting was to identify potential mitigation actions and projects that will reduce the impact of identified hazards. First, the mitigation goals and objectives from Steering Committee Meeting #2 were reviewed and validated. Then, during the meeting, the Steering Committee participants brainstormed possible projects and actions to mitigate the effects of the identified hazards. This was done using the hazard profiles, hazard-specific objectives, and asset-specific loss estimates as starting points. In addition, the Capital Improvement Plan was reviewed as necessary to assess if any capital improvement projects considered hazard mitigation.

As the mitigation projects were identified, the Steering Committee discussed the mitigation action implementation plan according to the following characteristics:

- Mitigation Action Category – Prevention, Property Protection, Public Education and Awareness, Natural Resource Protection, Emergency Services, and Structural Projects
- Corresponding Goals and Objectives

- Responsible Department – Building and Safety, Engineering, Administration, Community Development, Public Works, etc.
- Resources – General Fund, Grant Programs, Staff Time, Capital Improvements, etc.

- Implementation Timeframe – Ongoing, Short-Term (within two years), Medium-term (between three and ten years), and Long-Term (greater than ten years)
- Whether or not the project protects new or future buildings

#### Steering Committee Meeting #5 – Mitigation Action Benefit-Cost Review

Date: September 3, 2015

During the fifth Steering Committee Meeting, the identified mitigation actions from Steering Committee Meeting #4 were reviewed and validated with the Steering Committee. The Steering Committee then performed a high-level Benefit-Cost Review on each of the identified mitigation actions. The review consisted of identifying all benefits and costs associated with implementing each mitigation action. Typical benefits include:

- Avoided physical damages (e.g., to buildings, infrastructure, and equipment)
- Avoided loss of function costs (e.g., loss of utilities and lifelines)
- Avoided casualties
- Avoided emergency management costs (e.g., emergency operations center costs, evacuation/rescue costs, and other management costs)

Actions	Benefits (Pros)	Costs (Cons)	Priority
Floodproof 10 businesses in the downtown area	- Avoidance of 1 loss of life every 20 years (assumes reduced by half) - Avoidance of 100,000 dollars in damages and 15,000 in public cost - Loss of use of 10 downtown businesses completely eliminated - Federal grants like FEMA and FEMA can be used to implement the proposed floodproofing - Will help improve QRS rating in the long term for minor community's flood long term - More than half the members of the City Council are opposed to buy-outs; it might be easier to get their support	- Floodproofing cost = \$10,000 X 10 = \$100,000 - Need 3 people to administer (street cleaning technical assistance from the State) - Need a year to implement	High (Priority no. 1)
Build safe rooms for a total of 50 homes without basements	- Avoidance of 5 lives lost every 20 years (assumes reduced by half) - Avoidance of 100,000 dollars in damages and 15,000 in public cost - Local channel might be willing to fund 50% of the cost - Publicity would spread awareness about mitigation methods as well as what to do in an emergency	- City will share 50% of the cost for existing home = \$2,000 X 50 = \$1,000 X 50 = \$50,000 - Administrative cost per home = \$1,000 X 50 = \$50,000 - Need 3 years to complete - May never strike this exact area again	Medium (Priority no. 2)
Reconnect local water on local channel mitigation	- Local channel might be willing to fund 50% of the cost - Publicity would spread awareness about mitigation methods as well as what to do in an emergency	- Cost of property value = \$1,000 - Cost of implementation might include only 5% of cost as might actually be an individual	Low (Priority no. 3)

Once the benefits and costs were estimated, a relative priority was assigned for each action based upon the evaluation. More detailed information can be found in Section 4.4 "Prioritization of Mitigation recommendations."

#### 1.2.4 Public Meetings & Outreach

The City of Cerritos actively solicited public involvement through several advertisements and other media. The City published an article in the January 2015 issue of the City newsletter inviting the public to participate in a survey on the City's website. The survey assessed the community's level of concern with various hazards and the steps each respondent had taken to prepare for a disaster. Members of the public were also able to provide direct input for Hazard Mitigation Plan development and attend a City Council Meeting in order to review the Hazard Mitigation Plan during the drafting stage and provide comments. The Draft Hazard Mitigation Plan was provided on the City website two weeks prior to the City Council meeting to allow the public to review the document before providing comments. Additional documentation regarding public involvement is provided in Appendix D.

The public provided feedback on the Draft Plan at a City Council Meeting on Month day, 2016. Copies of the Draft Hazard Mitigation Plan were provided to interested members of the public and a presentation was prepared to provide an overview of the planning process and the results of the analyses. In addition, the draft Plan was posted on the City's website for two weeks prior to the date of the meeting.



2/16/2016 City of Cerritos | Local Hazard Mitigation Plan draft available for review

## Local Hazard Mitigation Plan draft available for review

February 1, 2016

The City of Cerritos has updated its Local Hazard Mitigation Plan (LHMP) as mandated by the Federal Emergency Management Agency. A current LHMP allows the City to reduce the costs associated with disaster response and recovery, by implementing hazard mitigation strategies.

Beginning Friday, February 12, a final draft of the LHMP will be available for review at the Public Works counter at City Hall and on the City's website at [cerritos.us](http://cerritos.us). The City Council will conduct a public hearing to discuss the draft at the February 25 City Council meeting.

Table 1.2: City Council Meeting Attendees

Name	Affiliation	Title
Rebecca Scott	City of Cerritos	Management Analyst
Ryan Bray	Risk Management Professionals	Project Coordinator
Jim Edwards	City of Cerritos	Council Agency Member
Mark Pulido	City of Cerritos	Council Agency Member
Naresh Solanki	City of Cerritos	Council Agency Member
George Ray	City of Cerritos	Mayor Pro Tem
Carol Chen	City of Cerritos	Mayor
Dr. Mark Chung	Citizen	Citizen

Additional information on the City Council Meeting, including the attendance log and presentation, can be found in Appendix D.

### 1.3 Review and Incorporation of Existing Plans

**§201.6(b):** In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:  
(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

While developing the City of Cerritos' Hazard Mitigation Plan, the Project Team reviewed existing plans (detailed below) and incorporated relevant information into the planning efforts.

#### City of Cerritos 2004 Natural Hazards Mitigation Plan

The City of Cerritos 2004 Natural Hazards Mitigation Plan is crucial in comparing the previous mitigation ideas and attitudes to the City's current needs and concerns. The project team referred to this plan constantly throughout the updating process. The Natural Hazards Mitigation Plan provides insight into hazard ranking, hazard history, previously proposed mitigation projects, etc.

#### City of Cerritos General Plan

The City of Cerritos General Plan 2004 contains guidelines and policies that serve as the City's vision for future planning and development. Mitigation projects defined in the Hazard Mitigation Plan will be required to align with the objectives outlined in the Safety Element of the General Plan. Proposed mitigation actions are found in Chapter 4 of this document.

#### Cerritos 2010 Urban Water Management Plan

The City of Cerritos 2010 Urban Water Management Plan is updated every five years to monitor water supply issues and mitigate drought situations. As part of Urban Water Management Plan updates, the City will review the drought hazard profile in the Hazard Mitigation Plan and incorporate the drought mitigation actions identified in the plan.

#### City of Cerritos Emergency Operations Plan

The City of Cerritos periodically updates the Emergency Operations Plan (EOP). The EOP, last updated in 2000, includes specific response procedures for earthquake, hazardous material incident, flooding, etc. In order to ensure the plan includes an appropriate response, the City will incorporate the Risk Assessment element of the Hazard Mitigation Plan into the EOP update, as appropriate.

#### State of California Multi-Hazard Mitigation Plan (2013)

The Multi-Hazard Mitigation Plan was reviewed to ensure consistency between the State and City Plan, with respect to identified hazards and vulnerability, goals and objectives, and mitigation actions. The State goals served as the basis for developing the goals at the City level. City goals and objectives are outlined in Chapter 4.

#### County of Los Angeles 2014 All-Hazard Mitigation Plan

Los Angeles County's All-Hazard Mitigation Plan was reviewed to ensure consistency between the County and City Plan. The County Plan, updated in 2014, outlines the County's approach to hazard mitigation, focusing on natural hazards, human-caused events, and technological emergencies.

#### California Earthquake Loss Reduction Plan

California's Seismic Safety Commission developed the Earthquake Loss Reduction Plan to identify actions to mitigate seismic hazards. This plan was reviewed for an overall seismic hazard evaluation for the Risk Assessment found in Chapter 3, as well as the identification of potential seismic mitigation actions.

#### California Fire Plan

The State Board of Forestry and the California Department of Forestry and Fire Protection have developed the Fire Plan for wildland fire protection in California. The plan defines a level of service measurement, considers assets at risk, incorporates the cooperative interdependent relationships of wildland fire protection providers, provides for public stakeholder involvement, and creates a fiscal framework for policy analysis. This information was used when developing the Urban Fire hazard profile.

#### California Water Plan

The state updated the California Water Plan in 2013 in order to address drought hazard mitigation over the long term. This Plan outlines the state's approach to integrated water management and sustainability. This information was used when developing the drought hazard profile.

#### California Adaptation Planning Guide 2012

FEMA, CalOES, and the California Natural Resources Agency developed the California Adaptation Planning Guide to assist municipalities in recognizing local climate change and to provide guidance addressing potential vulnerabilities. The information was used to develop potential hazards and to provide background information that allowed the Steering

# 2 PLANNING AREA PROFILE

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Committee to make educated decisions regarding mitigation actions designed to alleviate the effects of climate change.

## Table of Contents

2.1 Region Description.....	2-1
2.2 Development Trends .....	2-2
2.3 Population .....	2-9

## List of Tables

Table 2.1: Land Use Designations.....	2-5
Table 2.2: Projected Growth for the City of Cerritos .....	2-9

## List of Figures

Figure 2.1: City of Cerritos Overview Map .....	2-2
Figure 2.2: City of Cerritos General Plan Zoning Map .....	2-7
Figure 2.3: City of Cerritos Land Use Map.....	2-8



## 2.1 Region Description

The City of Cerritos is a municipality characterized by a combination of residential, industrial and commercial developments. Cerritos is located in the southern part of Los Angeles County, California, about 21 miles southeast of the City of Los Angeles, and is positioned on the border of the Los Angeles and Orange County line. The City is bordered by Buena Park and La Mirada to the west; Santa Fe Springs, Norwalk, and Artesia to the north; and Bellflower and Lakewood to the east and south. Cerritos is located near three major Los Angeles County freeways, including Interstates 5 and 605 and California State Route 91. Additionally, the City is in close proximity to Los Angeles International Airport, Long Beach Municipal Airport, the ports of Los Angeles and Long Beach, and is about 18 miles east of the Pacific Ocean. Cerritos has a total area of 8.86 square miles.

The climate of Cerritos is consistent with coastal Southern California and is generally characterized by warm summers and cool winters. Average temperatures range from the mid-70's in the summer to the high-50's in the winter. Precipitation occurs mainly in the winter months with an average annual rainfall of 10 to 15 inches according to the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service. In 2014, NOAA's Fullerton Municipal Airport Weather Station recorded May as the wettest month for the region with 6.32 inches of rainfall.

Cerritos was incorporated on April 24, 1956 as the City of Dairy Valley due to the prominence of dairy farms in the area. However, by 1967, the focus of the community changed from agriculture to residential. On January 10<sup>th</sup> of that year, the City's name was officially changed to Cerritos. By the 1970s, Cerritos was one of the fastest growing communities in California. Guided by the Cerritos General Plan, the City has become a state-of-the-art municipal city valued at over 8 billion dollars. Figure 2.1, below, provides an overview map of the City of Cerritos.

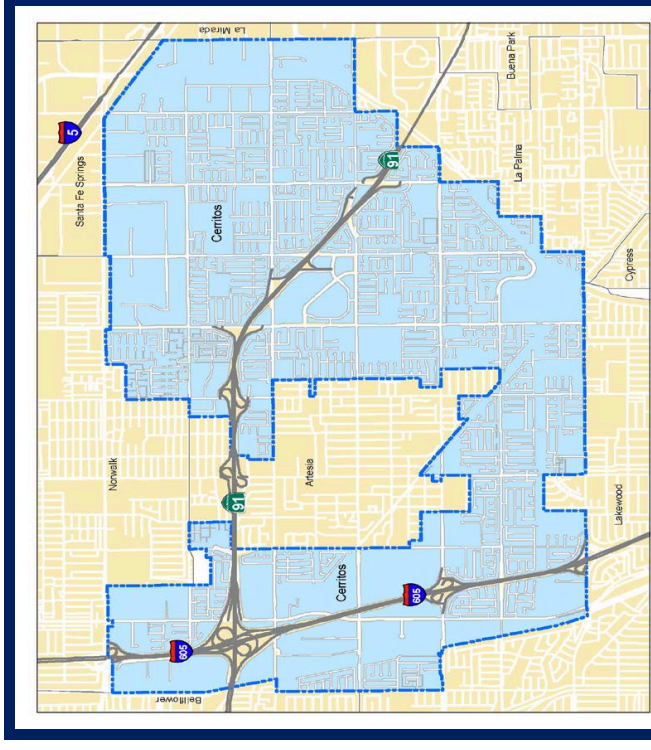


Figure 2.1: City of Cerritos Overview Map

## 2.2 Development Trends

§201.6(c)(2)(f)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

The City of Cerritos is 8.86 square miles. The Land Use Element of the City's General Plan provides a guide for land use, future growth, and development within the City. Since the 2004 Natural Hazard Mitigation Plan, there have been no major changes in development that have greatly affected the City's vulnerability to the identified hazards.

The following describes land use designations for Cerritos. These descriptions were excerpted from the City of Cerritos General Plan 2004 in an attempt to designate the proposed general distribution and intensity of uses of the land for housing, business, industry, open space, public facilities, and other categories of public and private uses.

#### **Residential Land Uses**

##### *Low Density Residential Development*

Land uses within this designation are characterized by single-family residential. This type of development accounts for 33 percent of the City's land. Generally, housing in this class was built in the 1960s as the City converted the agricultural land to residential. Today, new low density residential developments are occurring on vacant or underdeveloped parcels which account for about 0.5 percent of City land.

##### *Medium Density Residential Development*

This land use designation consists of multi-family housing stock typically comprised of townhomes and condominiums. As of August 2001, 3.6 percent of the City's total acreage was categorized under this type of residential classification. The majority of medium density housing stock was built post-1970 due to a rise in the demand for housing. Recent development projects in this area were completed to comply with State affordable housing mandates.

#### **Commercial & Industrial Land Uses**

##### *Office- Professional Commercial*

Land designated under this category is intended for office and professional employment and services. Included in this category are medical, professional, financial, administrative, religious, and private school establishments. This land use designation accounts for 0.3 percent of the overall land area of the City.

##### *Community Commercial*

This land use designation applies to a wide range of land uses involved in retail sales and services. Development included in this land use designation are concentrated in centers as opposed to "strip" or "ribbon" commercial centers which are discouraged by the City. This class of development accounts for 1.7 percent of the overall land area of the City.

##### *Regional Commercial*

Making up 6.6 percent of the overall land use, this designation applies to several major regional commercial centers with the City. Including the Los Cerritos Center, the Cerritos Auto Square, and the Cerritos Towne Center, developments under this designation provide a significant volume of employment opportunities and revenue for the City.

##### *Industrial/Commercial*

The industrial classification includes those land uses involved in manufacturing, processing, and warehousing activities. Light Industrial areas and locations used for educational use are subcategories that make up 12.5 percent and 7 percent of the city land area respectively. With an additional .5 percent labeled only as industrial/commercial, this designation accounts for more than 13 percent of overall City land area.

##### *Parks and Open Space*

The Parks and Open Space designation includes twenty (20) City operated parks. The combined land mass for these parks is 187 acres. Additionally, the City is home to a 22.1 acre golf course that provides recreational opportunities to residents including, but limited to, playing courts, athletic fields, picnic shelters and meeting rooms. This designation accounts for 4.9 percent of the City's overall land area.

*Public and Quasi-Public*

This designation includes publicly owned lands and properties for quasi-public institutions containing existing or proposed support uses for local community-wide or regional support facilities. Examples of land uses include, but are not limited to, schools, parks, power line easements, flood control facilities, churches, and similar uses that are ancillary to quasi-public uses. This land designation make up .4 percent of the overall City land area.

*Vacant and Underutilized Land*

Making up 0.5 percent of the overall City land area, vacant and underutilized land represents the portion of the City that has no development or that fails to meet the potential use or capacity of the location. While vacant land is undeveloped, underutilized land might include land with a high percent of vacant structures, a location with dilapidated buildings, areas with obsolete structures, or large areas with non-building uses such as excessive parking or outdoor storage areas.

Table 2.1 provides a summary of the land use designations described in the sections above.

**Table 2.1: Land Use Designations**

Land Use Designation	Dwelling Units (DU) or Square Feet (SF)	Area (acres)	%
Low Density Residential	13,023 DU	1,880.25	33.0
Medium Density Residential	2,596 DU	208.82	3.6
Office-Professional Commercial	241,053 SF	14.18	0.3
Community Commercial	1,517,878 SF	100.88	1.7
Regional Commercial	6,179,283 SF 72 DU	380.93	6.6
Industrial/ Commercial	536,076 SF	28.83	0.5
Light Industrial	11,343,771 SF	697.855	12.5
Educational Use	186,100 SF	403.49	7.0
Public/Quasi Public	137,666 SF	21.80	0.4

Land Use Designation	Dwelling Units (DU) or Square Feet (SF)	Area (acres)	%
Parks and Open Space	42,975 SF 1 DU	247.12	4.9
Utility & Flood Control Right-Of-Way	41,600 SF	274.71	4.3
Railroad Right-Of-Way	NA	43.75	0.7
Road Right-of-Way	NA	.87	0.0
Private Road	NA	18.24	0.3
Not a Part	NA	9.31	0.2
Freeways/ Public Street	NA	1,338.45	23.4
Vacant	NA	26.26	0.5
<b>Total</b>	<b>15,692 DU</b> <b>20,366,222 SF</b>	<b>5,696</b>	<b>100</b>

Source: City of Cerritos Land Use Element (2004)

Figures 2.2 and 2.3 illustrate the City's zoning and land use designations, respectively, and were extracted from the 2004 revision of the General Plan. As mentioned above, the City's designations have not changed since the previous planning period.





# 3 RISK ASSESSMENT

## 2.3 Population

Since its incorporation in 1956, the City's population has increased from 3,439 residents to 49,707, according to the United States Census Bureau (2013). The City's population rapidly increased from 16,000 to over 38,000 between 1970 and 1972. Conversely, future population growth is expected to grow slowly as development opportunities become increasingly limited and the City reaches its potential for building out. Table 2.2 provides the City's projected population growth through 2030.

**Table 2.2: Projected Growth for the City of Cerritos**

Year	2015	2020	2025	2030
Population	55,270	55,438	55,591	55,731

Source: California Department of Finance E-4 Population Estimates (Revised 11/9/2012)

## Table of Contents

3.1	Risk Assessment.....	3-3
3.2	Hazard Identification and Profiling.....	3-6
3.2.1	Hazard Profiling.....	3-8
3.3	Earthquake Hazard Profile.....	3-10
3.3.1	Earthquake Hazard Information and Background.....	3-10
3.3.2	Earthquake History.....	3-14
3.3.3	Earthquake Probability, Frequency, and Magnitude.....	3-22
3.4	Urban Fire Hazard Profile.....	3-32
3.4.1	Hazard Information and Background.....	3-32
3.4.2	Urban Fire Hazard History.....	3-34
3.4.3	Urban Fire Hazard Probability, Frequency, and Magnitude.....	3-36
3.5	Transportation Accident/ Incident Hazard Profile.....	3-39
3.5.1	Transportation Accident/ Incident Hazard Information and Background.....	3-39
3.5.2	Transportation Accident/ Incident History.....	3-40
3.5.3	Transportation Accident/ Incident Probability, Frequency, and Magnitude.....	3-41
3.6	Flood/ Dam Failure Hazard Profile.....	3-43
3.6.1	Flood/ Dam Failure Hazard Information and Background.....	3-43
3.6.2	Flood/ Dam Failure History.....	3-45
3.6.3	Flood/ Dam Failure Probability, Frequency, and Magnitude.....	3-49
3.7	Pipeline Failure/ Hazardous Material Release Hazard Profile.....	3-51
3.7.1	Pipeline Failure/ Hazardous Material Release Information and Background.....	3-51

3.7.2	Pipeline Failure/ Hazardous Material Release History .....	3-54
3.7.3	Pipeline Failure/ Hazardous Material Release Probability, Frequency, and Magnitude .....	3-55
<b>3.8</b>	<b>Drought Hazard Profile</b> .....	<b>3-58</b>
3.8.1	Drought Information and Background .....	3-58
3.8.2	Drought History .....	3-60
3.8.3	Drought Probability, Frequency, and Magnitude .....	3-62
<b>3.9</b>	<b>Terrorism Hazard Profile</b> .....	<b>3-63</b>
3.9.1	Terrorism Hazard Information and Background .....	3-63
3.9.2	Terrorism Hazard History .....	3-65
3.9.3	Terrorism Hazard Probability, Frequency, and Magnitude .....	3-66
<b>3.10</b>	<b>Windstorm Hazard Profile</b> .....	<b>3-67</b>
3.10.1	Windstorm Hazard Information and Background .....	3-67
3.10.2	Windstorm History .....	3-68
3.10.3	Windstorm Probability, Frequency, and Magnitude .....	3-70
<b>3.11</b>	<b>Climate Change</b> .....	<b>3-71</b>
<b>3.12</b>	<b>Asset Inventory</b> .....	<b>3-72</b>
<b>3.13</b>	<b>Loss Estimates</b> .....	<b>3-88</b>
<b>3.14</b>	<b>Information Sources</b> .....	<b>3-106</b>
<b>List of Figures</b>		
Figure 3.1:	Southern California Historic Earthquakes Map .....	3-22
Figure 3.2:	City of Cerritos Earthquake Fault Map .....	3-24
Figure 3.3:	City of Cerritos Peak Ground Acceleration Map .....	3-30
Figure 3.4:	City of Cerritos Fire Threat Map .....	3-38
Figure 3.5:	City of Cerritos Transportation Routes Map .....	3-42
Figure 3.6:	City of Cerritos FEMA Insurance Rate Map (FIRM) .....	3-50
Figure 3.7:	City of Cerritos Hazardous Materials Facilities .....	3-57

Figure 3.8:	Annual Runoff in California .....	3-60
Figure 3.9:	Southern California Drought Conditions, 2014 .....	3-61
Figure 3.10:	City of Cerritos Average Wind Speeds .....	3-70
Figure 3.11:	City of Cerritos Asset Inventory Map .....	3-87
<b>List of Tables</b>		
Table 3.1:	Risk Factors for Hazard Identification .....	3-6
Table 3.2	Risk Ranking Matrix .....	3-7
Table 3.3:	Risk Rank Categorization.....	3-8
Table 3.4:	Hazard Ranking Summary .....	3-9
Table 3.5:	Modified Mercalli Intensity Scale.....	3-12
Table 3.6	Southern California Historical Earthquakes .....	3-14
Table 3.7:	San Andreas Fault Information .....	3-25
Table 3.8:	Newport-Inglewood Fault Information .....	3-25
Table 3.9:	Whittier-Fault Information.....	3-26
Table 3.10:	Elsinore Fault Information .....	3-27
Table 3.11:	Palos Verdes Fault Information.....	3-28
Table 3.12:	Mercalli Intensity and Corresponding Peak Group Acceleration ...	3-31
Table 3.13:	Los Angeles County Historical Fires (2001-2013) .....	3-34
Table 3.14:	Traffic Fatalities in California.....	3-40
Table 3.15:	Historical Flooding Damage in Los Angeles County .....	3-46
Table 3.16:	Dam Failure Events in California.....	3-48
Table 3.17:	Types of Hazardous Material Incidents .....	3-52
Table 3.18:	ERNS Spills and Accidents in California in 2013 .....	3-54
Table 3.19:	Historical Severe Weather Damage in Los Angeles County .....	3-68
Table 3.20 –	Structural Replacement Values.....	3-73
Table 3.21 -	Loss of Function Values Per Capita – Utilities & Lifelines.....	3-74

Table 3.22 - Contents Value Percentages .....	75
Table 3.23 - Asset Inventory Summary – City of Cerritos .....	77
Table 3.24: Loss of Function .....	86
Table 3.25 Los Estimates/ Vulnerability Assessment – Earthquake through Flood/ Dam Failure.....	89
Table 3.26 Loss Estimates / Vulnerability Assessment – Pipeline Failure/ Hazardous Material Release through Windstorm .....	97
Table 3.27: Loss Estimates Summary.....	106

### 3.1 Risk Assessment

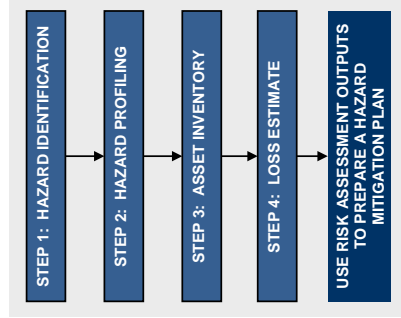
The Risk Assessment consists of four steps: Hazard Identification, Hazard Profiling, Asset Inventory, and Loss Estimates. This chapter includes the Hazard Identification and Hazard Profiling steps to evaluate the hazards of primary concern to local decision-makers to provide a basis for loss estimates which is also included within this chapter. Additionally, the Risk Assessment provides a foundation for the evaluation of mitigation measures that can help reduce the impacts of a potential hazard event.

#### Step 1: Identify Hazards

This step identified all the natural and man-made hazards that might affect the City and then narrowed the list to the hazards that are most likely to occur. These hazards included natural, technical, and human-caused events with an emphasis on the effect of natural disasters on critical facilities, services, and roadways (e.g., government buildings, schools, and public services including police and fire). The Steering Committee participated in a Hazard Identification Workshop during the first Steering Committee Meeting to identify and rank the potential hazards within the City of Cerritos.

#### Step 2: Profile Hazard Events

The hazard event profiles consist of either a map indicating the area impacted by each hazard or key information regarding the characteristics of hazard events within the planning area. To develop detailed hazard profiles, relevant open-source hazard studies and mapping projects were reviewed and documented within this report. In addition, the City of Cerritos supplied historical accounts of man-made hazard events (e.g. transportation incidents, etc.) that included specific hazard and emergency information. This planning step also determined the magnitude, frequency, and location characteristics of relevant natural hazards (urban fire, fault locations, flood plains, etc.) that were utilized as the design-basis for the loss estimates.



### **Step 3: Inventory Assets**

The purpose of this step is to determine the quantity of buildings, people, and assets in the City of Cerritos that lie in the different hazard areas and what proportion of the City this represents. The asset inventory was completed utilizing spatial Geographic Information Systems (GIS) asset locations and specifications for the following assets:

- General Buildings: City well sites, Civic Buildings, Parks, etc.
- Critical Facilities: Hazmat Facilities, Schools, etc.

The development of the comprehensive inventory facilitated the development of loss estimates for all hazard scenarios.

### **Step 4: Loss Estimates**

The loss estimate step relied on detailed information regarding the hazard probability and maps that were completed as part of the hazard profiles. This information was utilized to apply the hazard probabilities and recurrence intervals to the City's assets and inventory (buildings and infrastructure). This step was critical in determining which assets were subject to the greatest potential damages and which hazard event was likely to produce the greatest potential losses.

The HAZUS-MH software package, which implements the FEMA-developed methodology and runs on a GIS platform, was utilized to map and display earthquake hazard data, as well as the results of damage and economic loss estimates for buildings and infrastructure within the City. To estimate potential losses for the remaining hazards, detailed spreadsheets, including the asset inventory and potential hazards, were used to find the monetary impact of each hazard to the City of Cerritos.

In estimating losses, HAZUS-MH and the spreadsheets take into account various impacts of a hazard event such as:

- Physical damage: damage to public buildings, schools, critical facilities, and infrastructure;
- Economic loss: lost jobs, business interruptions, repair and reconstruction costs; and
- Social impacts: impacts to people, including requirements for shelters and medical aid.

The conclusion of this step precipitated a comprehensive loss estimate (vulnerability assessment) for each identified hazard for each specific asset in terms of damages, economic loss, and the associated consequences for the City of Cerritos.

## 3.2 Hazard Identification and Profiling

**§201.6(c)(2)(i):** [The risk assessment shall include a] description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

**§201.6(c)(2)(ii):** [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

**§201.6(c)(2)(iii):** [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

**§201.6(c)(2)(iii):** For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The hazard identification and ranking was obtained from the Hazard Identification Workshop. Each hazard profile includes a summary of the Hazard Identification Workshop identified risk factors and overall rank for each hazard, in addition to the detailed hazard description, historical occurrences, and projected future probability, magnitude, and frequency.

The Hazard Identification Workshop was conducted as a participatory Steering Committee workshop to identify the potential hazards within the City of Cerritos. The Hazard Identification Workshop was facilitated utilizing an interactive spreadsheet program that asks specific questions on potential hazards and then rated them accordingly. These questions guide the team in the correct facilitation and application of the program. Table 3.1 summarizes the Hazard Identification Workshop risk factors, lists the descriptions of each factor, provides the specific descriptor choices for each risk factor and description, and summarizes the risk ranking associated with each hazard:

**Table 3.1: Risk Factors for Hazard Identification**

Risk Factor	Description	Descriptors	Value
Probability/Frequency	Prediction of how often a hazard will occur in the future	Infeasible event - not applicable due to geographic location characteristics Rare event - occurs less than once every 50 years Infrequent event - occurs between once every 8 years and once every 50 years (inclusive) Regular event - occurs between once a year and once every 7 years Frequent event - occurs more than once a year	0 1 2 3 4
Consequence/Severity	Physical Damage - structures and lifelines Economic impact – loss of function for power, water, sanitation, roads, etc.	No damage Minor/slight damage to buildings and structures, no loss of lifelines Moderate building damage, minor loss of lifelines (less than 12 hours) Moderate building damage, lifeline loss (less than 24 hours) Extensive building damage, widespread loss of lifelines (water, gas, electricity, sanitation, roads), loss of life	1 2 3 4 5
Vulnerability	Impact Area - area impacted by a hazard event Secondary impacts - Capability of triggering additional hazards Onset - Period of time between initial recognition of an approaching hazard and when the hazard begins to impact the community	No physical damage, no secondary impacts Localized damage area Localized damage area, minor secondary impacts, delayed hazard onset Moderate damage area, moderate secondary impacts, moderate warning time Widespread damage area, significant secondary impacts, no warning time	1 2 3 4 5



Each profile also includes a ranking of the hazard (ranging from low hazard to high hazard). Table 3.2 illustrates the matrix for how each hazard was ranked according to all of the previously mentioned factors. Table 3.3 provides the value determinations for each ranking. The Steering Committee determined this initial profile ranking based on all of the hazard identification, profile research, group discussion, and evaluation of all of the data.

**Table 3.2 Risk Ranking Matrix**

Probability/Frequency Description	Risk Ranking Matrix																													
	Probability/Frequency Value					Consequence/Severity					Probability/Frequency Value					Consequence/Severity					Probability/Frequency Value					Consequence/Severity				
<b>Rare Event: Occurs less than once every 50 years</b>	Vulnerability					1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10
	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15
	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20
5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	
<b>Infrequent Event: Occurs between once every 8 years and once every 50 years (inclusive)</b>	Vulnerability					1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10
	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15
	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20
5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	
<b>Regular Event: Occurs between once a year and once every 7 years</b>	Vulnerability					1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10
	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15
	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20
5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	
<b>Frequent Event: Occurs more than once a year</b>	Vulnerability					1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10	2	4	6	8	10
	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15	3	6	9	12	15
	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20	4	8	12	16	20
5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	5	10	15	20	25	

**Table 3.3: Risk Rank Categorization**

<b>High Hazard</b>	50 to 100
<b>Moderately High Hazard</b>	25 to 49
<b>Moderate Hazard</b>	15 to 24
<b>Moderately Low Hazard</b>	5 to 14
<b>Low Hazard</b>	1 to 4

**3.2.1 Hazard Profiling**

This section presents additional information regarding the hazards of concern (detailed below) as hazard profiles. Hazard profiles are designed to assist communities in evaluating and comparing the hazards that can impact their community by comparing a number of hazard factors. Each type of hazard has unique characteristics and the impact associated with a specific hazard can vary depending on the magnitude and location of each event (a hazard event is a specific, uninterrupted occurrence of a particular type of hazard). Furthermore, the probability of occurrence of a hazard in a given location impacts the priority assigned to that hazard. Finally, each hazard will impact different communities in different ways, based on geography, local development, population distribution, age of buildings, and mitigation measures already implemented.

**Additional Hazard Scenarios**

It should be noted the 2004 Natural Hazards Mitigation Plan focused only on a few natural hazards, namely earthquake, flood, and windstorm. During this plan revision, the Steering Committee determined it would be appropriate to include additional natural and man-made hazards to make the Plan more robust. The Steering Committee took ideas from the City of Paramount and City of Norwalk's Hazard Mitigation Plan as well as the State and County Plans in order to brainstorm what additional hazards should be included in the new Plan revision. While the priorities of the original hazards didn't change overall, new scenarios were included in between as part of the hazard ranking process. Table 3.4 provides the hazard ranking summary for the City of Cerritos including the additional natural and man-made scenarios.

Table 3.4: Hazard Ranking Summary

Hazard Rank	Score
<b>High</b>	
Earthquake	50
<b>Moderately High</b>	
<b>Moderate</b>	
Urban Fire	18
Transportation Accident	16
<b>Moderately Low</b>	
Flood/ Dam Failure	12
Pipeline Failure/ Hazardous Materials Release	12
Drought	12
<b>Low</b>	
Terrorism	4
Windstorm	4

### 3.3 Earthquake Hazard Profile

#### Earthquake Risk Assessment Summary

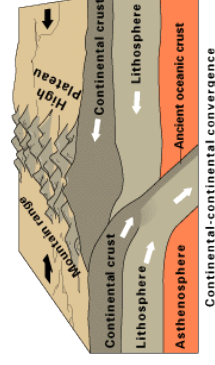
**Risk Rank: High**

<b>Probability/Frequency:</b>	Infrequent event - occurs between once every 8 years and once every 50 years (inclusive)
<b>Consequence/Severity:</b>	Extensive building damage, widespread loss of lifelines (water, gas, electricity, sanitation, roads), loss of life
<b>Vulnerability:</b>	Widespread damage area, significant secondary impacts, no warning time
<b>Hazard Risk Rank</b>	50



#### 3.3.1 Earthquake Hazard Information and Background

Plate tectonics is a starting point for understanding the forces within the Earth that cause earthquakes. Plates are thick slabs of rock that make up the outermost 100 kilometers of the Earth. The term "tectonics" describes the deformation of the Earth's crust, the forces producing such deformation, and the geologic and structural features that result. The constant motion of the plates causes stress in the brittle upper crust of the Earth. These tectonic stresses build as the rocks are gradually deformed. The rock deformation, or strain, is stored in the rocks as elastic strain energy. When the strength of the rock is exceeded, ruptures occur along a fault. The rocks on





**Table 3.5: Modified Mercalli Intensity Scale**

Mercalli Intensity	Description	Richter Scale Magnitude
I	Detected only by a seismograph	
II	Noticed by sensitive people	0.1 to 3.4
III	Like the vibrations due to a passing truck	3.5 to 4.2
IV	Felt by people while walking; rocking of loose objects, including standing vehicles	4.3 to 4.8
V	Felt generally; most sleepers are awakened and bells ring	
VI	Trees sway and all suspended objects swing; damage by over-turning and falling of loose objects	4.9 to 5.4
VII	General alarm; walls crack; plaster falls	
VIII	Car drivers seriously disturbed; masonry fissured; chimneys fall; poorly constructed buildings damaged	5.5 to 6.1
IX	Some houses collapse where ground begins to crack, and pipes break	6.2 to 6.9
X	Ground cracks badly; many buildings destroyed and railway lines bent; landslides on steep slopes	7.0 to 7.3
XI	Few buildings remain standing; bridges destroyed; all services (railway, pipes, and cables) out of action; great landslides and floods	7.4 to 8.1
XII	Total Destruction; objects thrown into air; ground rises and falls in waves	8.1 +

**Amplification of Seismic Shaking**

Although seismic waves radiate from their source like ripples on a pond, the radiation is not uniform due to the complex nature of an earthquake rupture, the different paths the waves follow through the earth, and the different rock and soil layers near the earth's surface. Large earthquakes begin to rupture at their hypocenter deep in the earth and the fault ruptures outward from that point. Because the speed of an earthquake rupture on a

opposite sides of the fault slide past each other as they spring back into a relaxed position. The strain energy is released partly as heat and partly as elastic waves called seismic waves. The passage of these seismic waves produces the ground shaking in earthquakes.

Faults are more likely to produce future earthquakes if they have rapid rates of movement, have had recent earthquakes along them, experience greater total displacements, and are aligned so that movement can relieve the accumulating tectonic stresses. Geologists classify faults by their relative hazards. "Active" faults, which represent the highest hazard, are those that have ruptured to the ground surface during the Holocene period (about the last 11,000 years). In contrast, "potentially active" faults are those that displaced layers of rock from the Quaternary period (the last 1,800,000 years). Determining if a fault is "active" or "potentially active" depends on geologic evidence, which may not be available for every fault.

**Shaking**

The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. An earthquake's magnitude is expressed in whole numbers and decimals (e.g., 6.8). Seismologists have developed several magnitude scales. One of the first was the Richter scale, developed in 1932 by Dr. Charles F. Richter of the California Institute of Technology. The most commonly used scale today is the Moment Magnitude (Mw) Scale. Moment magnitude is related to the total area of the fault that ruptured and the amount of offset (displacement) across the fault. It is a more uniform measure of the energy released during an earthquake.

The other commonly used measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface. In general, it decreases with distance from the source of an earthquake, but it may be increased or decreased by a number of factors.

**The Modified Mercalli Intensity Scale and Corresponding Richter Scale Magnitudes**

Shaking intensity is often described using the Modified Mercalli Intensity Scale which rates an earthquake's effects based on human observation. While an earthquake has only one magnitude, it may have many intensity values which will generally decrease with distance from the epicenter. Table 3.5 lists the Mercalli Scale's various intensity levels and corresponding Richter scale magnitudes.

fault is similar to the speed of seismic waves, waves closer to the epicenter can be compounded by waves from farther along the rupture, creating a pulse of very strong seismic waves that moves along the fault in the direction of the fault rupture. Seismic waves may also be modified as they travel through the earth's crust.

As seismic waves approach the ground surface, they commonly enter areas of loose soils where the waves travel more slowly. As the waves slow down, their amplitude increases, resulting in larger waves with frequencies that are more likely to damage structures. Waves can also be trapped within soft sediments between the ground surface and deep, hard basement rocks, their destructive energy multiplying as they bounce back and forth, producing much greater shaking at the ground surface.

**Ground Failure**

Fissuring, settlement, and permanent horizontal and vertical shifting of the ground often accompanies large earthquakes. Although not as pervasive or as costly as the shaking itself, these ground failures can significantly increase damage and, under certain circumstances, can be the dominant cause of damage. The following is a list of different ground failure scenarios.

*Fault Rupture*

The sudden sliding of one part of the earth's crust past another releases the vast store of elastic energy in the rocks as an earthquake. The resulting fracture is known as a fault, while the sliding movement of earth on either side of a fault is called fault rupture. Fault rupture begins below the ground surface at the earthquake hypocenter, typically between three and ten miles below the ground surface in California. If an earthquake is large enough, the fault rupture will actually travel all the way to the ground surface, severely damaging structures built across its path.

*Liquefaction*

In addition to the primary fault rupture that occurs right along a fault during an earthquake, the ground many miles away can also fail during the intense shaking. One common type of failure occurs when soft, water-saturated soil settles, causing the water to eject sediment particles as it works its way to the ground surface. This phenomenon, known as liquefaction, turns the soil into a fluid, causing it to lose the ability to support buildings and other structures. Areas susceptible to liquefaction include places where sandy sediments have been deposited by rivers along their course or by wave action along beaches.

*Landslides*

Landslides are the result of the down-slope movement of unstable hillside materials under the influence of weathering and gravity over time. Strength of rock and soil, steepness of slope, and weight of the hillside material all play an important role in the stability of hillside areas. Weathering and absorption of water can weaken slopes, while the added weight of saturated materials or overlying construction can increase the chances of slope failure. Sudden failure can be triggered by heavy rainfall, excavation of weak slopes, and earthquake shaking, among other factors.

**3.3.2 Earthquake History**

To indicate the potential for an earthquake event, Table 3.6 lists significant recorded earthquakes in Southern California and the associated magnitudes (excerpted from the Southern California Earthquake Data Center):

**Table 3.6 Southern California Historical Earthquakes**

Magnitude	Year	Earthquake Name
Under Magnitude 4.5		
Magnitude 4.5 - 5.4	1796	LA Basin Earthquake
Magnitude 5.5 - 6.4	1800	San Diego Earthquake
Magnitude 6.5 to 7.4	1812	Wrightwood (or San Juan Capistrano) Earthquake
Magnitude > 7.5	1812	Santa Barbara Earthquake
	1852	Volcano Lake Earthquake
	1855	Los Angeles Region Earthquake
	1857	Fort Tejon Earthquake
	1858	San Bernardino Earthquake
	1862	San Diego Earthquake
	1872	Owens Valley Earthquake
	1881	Parkfield Earthquake
	1883	Santa Barbara Channel Earthquake
	1890	San Jacinto or Elinore Fault Region Earthquake

Under Magnitude 4.5		Magnitude 4.5 - 5.4		Magnitude 5.5 - 6.4	
Magnitude 6.5 to 7.4		Magnitude > 7.5			
Magnitude	Year	Earthquake Name			
Magnitude 6.5 to 7.4	1892	San Jacinto or Elsinore Fault Region Earthquake			
Magnitude 6.5 to 7.4	1892	Laguna Salada Earthquake			
Magnitude > 7.5	1892	Imperial Valley Earthquake			
Magnitude 5.5 - 6.4	1899	Cajon Pass Earthquake			
Magnitude 6.5 to 7.4	1899	San Jacinto Earthquake			
Magnitude 5.5 - 6.4	1901	Parkfield Earthquake			
Magnitude 5.5 - 6.4	1906	Imperial Valley Earthquake			
Magnitude 5.5 - 6.4	1908	Death Valley Region Earthquake			
Magnitude 5.5 - 6.4	1910	Elsinore Earthquake			
Magnitude 5.5 - 6.4	1915	Imperial Valley Earthquake			
Magnitude 5.5 - 6.4	1916	South of Death Valley Earthquake			
Magnitude 6.5 to 7.4	1918	San Jacinto Earthquake			
Magnitude 5.5 - 6.4	1922	Parkfield Earthquake			
Magnitude 5.5 - 6.4	1923	North San Jacinto Fault Earthquake			
Magnitude 5.5 - 6.4	1925	Santa Barbara Earthquake			
Magnitude 6.5 to 7.4	1927	Lompoc Earthquake			
Magnitude 5.5 - 6.4	1933	Long Beach Earthquake			
Magnitude 5.5 - 6.4	1934	Parkfield Earthquake			
Magnitude 5.5 - 6.4	1937	San Jacinto Fault ("Terwilliger Valley") Earthquake			
Magnitude 6.5 to 7.4	1940	Imperial Valley Earthquake			
Magnitude 5.5 - 6.4	1941	Santa Barbara Earthquake			
Magnitude 4.5 - 5.4	1941	Torrance-Gardena Earthquakes			
Magnitude 6.5 to 7.4	1942	Fish Creek Mountains Earthquake			
Magnitude 5.5 - 6.4	1946	Walker Pass Earthquake			
Magnitude 6.5 to 7.4	1947	Manix Earthquake			
Magnitude 5.5 - 6.4	1948	Desert Hot Springs Earthquake			

Under Magnitude 4.5		Magnitude 4.5 - 5.4		Magnitude 5.5 - 6.4	
Magnitude 6.5 to 7.4		Magnitude > 7.5			
Magnitude	Year	Earthquake Name			
Magnitude > 7.5	1952	Kern County Earthquake			
Magnitude 5.5 - 6.4	1952	Bakersfield Earthquake			
Magnitude 5.5 - 6.4	1954	San Jacinto Fault Earthquake			
Under magnitude 4.5	1966	Imperial Fault Earthquake			
Magnitude 5.5 - 6.4	1966	Parkfield Earthquake			
Magnitude 6.5 to 7.4	1968	Borrego Mountain Earthquake			
Magnitude 4.5 - 5.4	1970	Lytle Creek Earthquake			
Magnitude 6.5 to 7.4	1971	San Fernando (Sylmar) Earthquake			
Magnitude 4.5 - 5.4	1973	Point Mugu Earthquake			
Magnitude 4.5 - 5.4	1975	Galway Lake Earthquake			
Magnitude 4.5 - 5.4	1978	Santa Barbara Earthquake			
Magnitude 4.5 - 5.4	1979	Malibu Earthquake			
Magnitude 5.5 - 6.4	1979	Imperial Valley Earthquake			
Magnitude 5.5 - 6.4	1980	White Wash Earthquake			
Magnitude 4.5 - 5.4	1982	"Anza Gap" Earthquake			
Magnitude 5.5 - 6.4	1986	North Palm Springs Earthquake			
Magnitude 4.5 - 5.4	1986	Oceanside Earthquake			
Magnitude 6.5 to 7.4	1987	Elmore Ranch/Superstition Hills Earthquakes			
Magnitude 5.5 - 6.4	1987	Whittier Narrows Earthquake			
Magnitude 4.5 - 5.4	1988	Tejon Ranch Earthquake			
Magnitude 4.5 - 5.4	1988	Upland Earthquake			
Magnitude 4.5 - 5.4	1988	Pasadena Earthquake			
Magnitude 4.5 - 5.4	1989	Malibu Earthquake			
Magnitude 4.5 - 5.4	1989	Newport Beach Earthquake			
Magnitude 4.5 - 5.4	1989	Montebello Earthquake			
Magnitude 4.5 - 5.4	1990	Upland Earthquake			

<span style="color: blue;">■</span> Under Magnitude 4.5 <span style="color: green;">■</span> Magnitude 4.5 - 5.4 <span style="color: orange;">■</span> Magnitude 5.5 - 6.4 <span style="color: red;">■</span> Magnitude 6.5 to 7.4 <span style="color: red;">■</span> Magnitude > 7.5		
Magnitude	Year	Earthquake Name
<span style="color: yellow;">■</span> Magnitude 5.5 - 6.4	1991	Sierra Madre Earthquake
<span style="color: yellow;">■</span> Magnitude 5.5 - 6.4	1992	Joshua Tree Earthquake
<span style="color: orange;">■</span> Magnitude 6.5 to 7.4	1992	Landers Earthquake
<span style="color: yellow;">■</span> Magnitude 5.5 - 6.4	1992	Big Bear Earthquake
<span style="color: yellow;">■</span> Magnitude 5.5 - 6.4	1992	Mojave (Garlock) Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	1993	Wheeler Ridge Earthquake
<span style="color: orange;">■</span> Magnitude 6.5 to 7.4	1994	Northridge Earthquake
<span style="color: yellow;">■</span> Magnitude 5.5 - 6.4	1995	Ridgecrest Earthquakes
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	1996	Coso Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	1997	Calico Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	1998	Coso Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	1998	Crafton Hills (Redlands) Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	1998	San Bernardino Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	1998	Whiskey Springs (Big Bear City) Earthquake
<span style="color: orange;">■</span> Magnitude 6.5 to 7.4	1999	Hector Mine Earthquake
<span style="color: blue;">■</span> Under magnitude 4.5	2001	West Hollywood Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2001	Anza Earthquake
<span style="color: yellow;">■</span> Magnitude 5.5 - 6.4	2002	Laguna Salada Earthquake
<span style="color: orange;">■</span> Magnitude 6.5 to 7.4	2003	San Simeon Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2005	Mettler Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2008	Chino Hills Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2009	Inglewood Earthquake
<span style="color: yellow;">■</span> Magnitude 5.5 - 6.4	2009	Baja California Earthquake
<span style="color: orange;">■</span> Magnitude 6.5 to 7.4	2010	Sierra El Mayor Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2011	Calexico Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2012	Brawley Earthquake

<span style="color: blue;">■</span> Under Magnitude 4.5 <span style="color: green;">■</span> Magnitude 4.5 - 5.4 <span style="color: yellow;">■</span> Magnitude 5.5 - 6.4 <span style="color: orange;">■</span> Magnitude 6.5 to 7.4 <span style="color: red;">■</span> Magnitude > 7.5		
Magnitude	Year	Earthquake Name
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2012	Westmoreland Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2013	Isla Vista Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2014	Brea Earthquake
<span style="color: green;">■</span> Magnitude 4.5 - 5.4	2015	Stovepipe Wells Earthquake

**Southern California Historic Earthquakes**

One of the best indicators of earthquake potential is learning the earthquake history of the area. The following is a discussion on large earthquakes that affected the City of Cerritos and Southern California in general, which were also included in Table 3.6.

*1857 Fort Tejon Earthquake*

On January 9, 1857, one of the greatest recorded earthquakes in the United States occurred. The Fort Tejon earthquake measured 7.9 on the Richter scale and left a surface rupture score of over 350 kilometers along the San Andreas Fault. Strong shaking was said to have lasted for over a minute, and water from the Los Angeles River was reportedly thrown out of its bed. Damage was not nearly as serious as it would be today since Southern California was sparsely populated at the time. Were the Fort Tejon earthquake to occur today, the damage would easily run into billions of dollars, and the loss of life would be substantial. The present-day communities of Wrightwood and Palmdale lie upon or near the 1857 rupture area.

*1933 Long Beach Earthquake*

In 1933, the Long Beach 6.4 magnitude earthquake struck the Los Angeles Basin on March 10. The earthquake occurred on the Newport-Inglewood Fault, causing serious damage in Long Beach and other communities. The earthquake resulted in 120 deaths and over \$50 million in property damage. Most of the damaged buildings were of unreinforced masonry construction. The following images of the damage were taken from the Southern California Earthquake Data Center website.

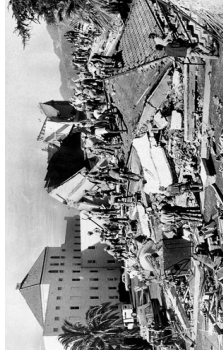


Damage resulting from the 1933 Long Beach Earthquake

**1971 Sylmar Earthquake (San Fernando)**



On February 9, 1971, the Los Angeles basin shook for over one minute. There were 65 deaths and a financial cost of over \$500 million. The earthquake resulted in a crack in the Van Norman Dam where an 80-square mile area had to be evacuated due to fear the dam would break. Numerous people were trapped in buildings and fires were started from natural gas line breaks. Two hospitals collapsed killing nine people. The Veterans Administration Hospital had seven deaths (photos left) and the Olive View Hospital had two deaths. Following this earthquake the Alquist Hospital Seismic Act was passed establishing structural and non-structure classifications for hospital building seismic –safety levels.



**1987 Whittier Narrows Earthquake**

In October 1987, the Whittier Narrows Earthquake struck the Los Angeles area with a 5.9 magnitude earthquake. This earthquake occurred on a fault system not previously known for seismic activity. There were 8 deaths and 200 injuries. The earthquake damage was estimated at \$358 million.



**1994 Northridge Earthquake**



On January 17, 1994, the Northridge Earthquake struck at a 6.7 magnitude in the Los Angeles area. There were 57 deaths and over 1,500 people were injured. The earthquake caused billions of dollars in damage and disrupted the lives of thousands of residents, schools and businesses in Southern California.

For days afterward, thousands of homes and businesses were without electricity; tens of thousands had no gas; and nearly 50,000 had little or no water. Approximately 15,000 structures were moderately to severely damaged, which left thousands of people temporarily homeless. Over 66,500 buildings were inspected, and nearly 4,000 were severely damaged and over 11,000 were moderately damaged. Several collapsed bridges and overpasses created commuter havoc on the freeway system. Ground shaking caused extensive damage, but the earthquake triggered liquefaction and dozens of fires also caused additional severe damage.





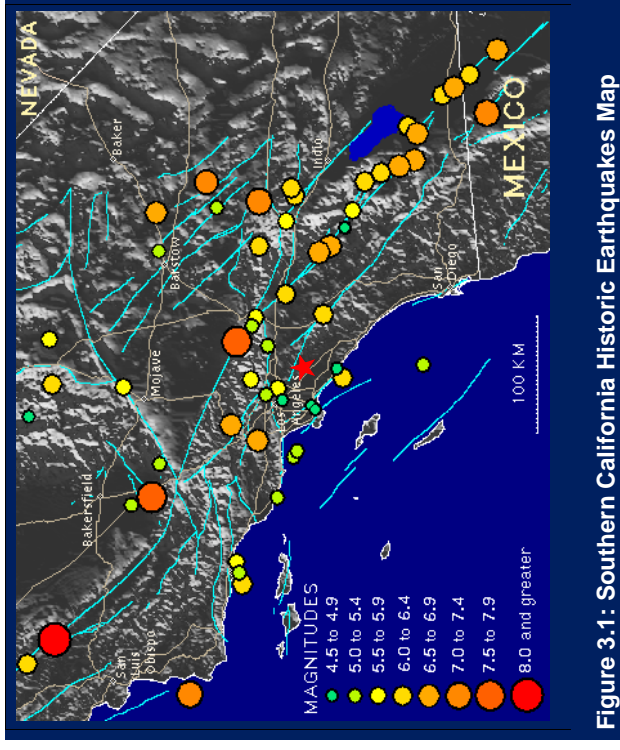
However, the earthquake occurred early in the morning on a holiday. This circumstance considerably reduced the potential effects. Many collapsed buildings were unoccupied, and most businesses were not yet open. The direct and indirect economic losses ran into the tens of billions.

When comparing the greatest recorded earthquakes in American history and the level of population and development today against that which existed at the time of the event, the scale of potential damage is staggering.

*Cost of Past Disasters in Today's Dollars:*

- 1811-12 New Madrid Earthquake, series of 4 Earthquakes over 7 weeks; Estimated insured damage, today's dollars - \$88 Billion
- 1906 San Francisco Earthquake M8.3 Significant fire following damage; Estimated insured damage, today's dollars - \$36 Billion

Even if the epicenter of a major earthquake is not located directly within the City of Cerritos, the aftershocks associated with that earthquake can cause significant damage. The hazards associated with aftershock earthquakes are the same as mainshock earthquakes and may cause significant damage and disruption. The primary difference between mainshock and aftershock earthquakes is aftershock earthquakes are categorized by the following two guidelines. First, it must occur within one rupture length of the mainshock rupture surface, or alternatively, within an "aftershock zone" based upon early aftershock activity and defined by seismologists. Second, it must occur within that designated area before the seismicity rate in that area returns to its "background", meaning pre-mainshock, level. Figure 3.1 from the Southern California Earthquake Data Center details the locations and magnitudes for historic Southern California earthquakes.



**Figure 3.1: Southern California Historic Earthquakes Map**

### 3.3.3 Earthquake Probability, Frequency, and Magnitude

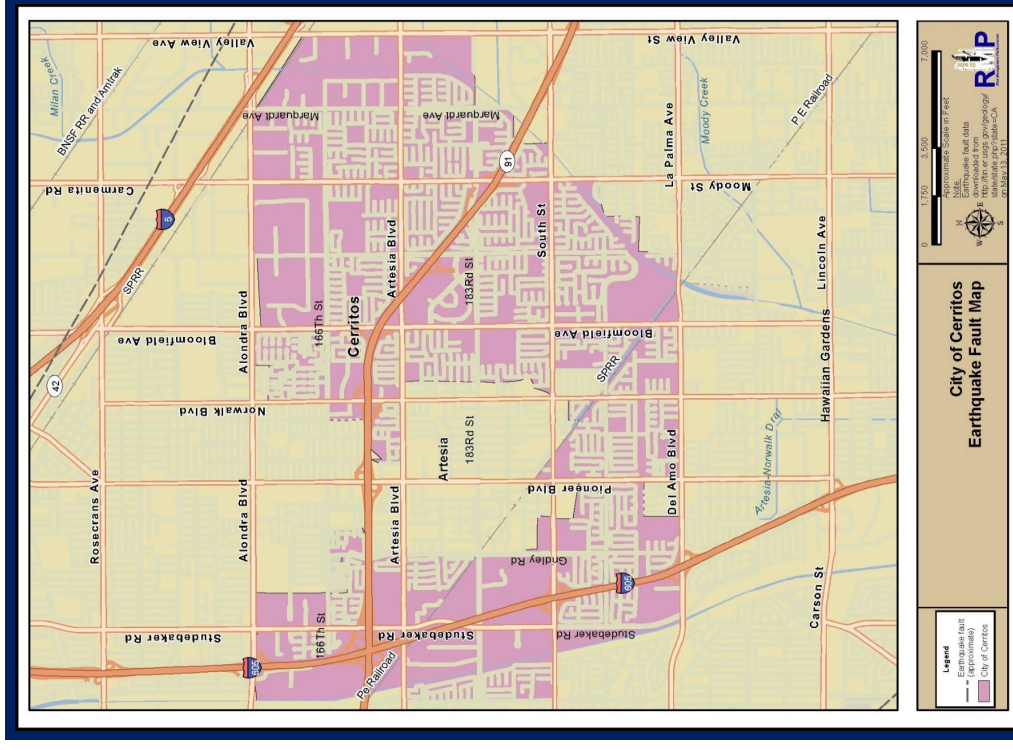
The Steering Committee ranked earthquake as the greatest threat to the City of Cerritos. The City is located in a seismic fault zone near the Newport-Inglewood Fault according to a Preliminary Alquist-Priolo Earthquake Fault Zone map provided by the California Department of Conservation website and is located in a moderately high seismic risk zone.

#### Fault Zones

There are many faults and fault zones throughout Southern California. After reviewing maps of the United States, California and specifically the Southern California area, the research showed potential earthquake areas that could impact the City of Cerritos. Faults that were reviewed include: the San Andreas, Newport-Inglewood, Rose Canyon, Cristianos, San Joaquin Hills, Rose Canyon, Coronado Bank, Whittier-Elsinore, Palos Verdes, San Diego Trough, and San Clemente Faults. These faults, all considered active, are capable of producing earthquakes in the 4.5 – 8+ magnitude range. This report focused on the four faults that could most seriously impact the area.

1. San Andreas Fault
2. Newport-Inglewood Fault
3. Whittier-Fault
4. Palos Verdes Fault

A major earthquake along any of these four faults could result in substantial casualties and damage resulting from collapsed buildings, damaged roads and bridges, fires, flooding, and other threats to life and property. There may still be unmapped earthquake faults throughout Southern California that could also affect the City of Cerritos. Figures 3.1 and 3.2 provides the local earthquake faults in the City of Cerritos and Southern California areas. In addition, Tables 3.7 through 3.11 give fault specific information from the Southern California Earthquake Data Center for local faults that could affect the City of Cerritos.



**Figure 3.2: City of Cerritos Earthquake Fault Map**

**The San Andreas Fault**

**Table 3.7: San Andreas Fault Information**

<b>Type of fault:</b>	Right-lateral strike-slip
<b>Length:</b>	1200 kilometers (km)
<b>Nearby Communities:</b>	Parkfield, Frazier Park, Palmdale, Wrightwood, San Bernardino, Banning, Indio
<b>Last Major Rupture:</b>	January 9, 1857 (Mojave segment); April 18, 1906 (Northern segment)
<b>Slip rate:</b>	20-35 millimeters/year (mm/yr)
<b>Interval Between Major Ruptures:</b>	Average of about 140 years on the Mojave segment; recurrence interval varies greatly from under 20 years (at Parkfield only) to over 300 years
<b>Probable Magnitudes:</b>	6.8 to 8.0
<b>Distance and Direction from City:</b>	Approximately 70 miles east

This fault marks the boundary between the North American and Pacific tectonic plates and is capable of producing earthquakes in the magnitude 8+ range. It has been scientifically determined through a carbon dating process that a major earthquake on this fault has occurred approximately every 145 years plus or minus 20 years. The last major earthquake on the Mojave segment of the fault occurred in 1857 (158 years ago as of 2015). The San Andreas Fault is considered one of the most active faults in the world today, and a major earthquake up to an 8.3 magnitude is expected to occur again within the next 20 years. The Fault traverses the Southern California region and is located approximately 70 miles east of the City. The ground shaking of an 8.3 magnitude earthquake on the Southern San Andreas Fault would result in serious damage in Southern California, including the City of Cerritos.

**The Newport-Inglewood Fault**

**Table 3.8: Newport-Inglewood Fault Information**

<b>Type of fault:</b>	Right-lateral, local reverse slip associated with fault steps
<b>Length:</b>	75 km

<b>Nearby Communities:</b>	Culver City, Inglewood, Gardena, Compton, Signal Hill, Long Beach, Seal Beach, Huntington Beach, Newport Beach, Costa Mesa
<b>Last Major Rupture</b>	March 10, 1933, $M_w$ 6.4
<b>Slip rate:</b>	0.6 mm/yr
<b>Interval Between Major Ruptures:</b>	Unknown
<b>Probable Magnitudes:</b>	6.0-7.4
<b>Distance and Direction from City:</b>	Approximately 8 miles southwest

The Newport-Inglewood Fault is considered the second most active fault in California. It runs from the City of Inglewood through the City of Huntington Beach and out into the Pacific Ocean in the Newport Beach area. At its closest point, the fault lies about 8 miles southwest of the City. This fault is capable of producing earthquakes in the range of 6.3 to 7.5 magnitude. The 6.5 magnitude, 1933 Long Beach earthquake, occurred on the Newport-Inglewood fault causing 120 deaths and severe damage. Unreinforced masonry buildings collapsed leaving people trapped beneath the rubble.

Earthquakes are to be considered a major threat to the City. When scientists refer to the San Andreas Fault, they often call it "The Big One." In 1990, the Los Angeles Times newspaper did a series of articles on the Newport-Inglewood Fault and described it as "The Bigger One." Both faults would cause considerable damage; however, a 7.5 magnitude Newport-Inglewood earthquake could be more severe to the City of Cerritos than an 8.3 on the San Andreas due to the fault's proximity to the City. The cost estimates of damage are much greater for the Newport-Inglewood worst-case scenario than the San Andreas worst-case scenario.

**Whittier-Elsinore Fault**

**Table 3.9: Whittier-Fault Information**

<b>Type of fault:</b>	Right-lateral strike-slip with some reverse slip
<b>Length:</b>	40 km
<b>Nearby Communities:</b>	Yorba Linda, Hacienda Heights, Whittier



<b>Most Recent Surface Rupture</b>	Holocene
<b>Slip rate:</b>	Between 2.5 and 3.0 mm/yr
<b>Interval Between Major Ruptures:</b>	Unknown
<b>Probable Magnitudes:</b>	6.0-7.2
<b>Distance and Direction from City:</b>	Approximately 10 miles northeast

The Whittier Fault runs along the Chino Hills range between Chino Hills and Whittier. Earthquakes with surface rupture on the Whittier Fault are estimated to have return intervals for a M6.5 and M7.5 of 100 and 1,200 years, respectively. An unpublished paleoseismic investigation suggests that the Whittier segment has not moved for 2,000 years. Since the average interval between major characteristic (extreme) events on the Whittier segment is estimated to be on the order of 1,200 years, the fault is considered long overdue. The Whittier fault joins the Chino Fault near Prado Dam where they merge into the Elsinore Fault.

**Table 3.10: Elsinore Fault Information**

<b>Type of fault:</b>	Right-lateral strike-slip
<b>Length:</b>	180 km
<b>Nearby Communities:</b>	Temecula, Lake Elsinore, Julian
<b>Last Major Rupture</b>	May 15, 1910; Magnitude 6.0
<b>Slip rate:</b>	Roughly 4.0 mm/yr
<b>Interval Between Major Ruptures:</b>	Roughly 250 years
<b>Probable Magnitudes:</b>	6.5-7.5
<b>Distance and Direction from City:</b>	Approximately 10 miles northeast

The Elsinore Fault trends along the eastern base of the Santa Ana Mountains and is one of the largest in Southern California, and in historical times, has been one of the quietest. The main trace of the Elsinore Fault has only seen one historical event greater than magnitude 5.2, which was the M6.0 Elsinore Earthquake of 1910.

At the northern end, the fault splays into several faults, creating the Whittier-Elsinore Fault Zone about 10 miles northeast of the City. A "characteristic" Magnitude M6.9 on the northwest segment of the Whittier-Elsinore Fault Zone has been estimated to have a return period of 450 years. This "characteristic" earthquake would be expected to cause ground movement on the order of 3 to 6 feet, with peak horizontal ground accelerations up to one multiplier of gravity (1 g). Most structures built prior to 1997 were designed to withstand peak ground accelerations, described in further detail below, of up to 0.4 g, so a "characteristic" earthquake along this fault zone would have devastating consequences.

#### Palos Verdes Fault

**Table 3.11: Palos Verdes Fault Information**

<b>Type of fault:</b>	Right-reverse
<b>Length:</b>	Roughly 80 km
<b>Nearby Communities:</b>	San Pedro, Palos Verdes Estates, Torrance, Redondo Beach
<b>Most recent surface rupture:</b>	Holocene offshore; Late Quaternary onshore
<b>Slip rate:</b>	Between 0.1 and 3.0 mm/yr
<b>Interval between major ruptures:</b>	Unknown
<b>Probable magnitudes:</b>	6.0 – 7.0 (or greater); fault geometries may allow only partial rupture at any one time.
<b>Distance and Direction from City:</b>	

The Palos Verdes Hills Fault is capable of a 6.0 to 7.0 magnitude earthquake. It has two main branches and continues southward as the Palos Verdes-Coronado Bank Fault Zone.

This fault is located off the coast of Redondo Beach and Torrance, and continues southward through the Palos Verdes peninsula and offshore, outside the San Pedro Bay. The issue of concern is the fault causing shaking and liquefaction within the City of Cerritos.

### Peak Ground Acceleration

Peak Ground Acceleration (PGA) mapping represents peak horizontal acceleration of the ground on firm-rock conditions. The approach of representing peak horizontal ground acceleration on firm-rock is a common and widely used method of showing ground accelerations. The development of probabilistic acceleration maps are a result of three types of basic input parameters:

- 1) Attenuation of ground shaking with distance from the earthquake source;
- 2) Frequency of earthquakes within an area or region, termed recurrence; and
- 3) The character and extent of regions and faults that generate earthquakes.

According to the following Peak Ground Acceleration Map, the City of Cerritos is located in an area that will experience a PGA ranging from 0.50 g to 0.70 g with 10% exceedance in 50 years (0.0021 annual probability).

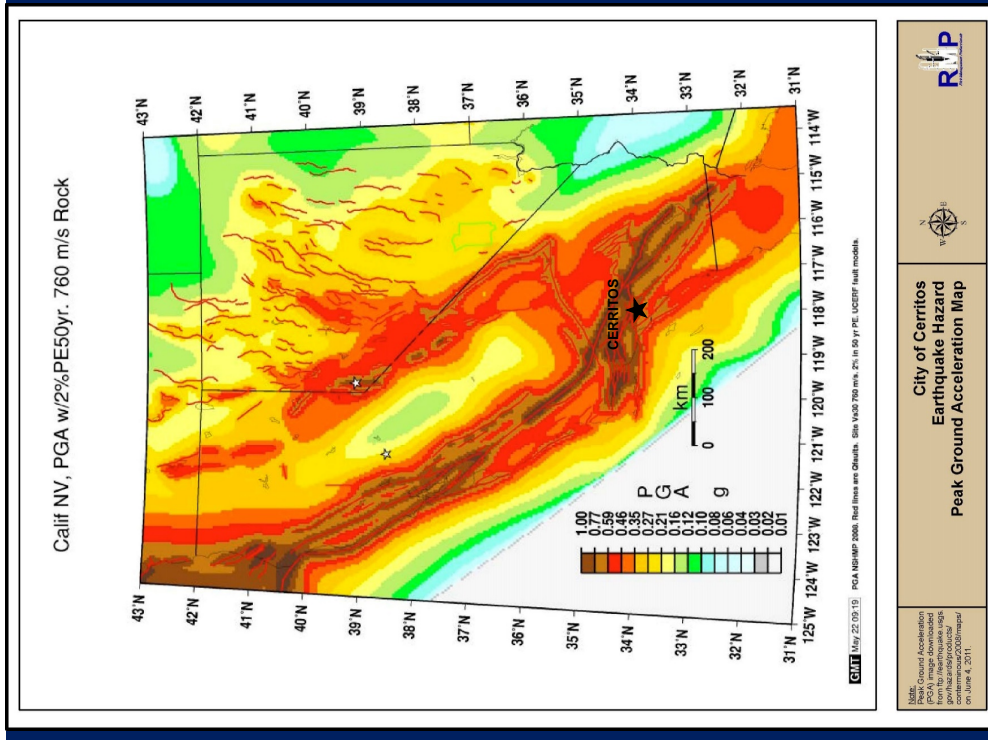


Figure 3.3: City of Cerritos Peak Ground Acceleration Map

According to Table 3.12 below (provided by the United States Geographic Survey), this PGA Value is typically associated with a 6.9 magnitude earthquake. Thus, there is a 0.21% annual possibility of a 6.9 magnitude earthquake affecting the City of Cerritos

**Table 3.12: Mercalli Intensity and Corresponding Peak Group Acceleration**

Mercalli Intensity	Richter Intensity	Acceleration (%g)	Velocity (cm/s)	Perceived Shaking	Potential Damage
I	3.5	< 0.17	< 0.1	Not Felt	None
II-III	4.2 – 4.3	0.17 - 1.4	0.1 - 1.1	Weak	None
IV	4.8	1.40 – 3.9	1.1 - 3.4	Light	None
V	4.9 – 5.4	3.9 - 9.2	3.4 - 8.1	Moderate	Very light
VI	5.5 – 6.0	9.2 - 18	8.1 - 16	Strong	Light
VII	6.1	18 - 34	16 - 31	Very Strong	Moderate
VIII	6.2	34 - 65	31 - 60	Severe	Moderate to Heavy
IX	6.9	65 - 124	60 - 116	Violent	Heavy
X+	> 7.0	> 124	> 116	Extreme	Very Heavy

The City has been impacted by earthquakes numerous times over the years. Typical of many locations in Southern California, seismic building standards have prevented these earthquakes from causing any severe damage within the City. However, as noted above, the potential for a large scale earthquake is possible. Given the frequency, and likelihood, of earthquake occurrences in the area coupled with the possibility for a large scale scenario, the City has ranked earthquakes as the hazard with highest vulnerability for the City.

### 3.4 Urban Fire Hazard Profile

#### Urban Fire Risk Assessment Summary

**Risk Rank: Moderate**

<b>Probability/Frequency:</b>	Infrequent event - occurs between once every 8 years and once every 50 years (inclusive)
<b>Consequence/Severity:</b>	Moderate building damage, minor loss of lifelines (less than 12 hours), lost time injury but no disability
<b>Vulnerability:</b>	Localized damage area, minor secondary impacts, delayed hazard onset
<b>Hazard Risk Rank Score:</b>	18



#### 3.4.1 Hazard Information and Background

Fire is a rapid oxidation process that can lead to uncontrolled burning, exposing and possibly consuming structures. Fires often spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Fires can be human-caused through acts such as arson or can be caused by natural events such as lightning. Fires are typically classified according to the following categories:

- **Urban fires** are primarily those associated with structures and the activities in and around them.
- **Wildland fires** occur in forests or other generally uninhabited areas and are fueled primarily by natural vegetation.



- **Urban Interface fires** occur where development and forest interface, with both vegetation and structures providing fuel, and are sometimes referred to as urban-wildland interface fires.

The following factors contribute significantly to aforementioned fire behavior.

- **Slope/Topography:** As slope increases the rate of fire spread increases. In the northern hemisphere, south facing slopes are also subject to greater solar radiation, making them drier and thereby intensifying fire behavior.
- **Fuel:** Weight and volume are the two methods of classifying fuel, with volume also referred to as fuel loading. Each fuel is assigned a burn index (the estimated amount of potential energy released during a fire), an estimate of the effort required to contain a fire, and an expected flame length.
- **Weather:** Variations in weather conditions have a significant effect on the occurrence and behavior of fires.

Firestorms that occur during extreme weather (e.g., high temperatures, low humidity, and high winds) have high intensity, which makes fire suppression virtually impossible. These events typically burn until the conditions change or the fuel is exhausted. Even small fires can threaten lives and resources and destroy properties. It is also important to note that, in addition to affecting people, fires may severely affect livestock and pets. Such events may require the emergency watering/feeding, shelter, evacuation, and even burying of animals.

#### Fire Secondary Events

The aftermath of a fire can be as disastrous, if not more so, than the fire. A particularly destructive fire burns away plants and trees that prevent erosion. If heavy rains occur after such a fire, landslides, ash flows, and flash floods can occur. This can result in property damage outside the immediate fire area, and can affect the water quality of streams, rivers, and lakes.

#### Fire as a Secondary Event

In addition to typical ignition sources for fires, earthquakes and floods have the potential to rupture buried gas lines, and high winds or accidents could cause overhead electric lines to break, creating ignition sources for fires. Catastrophic earthquakes could cause widespread urban fires, as multiple gas and electrical lines could be broken or disrupted.

### 3.4.2 Urban Fire Hazard History

Los Angeles County is well known as one of the world's great urban centers, but the county is also home to the 655,000-acre Angeles National Forest and a large portion of the Santa Monica Mountains National Recreational Area. Thousands of homes are located in foothill communities near these great natural areas, creating unique challenges for local fire agencies.



The most recent major fire in Los Angeles County started in Valencia, California in June 2013. The Magic Fire was a brushfire that burned 149 square miles. While the City of Cerritos and its surrounding cities are urbanized, it is possible for brush fires to spread and pose a threat to the area.

Table 3.13 provides a selection of recent fires in Los Angeles County and is taken from the California Department of Forestry and Fire Protection historical fire archives.

**Table 3.13: Los Angeles County Historical Fires (2001-2013)**

Fire Name	Date	Description
Topanga Fire	9/28/2005	The Topanga Fire burned 24,175 acres in the Chatsworth area.
Empire Fire	7/22/2006	The Empire Fire burned 1,094 acres on Catalina Island near the airport.
Quail Fire	8/13/2006	The Quail Fire burned 4,864 acres near the northbound Interstate 5 at Quail Lake Road in Gorman.
Cross Fire	8/28/2006	The Cross Fire burned 665 acres near Placerita Canyon Road and Sand Canyon Road in Santa Clarita.
Pines Fire	9/19/2006	The Pines Fire burned 113 acres in the Angeles National Forest near the Angeles Forest Highway and Angeles Crest Highway Junction.
Island Fire	5/10/2007	The Island Fire burned 4,750 acres near Avalon on Catalina Island.
Gorman Fire	5/19/2007	The Gorman Fire burned 2,500 acres at the edge of Los Padres National Forest.
Canyon Fire	7/7/2007	The Canyon Fire burned 815 acres near Agua Dulce Canyon and 14 Freeway.
North Fire	9/2/2007	The North Fire burned 2,200 acres 6 miles southwest of Acton in the Angeles National Forest.

Fire Name	Date	Description
Ranch Fire	10/20/2007	The Ranch Fire burned 58,401 acres near Townsend Peak southwest of Templin Highway and Interstate 5.
Buckweed (Agua Dulce) Fire	10/21/2007	The Buckweed (Agua Dulce) Fire burned 38,000 acres near Mint Canyon Road and Sierra Highway.
Canyon Fire	10/21/2007	The Canyon Fire burned 4,521 acres in the Malibu Canyon south of the Pacific Coast Highway.
Magic Fire	10/22/2007	The Magic Fire burned 2,824 acres near the Magic Mountain Parkway and The Old Road.
Corral Fire	11/24/2007	The Corral Fire burned 4,901 acres near Malibu Creek State Park.
Santa Anita Fire	4/26/2008	The Santa Anita Fire burned 584 acres in the mountains above the cities of Sierra Madre and Arcadia in the Angeles National Forest.
Big Horn Fire	5/13/2008	The Big Horn Fire burned 490 acres north of Mt. Baldy Village near Claremont.
Sesnon Fire	10/13/2008	The Sesnon Fire burned 14,703 acres in the Porter Ranch Community, Twin Lakes and Indian Hills area.
Marek Fire	10/28/2008	The Marek Fire burned 4,824 acres near the West Side Little Tujunga Canyon.
Sayre Fire	11/14/2008	The Sayre Fire burned 11,262 acres near Sylmar.
Osito Fire	7/15/2009	The Osito Fire burned 304 acres north of Castaic in the Angeles National Forest.
Morris Fire	8/25/2009	The Morris Fire burned 2,168 acres by San Gabriel Canyon near Morris Dam.
Station Fire	8/26/2009	The Station Fire burned 160,577 acres over 3 weeks by Highway 2, 1.5 miles north of USFS Angeles Crest Station.
PV Fire	8/27/2009	The PV Fire burned 235 acres near Rancho Palos Verdes.
Crown Fire	7/29/2010	The Crown Fire burned 14,000 acres over 6 days, north of Sierra Highway at Anthony Road, southwest of Palmdale.
Mint Fire	9/17/2011	The Mint Fire burned 634 acres near the Sierra Highway at Mint Canyon Road, north of Agua Dulce.

Fire Name	Date	Description
5 Mile Fire	7/6/2012	The 5 Mile Fire burned 525 acres off the I-5, north of Parker Road near Castaic.
Lake Fire	05/28/2013	The Lake Fire burned 712 acres off the southbound I-5 and Lake Hughes Road.
Magic Fire	6/10/2013	The Magic Fire burned 149 acres around Magic Mtn Parkway in Valencia.
Hunters Fire	6/2/2014	The Hunters Fire burned 677 acres near the southeast shore of Lake McClure.
Gulch Fire	9/10/2014	The Gulch Fire burned 1,375 acres east of Bella Vista.
Black Fire	9/13/2014	The Black Fire burned 403 acres north of Lake Mendocino.
Highway Fire	4/18/2015	The Highway Fire burned 1,049 acres near Prado Basin.
Park Hill Fire	6/20/2015	The Park Hill Fire burned 1,791 acres east of Santa Margarita.
Swedes Fire	7/29/2015	The Swedes Fire burned 400 acres off Swedes Flat Road, 3 miles north of Bangor.

### 3.4.3 Urban Fire Hazard Probability, Frequency, and Magnitude

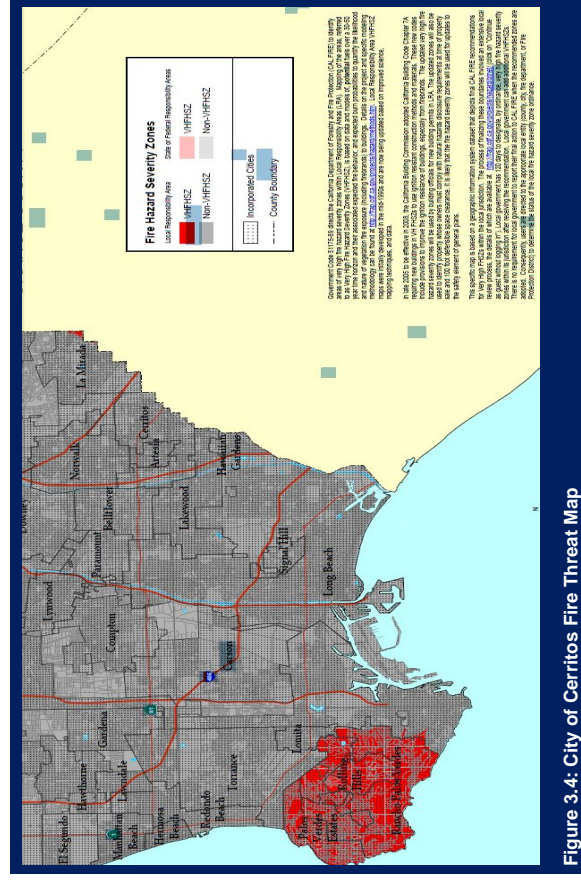
Since the City of Cerritos consists of urban terrain, the expected type of fire is an urban fire. Urban fires often consume buildings with the potential to spread to adjoining buildings; however major urban fires are highly unlikely.

Wildfires are a major environmental hazard that have historically cost California more than \$800 million each year and contribute to "bad air days" throughout the state. Heat and smoke from fires can be more dangerous than the flames. Inhaling the smoke can sear the lungs, and fire also produces poisonous gases that cause disorientation and drowsiness, eventually leading to asphyxiation. As a result, asphyxiation is the leading cause of fire deaths, exceeding burns by a three-to-one ratio.

While the City has never experienced a large scale fire, the Steering Committee included urban fire as an identified hazard after considering the following factors. Currently,



California is experiencing a severe drought. Water conservation is imperative to ensure a reliable water source. As a result, water restrictions for landscaping have left much of the plant life dry and more susceptible to fire. Should drought conditions continue, the City's vulnerability will only increase. During a Steering Committee meeting, the Committee discussed Fire response times and determined they would likely be sufficient to control most fires occurring within the City. Figure 3.5 on the following page illustrates the fire threat to the City of Cerritos. As shown in the figure, the expected fire hazard is low.



City of Cerritos Hazard Mitigation Plan 3-38

## 3.5 Transportation Accident/ Incident Hazard Profile

### Transportation Accident/ Incident Risk Assessment Summary

#### Risk Rank: Moderate

<b>Probability/ Frequency:</b>	Rare event - occurs less than once every 50 years
<b>Consequence/ Severity:</b>	Moderate building damage, lifeline loss (less than 24 hours), severe injury or disability
<b>Vulnerability:</b>	Moderate damage area, moderate secondary impacts, moderate warning time
<b>Hazard Risk Rank Score:</b>	16



#### 3.5.1 Transportation Accident/ Incident Hazard Information and Background

##### Roadway Incident

Freeway accidents occur very frequently in the Los Angeles County region. In the last few years, California has averaged about 3,000 freeway accident related deaths annually. Major local transportation routes include Interstates 5 and 605, and California State Route 91, creating local traffic congestion and increasing the potential for transportation accidents in the City of Cerritos.

##### Railway Incident

In addition to freeway accidents, a number of freight trains travel near the northeast border of the City hauling various types of hazardous materials. A major train derailment that occurs in a heavily populated industrial area could result in significant damage and potential loss of life. Both freeway and rail accidents can be a further hazard if the impacted vehicles

are transporting hazardous materials. As noted in the hazardous material release hazard profile, accidents in these cases can result in hazardous materials releases.

##### Airborne Incident

The City is also located in the flight path to the Los Angeles International Airport (LAX). With a high volume of flights over the City, there is the potential for airborne accidents as was experienced by the City in August 1986 when Aeromexico DC-9 Flight 498 collided with a single-engine Piper Archer 6,500 feet above a residential area. More detailed information about the incident can be found in the following section. Daily air traffic creates the potential for hazard events to occur in the skies over the City.

#### 3.5.2 Transportation Accident/ Incident History

The City of Cerritos is located in close proximity to several busy highways and railways. According to the Federal Highway Administration, California had the most people fatally injured in motor vehicle crashes in 2009. Table 3.20, taken from the National Highway Traffic Safety Administration, presents recent traffic fatalities in California.

Table 3.14: Traffic Fatalities in California

	2007	2008	2009	2010	2011	2012	2013
Rural	1,496	1,324	1,320	1,162	1,190	1,181	1,166
Urban	2,499	2,110	1,770	1,558	1,626	1,676	1,834
<b>Total</b>	<b>3,995</b>	<b>3,434</b>	<b>3,090</b>	<b>2,720</b>	<b>2,816</b>	<b>2,966</b>	<b>3,000</b>

##### Cerritos Air Disaster

On August 31, 1986, Aeromexico DC-9 Flight 498 collided with a single-engine Piper Archer at 6,500 feet above the City at about 11:52 AM. The collision sent the smaller airplane into an empty playground at Cerritos Elementary School while the larger DC-9 crashed into a residential neighborhood at Holmes Avenue and Reva Circle. All 67 of the passengers and crew aboard each of the aircraft, along



with 15 citizens on the ground, died in the aftermath with an additional eight injured. As a result of the accident, the aviation industry changed and now requires anti-collision instruments in jettisoners. In addition, smaller airplanes must now carry Mode C transponders that broadcast altitudes to air traffic controllers. The accident also pushed forward the idea of providing mental health support to victims and first responders which is a concept now practiced at a national level. Still, aircrafts pass over the City daily, which presents the potential for future incidents.

### 3.5.3 Transportation Accidents/ Incident Probability, Frequency, and Magnitude

Due to the high volume of commuter traffic traveling through the streets, freight transportation on the railroads, and air traffic in the skies above the City of Cerritos, there is a high potential for a transportation accident. In the event of a major incident, roadways could be populated by vehicles carrying hazardous chemicals and flammable materials, which could create the potential for fire, hazardous material releases, and other harmful events. As the City has already experienced, the aftermath of an airborne incident could be devastating to the community resulting in extensive property damage and loss of lives.

Figure 3.12 on the following page depicts the transportation routes for the City of Cerritos and the potential areas for freeway-related accidents.

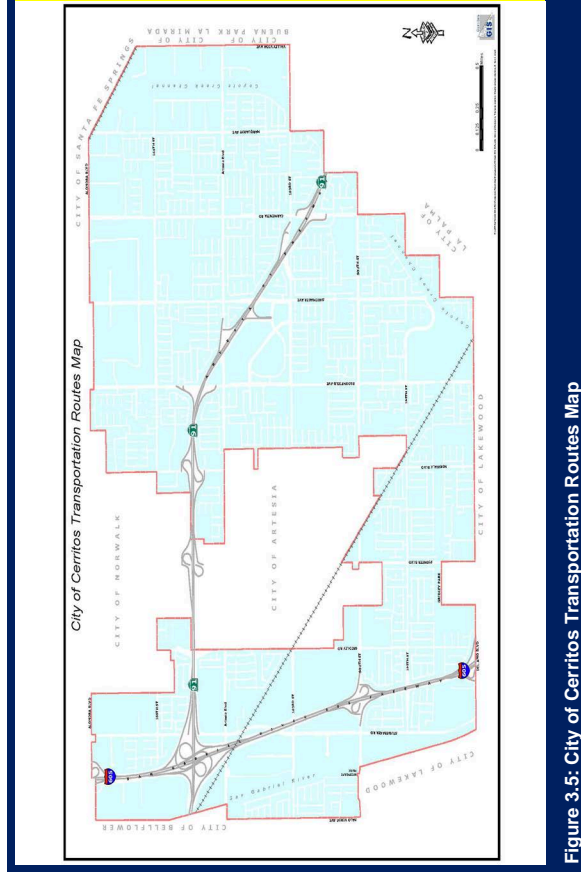


Figure 3.5: City of Cerritos Transportation Routes Map



### 3.6 Flood/ Dam Failure Hazard Profile

#### Flood/ Dam Failure Risk Assessment Summary

##### Risk Rank: Moderately Low

<b>Probability/ Frequency:</b>	Rare event - occurs less than once every 50 years
<b>Consequence/ Severity:</b>	Moderate building damage, minor loss of lifelines (less than 12 hours), lost time injury but no disability
<b>Vulnerability:</b>	Moderate damage area, moderate secondary impacts, moderate warning time
<b>Hazard Risk Rank Score:</b>	12



#### 3.6.1 Flood/ Dam Failure Hazard Information and Background

According to the National Flood Insurance Program (NFIP), flood is the most common type of disaster including both man made and naturally occurring incidents in the United States. Land along rivers, streams, lakeshores, and coastlines are particularly susceptible to flooding.

The primary responsibility of the local governments during widespread flooding is to protect public safety. The second responsibility is protection of the environment followed by property such as highways, streets, bridges, and structure protection.

The types and causes of flooding that can occur within the City of Cerritos are the result of:

- Heavy rains,
- Dam failure,
- Flood control channel overflow,

- Waste water flooding within residences as a result of lift station failures,
- Coastal, tropical, and/or hurricane storms, and
- Accidents such as reservoir leaks and water main breaks.

Due to light annual rain fall and the City's location on the flood plain protecting it from channel overflow, dam failure is the most likely cause of flooding with the City of Cerritos.

#### What are Floods?

A flood occurs any time a body of water rises to cover what is usually dry land. Floods have many causes, including heavy rains, spring snowmelt, coastal storms, and dam or levee failure. When flooding occurs, affected areas may sustain damage to structures and personal property, as well as severe damage to the environment in the form of soil erosion, deforestation and damage to utilities and transportation systems.

Floods can take several hours to days to develop. The following flood characterization designates the amount of time for response.

- **Flood Watch** – a flood is possible in the area.
- **Flood Warning** – flooding is already occurring or will occur soon in the area.
- **Flash Flood Watch** – a flash flood is possible in the area. Those affected should seek immediate shelter or higher ground.
- **Flash Flood Warning** – flooding is already occurring or will occur soon in the area. Flash floods can occur without warning, during heavy rain in mountainous regions ensure that precautions and flash flood warnings are adhered to.

#### Alluvial Fan Flooding

Alluvial fan flooding occurs in the steep arid or semiarid mountains found throughout California. Alluvial fans are fan-shaped deposits of eroded rock and soil carried out of mountains and into valley floors by landslides, mudslides, mudflows, and surface runoff. At the beginning of the valley, alluvial fans are steep and narrow with boulders and other course material. The deposited material becomes increasingly fine as the gradient decreases and the material, mainly gravel, sand and mud, spreads.

When rain falls, runoff from the canyon walls flows as a high-velocity sheet that channels into rivulets, and then to natural drainage courses. The rapidly moving water often carries large boulders and other material from the watershed depositing them into runoff channels, blocking the flow of water. Floodwater then spills out onto the fan, with each event finding

**Table 3.15: Historical Flooding Damage in Los Angeles County**

Date	Injuries	Fatalities	Property Damage (\$)	Crop Damage (\$)
2/17/1994	1	0	0	0
2/20/1994	0	0	50,000	0
1/04/1995	0	1	50,000,000	0
1/10/1995	0	0	500,000	0
2/07/1998	0	3	0	0
10/20/2004	0	1	0	0
1/09/2005	0	1	0	0
1/11/2005	0	0	2,000,000	0
2/20/2005	0	0	1,000,000	0
12/21/2005	1	0	0	0
9/22/2007	0	0	300,000	0
11/26/2008	0	0	10,000	0
1/19/2010	0	0	0	3,000,000
10/11/202	0	0	0	0
2/28/2014	0	0	0	0

**Historical Flooding Events**

*Los Angeles County Flood of 1938*

According to the Suburban Emergency Management Project, the Los Angeles County Flood of 1938 was caused by two oceanic storms that swept through the Los Angeles Basin to the San Gabriel Mountains in late February and early March of 1938. Rainfall from the two storms totaled nearly 9.5 inches over a three-day period, resulting in a large natural disaster. The flood was responsible for destroying 5,601 homes, damaging another 1,500, and killing nearly 110 people. The Los Angeles River reached a maximum flow rate of 130,000 cubic

a new channel that soon fills up with deposits and overflows. Flooding in alluvial fans often can cause greater damage than clear-water flooding.

**Flash Flooding**

A flash flood is a rapid flooding of low-lying areas, rivers and streams that is caused by the intense rainfall associated with a thunderstorm or multiple thunderstorms. Flash floods also occur when a man-made structure, such as a dam, collapses. Flash flooding occurs when the ground under a storm becomes saturated with water so quickly that it cannot be absorbed. The runoff collects in low-lying areas and flows rapidly downhill. As a result, anything in its path is suddenly in rising water. Typically, flash floods begin with a slow moving thunderstorm. A slow moving thunderstorm usually takes longer to move out of the affected areas and causes the area to endure a greater amount of rainfall for a longer period of time. In addition, a thunderstorm may pass over an affected area repeatedly, dumping even more rainfall.

The heavy rainfall associated with these storm systems contributes to urban flooding in a number of ways. Primarily, heavy rainfall will often overwhelm the capacity of the conventional drainage system made up of storm drains, catch basins, sewers, and additional natural mechanisms for storm-water management. These systems typically cannot handle more than one or two inches of rainfall per hour before they begin to backup and overflow. This amount is further diminished if the storm drains, and other components of the storm-water management system, have not been adequately maintained, are clogged with debris such as trash or natural waste, or are old and in a state of disrepair. Heavy rainfall, combined with storm-water runoff, can cause local waterways to rise and overflow their banks.

**3.6.2 Flood/Dam Failure History**

A flood event in Los Angeles County can range from a few isolated areas where a number of streets are flooded preventing temporary access to homes and businesses, to numerous homes inundated with several feet of water causing millions of dollars of damage. Floods in the City of Cerritos area can cause extensive damage to residential and business properties, parks and recreational facilities, road and highway infrastructure, and critical utility facilities.

To indicate the potential for a flooding event, Table 3.15 below, taken from National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center, lists an excerpt of large-scale flooding events that have resulted in damage within Los Angeles County.

feet per second. As a result, the U.S. Army Corps of Engineers channelized the local rivers and built more flood control dams.



The above photographs are courtesy of California State University Northridge. The photograph on the left illustrates flooding of the Los Angeles River along Victory Blvd. The photograph on the right illustrates the levee failures along the Los Angeles River.

#### Historical Dam Failure Events

As stated previously, the most likely cause of flood within the City would be dam failure. The City has never been impacted by a dam failure. However, there have been a total of 45 dam failures in California's history. Failures have occurred for a variety of reasons. According to the United States Bureau of Reclamation, overtopping accounts for 30 percent of all dam failures in the United States in the last 75 years. Other dams have failed due to specific shortcomings in the dam itself or an inadequate assessment of the surrounding geomorphologic characteristics. The first notable dam failure occurred in 1883 in Sierra County, while the most recent failure occurred in 1965. The greatest catastrophe relating to California dam failures was William Mulholland's infamous St. Francis Dam, which failed in 1928 and resulted in a major disaster. Because of this failure and the exposure to potential risk to the general populace from a number of water storage dams in California, the Legislature in 1929 enacted legislation providing for supervision over non-federal dams in the State. Before the enactment of this legislation, either the State Engineer or the State Railroad Commission exercised State supervision over dams. This supervision was limited in scope and extended to less than half of the dams in the State.

The statute enacted in 1929 provided for:

- examination and approval or repair of dams completed prior to the effective date of the statute, August 14, 1929,
- approval of plans and specifications, and supervision of construction of new dams, and of the enlargement, alteration, repair, or removal of existing dams, and
- supervision over maintenance and operation of all dams of jurisdictional size.

Overall, there have been at least 460 deaths from dam failures in California. These failures are outlined in Table 3.16.

**Table 3-16: Dam Failure Events in California**

Year Failed	Dam	Location	Cause of Failure/Deaths
1883	English	Sierra County	Dam crumbles to foundations, decay of timber used
1892	Long Valley Creek	San Jacinto	Heavy rains, dam carried away by flood
1895	The Angels	Calaveras County	Undetermined during flood, poor foundation/ 1 death reported
1896	Vernon Heights	Oakland	Shallow foundation
1898	Snake Ravine	Stanislaus County	Poor compaction
1905	Piedmont No.1	Oakland	Outlet pipe sheared off at core wall
1906	San Andreas	San Mateo County	Crack along axis
1912	Morena	San Diego	Overtopping
1916	Lower Otay	San Diego	Leakage and overtopping due to inadequate spillway
1918	Lake Hodges	San Diego	Cracks in pier
1963	Baldwin Hills	Los Angeles	Leak through embankment turned into washout/ 3 Deaths
1964	Hell Hole	Rubicon River	Failed during construction due to unprecedented rains
1965	Matilija	Ventura	Bad foundation and concrete disintegrating

Note: Information was taken from UC Davis Civil & Environmental Engineering





### 3.7 Pipeline Failure/ Hazardous Material Release Hazard Profile

#### Pipeline Failure/ Hazardous Material Release Risk Assessment Summary

**Risk Rank: Moderately Low**

<b>Probability/Frequency:</b>	Rare event - occurs less than once every 50 years
<b>Consequence/Severity:</b>	Moderate building damage, minor loss of lifelines (less than 12 hours), lost time injury but no disability
<b>Vulnerability:</b>	Localized damage area, minor secondary impacts, delayed hazard onset
<b>Hazard Risk Rank Score:</b>	12



#### 3.7.1 Pipeline Failure/ Hazardous Material Release Information and Background

Hazardous materials include hundreds of substances that can potentially pose a significant risk to the general population if released. These substances may be highly toxic, reactive, corrosive, flammable, radioactive or infectious. They are present in nearly every community in the United States where they may be manufactured, used, stored, transported, or disposed. According to reports obtained through the Toxic Release Inventory (TRI) Program, there are thousands of hazardous material release events annually that contaminate air, soil, and groundwater resources. These events can potentially trigger millions of dollars in clean-up costs, human and wildlife injuries, and occasionally human deaths.

Accidents which result in chemical clouds or release of hazardous materials into public water or sewer systems may affect outlying neighborhoods or the community at large. Depending upon the scale of the release, large segments of the residential and business populations may need to be evacuated quickly for extended periods of time. Effective emergency planning with regard to hazardous materials, therefore, requires the concentrated efforts of the Fire and Police Departments as well as other public safety officials and private organizations such as the Red Cross. Hazardous material releases may occur from any of the following:

**Table 3.17: Types of Hazardous Material Incidents**

<b>Fixed-Site</b>	Includes all releases involving the production and manufacturing, handling, and storage of a hazardous product at a single facility as well as any releases that may occur at a designated hazardous waste disposal site.
<b>Transportation</b>	Includes all releases that occur while the product is in transit from one facility to another or en route to be disposed of at a designated hazardous waste disposal site, of which the main concerns for the City of Cerritos are the 5, 605, and 91 freeways.
<b>Intentional Spills and Releases</b>	Includes all criminal acts and acts of terrorism in which a hazardous material is used to intentionally cause injuries and/or fatalities, damage the environment and/or property, or advance a political or social agenda. Terrorism and Weapons of Mass Destruction will be discussed in further detail in the Terrorism section of this document.

In response to concerns over the environmental and safety hazards posed by the storage and handling of toxic chemicals, Congress passed the Emergency Planning and Community Right to Know Act (EPCRA) in 1986. To reduce the likelihood of hazardous material releases, EPCRA established specific requirements on federal, state and local governments, Indian tribes, and industry to plan for hazardous materials emergencies. EPCRA's Community Right-to-Know provisions help increase the public's knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities working with facilities can use the information to improve chemical safety and protect public health and the environment. Under EPCRA, hazardous materials must be reported to the Environmental Protection Agency (EPA), even if they do not result in human exposure.

Hazardous material releases may include the following.

- Air emissions (e.g., pressure relief valves, smokestacks, broken pipes, water or ground emissions with vapors)
- Discharges into bodies of water (e.g., outflows to sewers, spills on land, water runoff, contaminated groundwater)
- Discharges onto land
- Solid waste disposals in onsite landfills
- Transfer of wastewater to public sewage plants
- Transfers of waste to offsite facilities for treatment or storage

In addition to accidental human-caused hazardous material events, natural hazards may cause the release of hazardous materials and complicate response activities. The impact of earthquakes on fixed facilities may be particularly damaging due to the impairment of the physical integrity or even failure of containment facilities. The threat of any hazardous material event may be magnified due to restricted access, reduced fire suppression and spill containment, and even complete cut-off of response personnel and equipment.

In recognition of the dangers associated with keeping hazardous substances, the California State legislature has enacted several laws regulating the use and transport of identified hazardous materials. In particular, Chapter 6.95 of the Health and Safety Code requires all businesses using these materials to inform local government agencies of the types and quantities of materials stored on site. This disclosure enables emergency response agencies to respond quickly and appropriately to accidents involving dangerous substances. Chapter 6.95 of the California Health and Safety Code and Title 19 of the California Code of Regulations describe the requirements for chemical disclosure, business emergency plans, and community right to know programs. According to these state requirements, a business that uses or handles hazardous materials in amounts equal to or greater than 55 gallons, 500 pounds or 200 cubic feet at any one time must prepare a business emergency plan and chemical inventory. The inventory must be updated annually and the business plan must be updated every two years. The chapter also has incorporated certain requirements from Federal Superfund Amendments and Reauthorization Act (SARA) Title III for chemicals designated as acutely hazardous. In addition, these regulations apply to industrial accidents, refinery explosions and incidences of high volume releases.

### 3.7.2 Pipeline Failure/Hazardous Material Release History

According to the Emergency Response Notifications System (ERNS), there were over 2,143 spills and accidents in California during 2013. As illustrated in Table 3.18 below, the majority of these incidents were caused by mobile vehicles, which represent a threat to the City of Cerritos due to multiple transportation routes that run within the City.

**Table 3.18: ERNS Spills and Accidents in California in 2013**

Type of Incident	Number of Incidents
Fixed site (e.g., incident at a building)	651
Continuous release	1
Storage tank, drilling platform, or pipeline	176
Unknown sheen on water	313
Mobile vehicle (plane, truck, train, ship, etc.)	1,002
Other or unknown	0
<b>Total</b>	<b>2,143</b>

#### 2012 Richmond Refinery Fire

On August 6, 2012, a piping segment at the Number 4 Crude Unit at a Chevron refinery in Richmond, California, failed, leading to a release of hydrocarbons. The hydrocarbon vapor cloud then ignited, resulting in a large, uncontrolled fire. The fire burned for several hours before being contained later that night. The picture below illustrates the smoke plume from the fire.



Photo taken from a Cal/OSHA presentation on 2/26/2014

Fortunately, there were no fatalities from the fire. According to the final investigation report completed by the United States Chemical Safety and Hazard Investigation Board, over 15,000 residents surrounding the refinery sought medical treatment for respiratory irritation. The incident tied up many local emergency response agencies and also shut down local service for the Bay Area Rapid Transit (BART). Although the 2012 Richmond Refinery Fire did not impact the City, the incident illustrates the potential major impacts to residential areas that a release of this magnitude could have on the City.

### **3.7.3 Pipeline Failure/ Hazardous Material Release Probability, Frequency, and Magnitude**

While the City has never experienced a large scale release, hazardous material emergencies can occur during transportation and all major highways are susceptible to releases of toxic and flammable chemicals. While the City has taken measures to reduce the potential for hazardous materials events, Interstates 5 and 605, and California State Route 91 are still located in and around the City. Due to the volume of traffic and the nature of the materials transported, there is a risk of a hazardous material leak or spill within the City. The ongoing use, production, and transportation of hazardous materials in and through the City pose constant and real threats to the safety of the community. An

accidental release of a hazardous substance into the environment has the potential to cause localized or widespread upset.

While there is currently no mechanism to assign a true probability of a fixed-site or transportation hazardous material emergency, it is important to consider a relatively high likelihood of occurrence and conduct planning and training accordingly. Figure 3.7 provides an overview of the transportation corridors throughout the City of Cerritos, including Interstates 5 and 605, and the 91 freeway, which are considered major shipping and transportation routes.

### 3.8 Drought Hazard Profile

#### Drought Risk Assessment Summary

**Risk Rank: Moderately Low**

<b>Probability/Frequency:</b>	Regular event - occurs between once a year and once every 7 years
<b>Consequence/Severity:</b>	Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability
<b>Vulnerability:</b>	Localized damage area
<b>Hazard Risk Rank Score:</b>	12



#### 3.8.1 Drought Information and Background

A drought or an extreme dry periodic climate is an extended period where water availability falls below the statistical requirements for a region. Drought is not a purely physical phenomenon, but rather an interplay between natural water availability and human demands for water supply. The precise definition of drought is made complex owing to political considerations, but there are generally four types of conditions that are referred to as drought.

- **Meteorological drought** is brought about when there is a prolonged period with less than average precipitation.
- **Agricultural drought** is brought about when there is insufficient moisture for average crop or range production. This condition can arise, even in times of average precipitation, owing to soil conditions or agricultural techniques.
- **Hydrologic drought** is brought about when the water reserves available in sources such as aquifers, lakes, and reservoirs fall below the statistical average. This

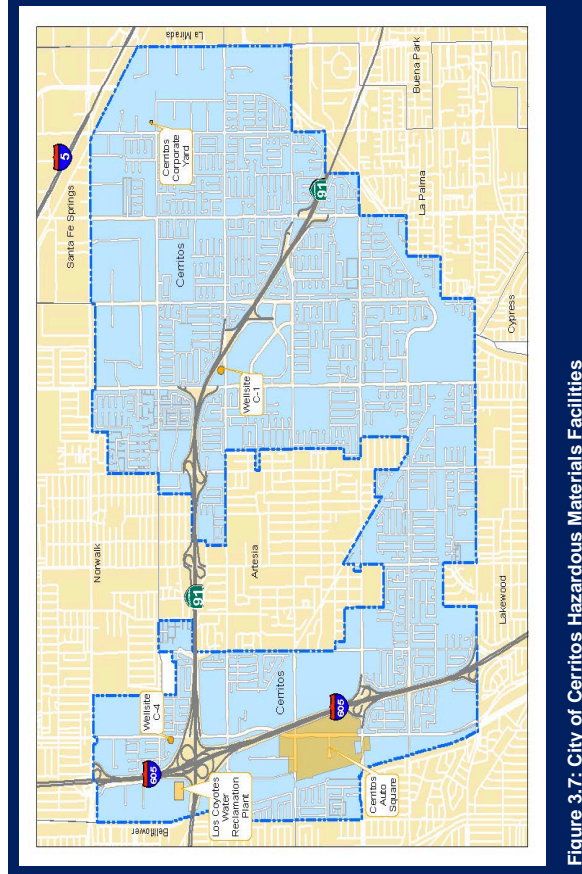


Figure 3.7: City of Cerritos Hazardous Materials Facilities



condition can arise, even in times of average (or above average) precipitation, when increased usage of water diminishes the reserves.

- **Socioeconomic drought** associates the supply and demand of water 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.

Due to the extensive nature of water supply infrastructure – reservoirs, groundwater basins, and inter-regional conveyance facilities – mitigation for the effect of short-term dry periods is implicit for most systems. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.

Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or wildland fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts, however, occur slowly and over a multi-year period. There is no universal definition of when a drought begins or ends. Impacts of drought are typically felt first by those most reliant on annual rainfall – ranchers engaged in dryland grazing, rural residents relying on wells in low-yield rock formations, or small water systems lacking a reliable source. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.

Droughts may cause a shortage of water for human and industrial consumption, hydroelectric power, recreation, and navigation. Water quality may also decline and the number and severity of wildland fires may increase. Severe droughts may result in the loss of agricultural crops and forest products, undernourished wildlife and livestock, lower land values, and raise unemployment.

### 3.8.2 Drought History

As stated in the City's Urban Water Management Plan, the City of Cerritos supplies most of its water from groundwater pumped from the Central Ground Basin. Additionally, the City is a member agency of the Central Basin Municipal Water District (CBMWD). The CBMWD imports water from the Metropolitan Water District of Southern California (MWD) and distributes it to its member agencies. Purchased water made up only 1.17 percent of the City's total potable water supplies in 2014. Additionally, the City utilizes recycled water to meet its nonpotable demands. Furthermore, the City is a retailer, providing potable water to the Golden State Water Company and the City of Norwalk. The City boundaries, as shown previously in Figure 2.1 provide an estimate of the service area of the City of Cerritos.

Because water systems are interconnected, the regional impacts of drought may have adverse impacts for the City of Cerritos. For example, as stated in the City's Urban Water Management Plan, the Colorado River, which supplies potable water to the City through CBMWD and MWD, is impacted by climatic changes. Therefore, any significant rise in temperature, due to an unseasonably hot summer or perhaps the impacts of climate change, could reduce the available water supply for each retailer decreasing the available water supply for the City's use. It is important to consider droughts that have occurred and currently are occurring throughout the State. Figure 3.8 provides the annual runoff in California for the last century, and is provided by the United States Geological Survey.

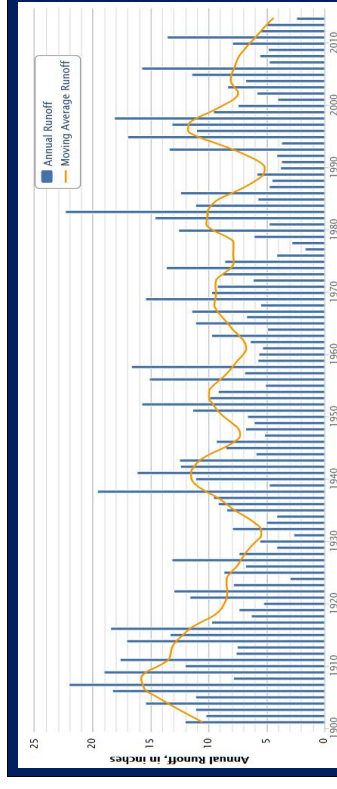
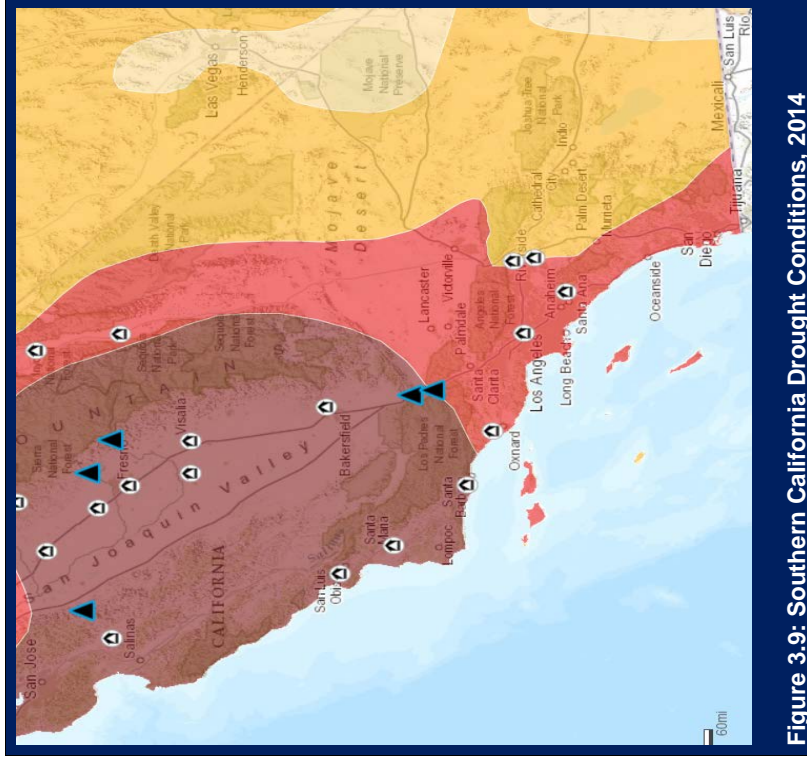


Figure 3.8: Annual Runoff in California

Figure 3.9 illustrates the current state of drought in California and is provided by the California Governor's Office of Emergency Services.



**Figure 3.9: Southern California Drought Conditions, 2014**

As stated by the California Department of Water Resources, the last part of 2013 began one of the driest periods in California's recorded history. On January 14, 2014, Governor Edmund G. Brown declared a drought state of emergency which triggered municipalities to take preventative actions. While the City has continued to provide potable water to its residents, the County of Los Angeles has imposed conservation measures to circumvent potential drought hazards. The City will rely on the previously discussed infrastructure to maintain water services for its residents.

### 3.8.3 Drought Probability, Frequency, and Magnitude

For years, the City has enjoyed an abundant supply of high-quality water. However, as water demand continues to increase statewide and the supply fluctuates with current drought conditions, the City must be even more conscientious about the water supply and maximize the efficient use of this precious natural resource. The City of Cerritos and the Metropolitan Water District of Southern California work closely together to evaluate new and innovative water management and supply development programs, including water reuse and recycling, recharge facility construction, ocean and brackish water desalination, surface storage, and water use efficiency programs. These efforts are helping to enhance long-term water reliability and water quality.

### 3.9 Terrorism Hazard Profile

#### Terrorism Risk Assessment Summary

**Risk Rank: Moderately Low**

**Probability/Frequency:** Rare event - occurs less than once every 50 years

**Consequence/Severity:** Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability

**Vulnerability:** Localized damage area

**Hazard Risk Rank Score:** 4



#### 3.9.1 Terrorism Hazard Information and Background

Terrorism is the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of a political or social objective.

A weapon of mass destruction (WMD) is a type of weapon that can bring significant harm to a large number of people or structures. Examples of WMD include nuclear, radiological, biological, or chemical agents. Aside from attacking local targets, terrorists might also use WMD to inflict harm on a large population.

The Federal Bureau of Investigation (FBI) has categorized two types of terrorism in the United States.

**International Terrorism** involves terrorist activity committed by groups or individuals who are foreign-based and/or directed by countries or groups outside the United States, or whose activities transcend national boundaries.

**Domestic Terrorism** involves groups or individuals whose terrorist activities are directed at elements of our government or population without foreign direction.

Well-known international terrorist groups include Islamic Fundamentalist groups, such as Islamic State in Iraq and Syria (ISIS); European terrorists, including the Red Brigade in Italy, Spain's Euskadi Ta Askatasuna (ETA), and the Japanese Red Army; separatist groups, such as Sierra Lumenoso, and the "Shining Path" in Peru. Add to these a host of narco-terrorists, such as the Medellín and Cali drug cartels.

In the United States, a number of animal rights activists; environmentalist groups; white supremacists, such as the League of Aryan nations; and groups including the Covenant, Sword and Arm of the Lord, New World Order, and skinheads have been responsible for acts of terrorism on United States soil. Added to these are groups like the Klu Klux Klan; survivalists, such as the Freemen in Montana; and doomsday cults, such as David Koresh in Waco, Texas, and Jim Jones in Guyana.

There are a number of methods a terrorist may use to carry out their objective, including attacks of a chemical, biological, radiological, nuclear, explosive, and cyber nature. In addition, terrorists conduct hijackings, assassinations, armed assaults, kidnappings/hostage taking, arson fires, sabotage of critical infrastructures such as utilities and transportation, and the dissemination of confidential or otherwise sensitive information for the planning of terrorist attacks.

#### Chemical

Chemical agents involve the use of chemical compounds to kill or seriously injure victims. There are numerous kinds of chemical weapons and their effectiveness is determined by a number of factors, including age, purity, weather conditions, wind direction, and means of dissemination.

#### Biological

Biological agents include microbes, such as bacteria or viruses, and toxins derived from plants or animals that can produce illness or death. Illegal facilities that manufacture these substances are difficult to detect because they employ fermentation technology commonly used in the production of legitimate products such as antibiotics, vaccines, and consumables.

#### Radiological and Nuclear

Radiological or nuclear terrorism is the use of radioactive materials and/or nuclear explosives, as well as any terrorist actions against nuclear facilities by individuals or groups,

to inflict harm on a population and advance political or social objectives. Sources of radiological material including nuclear fuel cycle waste, medical and dental equipment, military weaponry, and machines used in private industry.

#### **Explosive**

The impact of a bombing depends largely on the type, size, and placement of the device used. Additionally, a WMD in combination with an explosive device expands the lethality, physical damage, and economic disruption. The use of an explosive device can also inflict significant disruption of society through destruction of critical infrastructure and widespread fear amongst the target population.

#### **Cyber**

Cyber terrorism is a premeditated, politically motivated attack against information, computer systems, computer programs, and data which results in violence against noncombatant targets by sub-national groups or clandestine agents. Cyber terrorists can be domestic or international. Classification of being a cyber-terrorist depends on if the terrorist relies on cyber terrorism to further their cause, or uses it in addition to conventional terrorism.

#### **Additional Terrorism Methods**

Additional terrorism methods include hijackings, kidnappings, and the taking of hostages; armed assaults and mass shootings; assassinations of public figures; sabotage of transportation systems and utility infrastructure; the dissemination of confidential information that would aid terrorist organizations when planning an attack; arson fires; and many other means of disrupting normal society or endangering lives and property.

### **3.9.2 Terrorism Hazard History**

The United States has proven to be a high priority target for both domestic and international terrorists. Acts of terror have become increasingly alarming in their magnitude in recent years. Examples of this include the bombing of the Alfred P. Murrah Federal Building in Oklahoma City and the attacks of September 11, 2001 on the World Trade Center complex and the Pentagon. Not all attacks, however, are at this level of intensity. The United States has also been subject to small scale attacks in the past such as the bombing at the Boston Marathon in 2013. Specifically, the City of Cerritos has not been directly impacted by terrorism events in the past.

### **3.9.3 Terrorism Hazard Probability, Frequency, and Magnitude**

While the City has never fallen victim to a terrorist attack, the City recognizes the potential for a terrorism event to impact the City. Given current escalating terrorism trends, the threat of a terrorist event within the United States is a credible possibility and the City ranked the probability of terrorism accordingly during the Hazard Identification Workshop. Although Cerritos does not have any hard targets within the City's boundaries, the potential threat exists due to its proximity to the City and County of Los Angeles, the Los Angeles Airport, and other identified targets.

Additionally, the City of Cerritos completed a Security Vulnerability Assessment to comply with the Bioterrorism Act of 2002. The Security Vulnerability Assessment evaluated the City's vulnerability to malevolent attacks, including terrorism and contamination, and developed recommendations to protect against the malevolent attacks. However, because of the security sensitive nature of the information, the terrorism risk assessment results are not repeated as part of the Hazard Mitigation Plan.

### 3.10 Windstorm Hazard Profile

#### Windstorm Risk Assessment Summary

##### Risk Rank: Moderately Low

<b>Probability/Frequency:</b>	Rare event - occurs less than once every 50 years
<b>Consequence/Severity:</b>	Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability
<b>Vulnerability:</b>	Localized damage area
<b>Hazard Risk Rank Score:</b>	4



#### 3.10.1 Windstorm Hazard Information and Background

Wind can be described as the flow of air caused by a difference in air pressure within the Earth's atmosphere. Differences in atmospheric pressure cause air to move from high pressure areas to lower. The greater the difference between the two pressure areas, the greater the speed at which the air moves from one pressure area to the other. Strong winds have been known to cause minor property damage and in extreme cases destroy large structures in its path.

The Beaufort Scale is widely used to describe wind speeds based on observed ocean conditions. Since its most recent modification in the 1940s, the scale utilizes a seventeen level system ranging from no air flow to winds that exceed 140 miles per hour (mph; 120 knots) and describe wind speeds in empirical terms. According to this scale, air speeds during a windstorm usually fall between 65 mph (56 knots) and 72 mph (63 knots). Winds of this speed and greater have been known to cause tornado-like property damage and could inhibit utility, telecommunications, and transportation systems in and around the City of Cerritos.

### 3.10.2 Windstorm History

To indicate the potential for a severe storm event, Table 3.19 lists an excerpt of large-scale severe storms extracted from the NOAA National Climatic Data Center, including lightning, thunderstorms, hail, fog, winter weather, and wind some of which have resulted in extensive regional damage. This list is not considered to be comprehensive, since severe storms are an annual event causing minor damages and economic disruption (closed roads, fallen power lines, etc.).

Table 3.19: Historical Severe Weather Damage in Los Angeles County

Date	Fatalities	Injuries	Property Damage (\$)
8/07/1990	0	8	0
2/23/1993	0	0	50,000
4/25/1994	0	0	5,000
3/14/1996	0	1	0
12/14/1996	1	2	0
1/20/1997	0	4	0
7/20/1998	0	1	0
5/23/1999	1	0	0
7/13/1999	0	1	0
2/23/2000	0	1	0
4/20/2001	0	1	0
7/28/2003	0	1	0
11/12/2003	0	0	3,500,000
1/07/2005	0	0	5,000,000
9/01/2007	0	0	0



Date	Fatalities	Injuries	Property Damage (\$)
7/15/2010	0	0	0
3/17/2013	0	0	0
3/1/2014	0	0	0

Note: Property Damage may not have been reported for each incident

### Microbursts

As stated by the National Weather Service, a microburst is a downdraft in a thunder storm that is less than 2.5 miles in scale. Microbursts can be driven by a number of factors including mid-level dry air entrainment, cooling beneath the thunderstorm cloud base, sublimation, and the existence of rain and/or hail within the thunderstorm. Although microbursts are not widely recognized as tornadoes, they can cause comparable, and in some cases worse, damage than some tornadoes.



In April 2000, a microburst ripped through 4.9 square miles of a The City of Paramount; less than 5 miles from the heart of the City. Hardest hit were the mobile homes where at least 141 structures were reported to have sustained damage, ranging from total loss to minor structural damage. The local Fire Department estimated at least \$843,000 in damage losses. Families were immediately placed in a Red Cross Shelter at a nearby park.

### Santa Ana Winds

The Santa Ana Winds are a seasonal phenomenon in Southern California occurring between October and March. According to the California Climate Change Center, these dry winds occur when cold air moves southward into the Great Basin between the Sierra Nevada Mountain Range and the Southern California Coastal Range. The cold air mass is characterized by unusually high pressure near the land surface. As the wind moves through canyons and passes, the wind accelerates to speeds of 40 mph (35 knots) with gusts up to

about 70 mph (60 knots). This phenomenon has occurred irregularly since at least the mid-1800s. While generally overlooked, Santa Ana winds have been reported to have caused property damage, power outages, blocked roads due to fallen trees, increased fire threats, and even loss of life as the result of a secondary impact.

### 3.10.3 Windstorm Probability, Frequency, and Magnitude

Taking into account that Santa Ana Winds are (typically) an annual occurrence in Southern California, strong winds are very likely to continue to occur although infrequently in the City of Cerritos. In the past, high winds have toppled trees, damaged traffic signals, and in rare cases caused minor injury to residents. In response, the Steering Committee determined windstorm was still a possible threat to the City and warranted inclusion in the Plan update. Figure 3.10 below provides information on the average wind speeds for the Fullerton Municipal Airport Weather Station region.

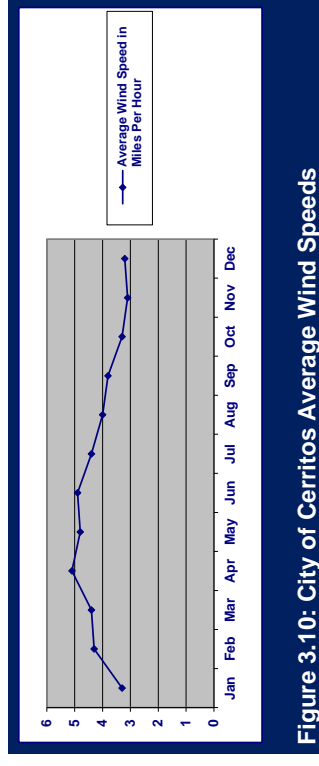


Figure 3.10: City of Cerritos Average Wind Speeds

Note: Data taken from the Western Regional Climate Center

### 3.11 Climate Change

With the release of the California Adaptation Planning Guide (APG) in March 2015, the City aimed to include the effects of climate change into the Hazard Mitigation Plan update. As identified in the "Understanding Regional Characteristics" portion of the APG, Cerritos is located in the South Coastal Region of California. As a result, the City considered the following climate change impacts as recommended by the APG:

- Increased Temperatures
- Reduced Precipitation
- Sea Level Rise
- Reduced Tourism
- Reduced Water Supply
- Wildfire Risk
- Public Health – Heat and Air Quality
- Coastal Erosion

The Steering Committee engaged in a discussion to determine which impacts posed a viable threat to the City. While some impacts clearly applied to the City, some required additional research. Studies were conducted to look at recorded trends for sea level rise, wildfire, and regional temperature increases. The result of the study was the following list of perceived, feasible impacts that might affect the City over the next 5 to 10 years:

Increased Temperatures  
Reduced Precipitation  
Reduced Water Supply  
Fire Risk

After reviewing the results of each of these impacts, the Steering Committee decided to include hazards in the Plan update that represented how the impacts would be felt by the City. For example, increased temperatures, reduced precipitation, and reduced water supply would be recognized as a drought. Additionally, increased temperatures and reduced precipitation might result in a fire. Therefore, the Steering Committee identified Drought and Urban Fire as perceived hazards. Any information regarding the effects of these impacts on the City will be found under the hazard profiles listed above. Additionally,

mitigation strategies that apply to these impacts will be classified under Drought and Urban Fire in the mitigation actions identified in Chapter 4.

### 3.12 Asset Inventory

§201.6(c)(2)(ii)(A): [The plan should describe vulnerability in terms of] the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area

A critical step required to complete the Risk Assessment is to develop a detailed asset inventory and document potential asset damages due to each identified hazard. The calculated loss estimates will be based on the values determined during the initial asset inventory. In order to produce accurate loss estimates, the City of Cerritos developed a comprehensive inventory of all assets, including asset locations.

In order to develop loss estimates, specific values were assigned to the critical City facilities in the asset inventory. The following tables summarize the assigned values, as well as the sources utilized as the basis for the values including the following:

- FEMA's "Multi-hazard Loss Estimation Methodology, Earthquake Model, HAZUS MR4"
- FEMA's guidance document entitled "What is a Benefit? - Guidance on Benefit-Cost Analysis of Hazard Mitigation Projects, Draft Revision 2.0"

#### Replacement Values

The following table provides a mechanism for determining the cost per square foot for replacing assets. Using this table, the Steering Committee reviewed the asset inventory list and discussed and documented approximate square footages (based upon available building plans and expert knowledge) and building descriptions in order to identify the appropriate replacement cost for each asset.

**Table 3.20 – Structural Replacement Values**

Facility Category	Facility Sub-Category	Description	Replacement Cost (\$/SF)
<b>Hospital</b>	Medium	2-3 Stories, 55,000 SF	\$144.60
	Large	4-8 Stories, 200,000 SF	\$124.60
<b>Medical Office / Clinic</b>	Small	1 Story, 7,000 SF	\$118.01
	Medium	2 Stories, 7,000 SF	\$129.82
	Town Hall, Small	1 Story, 11,000 SF	\$90.30
<b>General Government Services</b>	Town Hall, Medium	2-3 Stories, 18,000 SF	\$112.94
	Courthouse, Small	1 Story, 30,000 SF	\$130.71
	Courthouse, Medium	2-3 Stories, 60,000 SF	\$136.81
	Post Office	13,000 SF	\$86.83
	Police Station	2 Stories, 11,000 SF	\$136.10
<b>Emergency Response</b>	Fire Station, Small	1 Story, 6,000 SF	\$105.53
	Fire Station, Medium	2 Stories, 10,000 SF	\$110.34
<b>Schools / Libraries</b>	High School	130,000 SF	\$92.80
	Elementary School	45,000 SF	\$90.22
	Jr. High School	110,00 SF	\$95.21
	Library	2 Stories, 22,000 SF	\$103.94
	Religious School	1 Story, 10,000 SF	\$112.19
<b>Colleges / Universities</b>	College Classroom	2-3 Stories, 50,000 SF	\$114.68
	College Laboratory	1 Story, 45,000 SF	\$119.51
	Vocational School	40,000 SF	\$93.96

Note: Values were listed from FEMA's "Multi-hazard Loss Estimation Methodology, Earthquake Model, HAZUS MR4"

**Loss of Function Values**

In order to provide a mechanism for evaluating the importance of lifelines and critical services, the following tables were used to identify per capita values for each category. Based upon the population in the City of Cerritos, the following values were assigned.

**Table 3.21 - Loss of Function Values Per Capita – Utilities & Lifelines**

Loss of Electric Power	Cost of Complete Loss of Service	
Reduced Regional Economic Activity <sup>1</sup>	\$87	
Impacts on Residential Customers	\$101	
<b>Total Economic Impact</b>	<b>\$188</b>	
Loss of Potable Water Service	Cost of Complete Loss of Service	Cost of Water Unsafe for Drinking
Reduced Regional Economic Activity <sup>1</sup>	\$35	\$8.75
Impacts on Residential Customers	\$68	\$34
<b>Total economic impact (all hazards)</b>	<b>\$103</b>	<b>\$43</b>
Fire Following Earthquake Losses		
Dry Climates	\$35	
Moderate Climates	\$17.50	
Wet Climates	\$8.75	
Loss of Wastewater Service	Cost of Complete Loss of Service	Cost of Partial Treatment Only



Reduced Activity <sup>1</sup>	Regional	Economic	\$33.50	\$8.50
Impacts on Residential Customers			None	None
<b>Total Economic Impact</b>			<b>\$33.50</b>	<b>\$8.50</b>
<b>Road or Bridge Closure</b>				
			<b>Delay or Detour (per vehicle per hour)</b>	
Economic Impact			\$32.23	
<b>Total Economic Impact</b>			<b>\$32.23</b>	
<small>Note: The values listed in this table were obtained from FEMA's guidance document entitled "What is a Benefit? - Guidance on Benefit-Cost Analysis of Hazard Mitigation Projects, Draft Revision 2.0"</small>				

### Future Developments

Currently, there are no planned developments for new buildings within the City of Cerritos; however, the hazard maps and loss estimates are dynamic and the calculations will be updated to account for future developments as the potential arises. The hazard maps will also be used as a tool to pre-identify areas that are not conducive for construction.

The Asset Inventory Summary Tables and maps depicting the asset locations for the City of Cerritos are presented on the following tables.

### Contents Value Percentages

When assessing the potential losses, the value of the contents of the buildings was included in the analysis. The following table from FEMA's guidance provides a list of facility categories and the associated contents value percentages.

**Table 3.22 - Contents Value Percentages**

Occupancy Class	Contents Value %
Government – General Services	100
Government – Emergency Response	150
Education – Schools/Libraries	100
Education – Colleges/Universities	150
Industrial – Food/Drugs/Chemicals	150
<small>Note: Values were listed from FEMA's "Multi-hazard Loss Estimation Methodology, Earthquake Model, HAZUS MR4"</small>	

Table 3.23 - Asset Inventory Summary – City of Cerritos

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
Public Buildings	Performing Arts Center	12700 Center Ct Dr, Cerritos, CA 90703	150,000	NA	78,607,367	NA	16,425,867	\$95,033,234
Public Buildings	Library	18025 Bloomfield Ave, Cerritos, CA 90703	88,780	NA	65,724,027	NA	10,951,708	\$76,675,735
City Property	Library Fine Arts	18025 Bloomfield Ave, Cerritos, CA 90703	0	NA	0	NA	1,283,435	\$1,283,435
Public Buildings	Sculpture Garden	18125 Bloomfield Ave, Cerritos, CA 90703	0	NA	0	NA	3,469,203	\$3,469,203
Public Buildings	Cerritos Park East (CPE)	13234 E 166th St, Cerritos, CA 90703	15,500	NA	7,535,821	NA	895,093	\$8,430,914
Public Buildings	City Hall	18125 Bloomfield Ave, Cerritos, CA 90703	53,288	NA	14,552,688	NA	4,880,262	\$19,432,950
Public Buildings	Corporate Yard	16540 Marquardt Ave, Cerritos, CA 90703	24,257	NA	3,064,373	NA	1,345,694	\$4,410,067
Public Buildings	Vehicle Storage	16540 Marquardt Ave, Cerritos, CA 90703	12,740	NA	1,040,620	NA	394,231	\$1,434,851
Fire Building	Fire Station	19030 Pioneer Blvd, Cerritos, CA 90703	10,575	NA	3,188,956	100%	3,188,956	\$6,377,912
Public Buildings	Swim Center	13150 E 166th St, Cerritos, CA 90703	38,909	NA	12,155,618	NA	407,217	\$12,562,835

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
Public Buildings	Senior Center at Pat Nixon Park	12340 South St, Cerritos, CA 90701	27,500	NA	12,419,313	NA	974,550	\$13,393,863
Public Buildings	Sports Complex & Skate Park	12340 South St, Cerritos, CA 90701	5,840	NA	181,321	NA	0	\$181,321
Schools	Whitney Gym	18800 South Shoemaker Ave, Cerritos, CA 90703	28,000	NA	0	NA	4,783	\$4,783
Police Building	Sheriff's Station	18135 Bloomfield Ave, Cerritos, CA 90703	15,000	NA	31,320,066	NA	1,298,154	\$32,618,250
Public Buildings	Parking Structure	18027 Bloomfield Ave, Cerritos, CA 90703	0	NA	15,361,209	NA	0	\$15,361,209
Public Buildings	Cerritos Towne Center	12731 Towne Center Dr, Cerritos, CA 90703	0	NA	88,742	NA	0	\$88,742
Parks	Frontier Park	18910 Maria Ave, Cerritos CA 90703	783	NA	116,992	NA	2,032	\$119,024
Public Buildings	Heritage Park	18600 Bloomfield Ave, Cerritos CA, 90703	2,915	NA	8,233,889	NA	37,995	\$8,271,884
Public Buildings	Golf Course Clubhouse	16401 Pluma Ave, Cerritos, CA 90703	1,815	NA	745,697	NA	196,649	\$942,346
Public Buildings	Golf Course Café	16401 Pluma Ave, Cerritos, CA 90703	350	NA	82,484	NA	24,609	\$107,093

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
Public Buildings	Liberty Park	19211 Studebaker Rd. Cerritos, CA 90703	11,500	NA	10,173,037	NA	238,125	\$10,411,162
Parks	Westgate Park	18830 South San Gabriel Cerritos, CA 90703	1,496	NA	228,346	NA	704	\$229,050
Parks	Friendship Park	13650 Acoro St. Cerritos, CA 90703	0	NA	25,177	NA	18,496	\$43,673
Parks	Joe A. Gonzales Park	13611 East 168th St. Cerritos, CA 90703	855	NA	243,784	NA	0	\$243,784
Parks	Ecology Park	17133 Gridley Rd. Cerritos, CA 90703	0	NA	28,504	NA	2,072	\$30,576
Parks	Esabella Utility Clearance	16400 Studebaker Rd. Cerritos, CA 90703	0	NA	35,502	NA	0	\$35,502
Parks	Gridley Park	Gridley Road & Yearling Cerritos, CA 90703	0	NA	131,715	NA	103,810	\$235,525
Parks	Jacob Park	Jacob Avenue & Yearling Cerritos, CA 90703	0	NA	40,665	NA	0	\$40,665
Parks	Rainbow Park	18600 S. Linda Cir. Cerritos, CA 90703	0	NA	95,783	NA	0	\$95,783
Parks	Reservoir Hill Park	16733 Studebaker Rd. Cerritos, CA 90703	0	NA	27,205	NA	0	\$27,205

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
Parks	Saddleback Park	13037 Acoro St. Cerritos, CA 90703	0	NA	15,593	NA	0	\$15,593
Parks	Satellite Park	12410 Ash Creek Rd. Cerritos, CA 90703	609	NA	19,542	NA	75,157	\$94,699
Parks	Sunshine Park	18310 Vickie Ave. Cerritos, CA 90703	660	NA	66,072	NA	32,309	\$98,381
Parks	Rosewood Park	17715 Eric St. Cerritos, CA 90703	0	NA	420,148	NA	59,359	\$479,507
Parks	Cerritos Regional County Park	19600 Bloomfield Ave. Cerritos, CA 90703	78,850	NA	4,243,770	NA	133,745	\$4,377,515
Parks	Bettencourt Park	13575 E. Andy St. Cerritos, CA 90703	0	NA	27,055	NA	0	\$27,055
Parks	El Rancho Verde Park	7915 Danni St. Cerritos, CA 90703	0	NA	27,055	NA	0	\$27,055
Parks	Loma Park	17503 Stark St. Cerritos, CA 90703	0	NA	27,055	NA	9,265	\$36,320
Parks	Brookhaven Park	13167 Brookhaven St. Cerritos, CA 90703	5,272	86.83	457,768	NA	0	\$457,768
Water	Water Well C-1	12701 East Artesia Blvd. Cerritos, CA 90703	1,700	NA	1,868,656	NA	962,545	\$2,831,201

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
Water	Water Well C-2	16540 Marquardt Ave. Cerritos, CA 90703	182	NA	6,131,966	NA	1,096,762	\$7,228,728
Water	Water Well C-4	16807 Studebaker Rd. Cerritos, CA 90703	182	NA	5,705,711	NA	1,074,319	\$6,780,030
Water	Water Well C-5	20101 Cabrillo Ln. Cerritos, CA 90703	0	NA	926,925	NA	0	\$926,925
Water	Reclaimed Water Pump	16515 Piroma Cerritos, CA 90703	0	NA	2,828,901	NA	0	\$2,828,901
Schools	Dragg Elementary School	11501 Box St. Cerritos, CA 90703	70,095	90.22	6,323,971	100%	6,323,971	\$12,647,942
Schools	Carver Elementary School	19200 Ely Ave. Cerritos, CA 90703	56,557	90.22	5,102,573	100%	5,102,573	\$10,205,145
Schools	Cerritos Elementary School	13600 183rd St. Cerritos, CA 90703	61,172	90.22	5,518,938	100%	5,518,938	\$11,037,876
Schools	Gonsalves Elementary School	13650 Park St. Cerritos, CA 90703	61,868	90.22	5,581,731	100%	5,581,731	\$11,163,462
Schools	Juarez Elementary School	11939 Aclare St. Cerritos, CA 90703	61,530	90.22	5,551,237	100%	5,551,237	\$11,102,473

City of Cerritos Hazard Mitigation Plan 3-81

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
Schools	Leal Elementary School	12920 Droxford St. Cerritos, CA 90703	64,475	90.22	5,816,935	100%	5,816,935	\$11,633,869
Schools	Pat Nixon Elementary School	19600 Jacob Ave. Cerritos, CA 90703	48,731	90.22	4,396,511	100%	4,396,511	\$8,793,022
Schools	Stowers Elementary School	13350 Beach St. Cerritos, CA 90703	70,938	90.22	6,400,026	100%	6,400,026	\$12,800,053
Schools	Wittmann Elementary School	16801 Yvette Way Cerritos, CA 90703	46,468	90.22	4,192,343	100%	4,192,343	\$8,384,686
Schools	Carmenita Middle School	13435 166th St. Cerritos, CA 90703	127,175	95.21	12,108,332	100%	12,108,332	\$24,216,664
Schools	Haskell Junior High	11525 Del Amo Blvd. Cerritos, CA 90703	153,906	95.21	14,653,390	100%	14,653,390	\$29,306,781
Schools	Teitzlaff Junior High	12351 Del Amo Blvd. Cerritos, CA 90703	104,841	95.21	9,981,912	100%	9,981,912	\$19,963,823
Schools	Cerritos High School	12500 183rd St. Cerritos, CA 90703	347,997	92.80	32,294,122	100%	32,294,122	\$64,668,243
Schools	Cerritos High School Gym	12500 183rd St. Cerritos, CA 90703	0	NA	0	NA	5,000	\$5,000

City of Cerritos Hazard Mitigation Plan 3-82

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
Schools	Gahr High School	11111 Artesia Blvd. Cerritos, CA 90703	329,952	92.80	30,619,546	100%	30,619,546	\$61,239,091
Schools	Tracy High School	12222 Cuesta Dr. Cerritos, CA 90703	69,443	92.80	6,444,310	100%	6,444,310	\$12,888,621
Schools	Whitney High School	16800 Shoemaker Ave. Cerritos, CA 90703	152,790	92.80	14,178,912	100%	14,178,912	\$28,357,824
City Property	C-46 MWD COM	Castle & South St. Cerritos, CA 90703	0	NA	120,365	NA	51,353	\$171,718
City Property	La Palma Interconnect	Valley View Ave & 183rd St. Cerritos, CA 90703	0	NA	8,397	NA	0	\$8,397
City Property	Santa Fe Interconnect	1350 Alondra Blvd. Cerritos, CA 90703	0	NA	24,321	NA	0	\$24,321
City Property	Kings Row/South Vault	Kings Row Ave. & South St. Cerritos, CA 90703	0	NA	42,125	NA	491	\$42,616
City Property	Studebaker/South Vault	Studebaker Rd. & South St. Cerritos, CA 90703	0	NA	71,693	NA	0	\$71,693
City Property	Canehill/South Vault	Canehill Ave. & South St. Cerritos, CA 90703	0	NA	42,125	NA	491	\$42,616
City Property	South St. Blow-off	San Gabriel River & South St. Cerritos, CA 90703	0	NA	42,125	NA	491	\$42,616

City of Cerritos Hazard Mitigation Plan 3-83

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
City Property	Greyland Vault	12015 Artesia Blvd. Cerritos, CA 90703	0	NA	24,795	NA	0	\$24,795
City Property	183rd & Marquardt Lift Station	16924 Marquardt Ave. Cerritos, CA 90703	0	NA	89,172	NA	24,779	\$113,951
City Property	Bettencourt Lift Station	16924 Marquardt Ave Cerritos, CA 90703	0	NA	9,979	NA	2,370	\$12,349
City Property	Lift Station	Parkville Ave. & 183rd St. Cerritos, CA 90703	0	NA	62,151	NA	14,397	\$76,548
City Property	Computer Equipment	Various Locations	0	NA	0	NA	3,445,371	\$3,445,371
City Property	Radio & Mobile Telephone Equipment	Various Locations	0	NA	0	NA	851,436	\$851,436
City Property	Scheduled & Mobile Equipment	Various Locations	0	NA	0	NA	2,814,696	\$2,814,696
City Property	On-Premises Auto	Various Locations	0	NA	0	NA	1,832,707	\$1,832,707
City Property	State Farm Property & Storage	19033 Studebaker Rd. Cerritos, CA 90703	11,682	NA	6,019,889	NA	0	\$6,019,889

City of Cerritos Hazard Mitigation Plan 3-84

Type	Name	Address	Square Footage	Cost / Square Foot	Structure Value	Contents Value %	Contents Value	TOTAL
City Property	Mullikan Property	12616 E. 183rd St. Cerritos, CA 90703	33,378	NA	5,663,522	NA	0	\$5,663,522
City Property	Leased & Rented Equipment	Various Locations	0	NA	0	NA	1,236,585	\$1,236,585
City Property	Artwork in Public Places	Various Locations	0	NA	918,669	NA	3,832,960	\$4,751,629
City Property	Arco Station	18310 Carmentia Rd. Cerritos, CA 90703	0	NA	2,300,069	NA	0	\$2,300,069
City Property	Office/Warehouse	12880 Moore St. Cerritos, CA 90703	35,571	NA	6,125,874	NA	0	\$6,125,874
City Property	Office Building	12881 166th St. Cerritos, CA 90703	45,864	NA	9,640,718	NA	0	\$9,640,718
City Property	Vacant Building	18201 Studebaker Rd. Cerritos, CA 90703	0	NA	7,445,055	NA	0	\$7,445,055
							<b>Subtotal</b>	<b>\$729,653,799</b>
<small>Note: All Projected values were listed from FEMA's "Multi-hazard Loss Estimation Methodology, Earthquake Model, HAZUS MFS"  Note: Stated values extracted from the CUIPA Property Schedule Prepared by Alliant Insurance Services, Inc. (2014)</small>								

**Table 3.24: Loss of Function**

**Loss of Function / Continuity Premium (1 day) - City of Cerritos**

Category	Value Per Person	Value Per Day	Continuity Premium	Total
<b>Population: 49,041</b>				
Fire Service	-	\$21,204	10	\$212,040
Police Service	-	\$36,589	10	\$365,890
Water Service	\$93	\$4,560,813	-	\$4,560,813
Electricity	\$126	\$6,179,166	-	\$6,179,166
Wastewater	\$41	\$2,010,681	-	\$2,010,681
<b>Subtotal</b>				<b>\$13,328,590</b>

Note: Values were listed from FEMA's "BCA Reference Guide, June 2009" except Fire Service  
Note: Fire Service values were provided by the LA County Fire Department



Table 3.23 Los Estimator/Vulnerability Assessment – Earthquake through Flood/Dam Failure

City of Cerritos Vulnerability Assessment Calculations					City of Cerritos Vulnerability Assessment Calculations				
Type	Name	TOTAL	Earthquake % Damage	Urban Fire % Loss Estimate	Transportation Accident/Incident % Loss Estimate	Flood/Dam Failure % Damage	Loss Estimate		
Public Buildings	Performing Arts Center	1270 Cerritos Ct, Cerritos, CA 90703	25%	\$2,758,309	5%	20%	\$18,006,647		
Public Buildings	Library	1802 Bloomfield Ave, Cerritos, CA 90703	25%	\$19,168,834	5%	10%	\$7,667,574		
City Property	Library Fine Arts	1802 Bloomfield Ave, Cerritos, CA 90703	25%	\$320,859	5%	10%	\$128,344		
Public Buildings	Sculpture Garden	1812 Bloomfield Ave, Cerritos, CA 90703	25%	\$867,301	5%	10%	\$346,920		
Public Buildings	Cerritos Park East (CPRE)	13324 E 166th St, Cerritos, CA 90703	20%	\$1,686,183	10%	15%	\$1,264,637		
Public Buildings	City Hall	1812 Bloomfield Ave, Cerritos, CA 90703	20%	\$3,886,590	5%	15%	\$2,914,943		
Public Buildings	Copconan Yard	1624 Walnut Ave, Cerritos, CA 90703	25%	\$1,102,917	40%	10%	\$441,007		
Public Buildings	Vehicle Storage	16540 Mirajant Ave, Cerritos, CA 90703	25%	\$388,713	10%	10%	\$143,485		
Fire Building	Fire Station	18030 Pioneer Blvd, Cerritos, CA 90703	30%	\$1,913,374	10%	5%	\$318,886		
Public Buildings	Swim Center	13150 E 166th St, Cerritos, CA 90703	35%	\$4,386,982	10%	15%	\$1,884,425		

City of Cerritos Vulnerability Assessment Calculations					City of Cerritos Vulnerability Assessment Calculations				
Type	Name	TOTAL	Earthquake % Damage	Urban Fire % Loss Estimate	Transportation Accident/Incident % Loss Estimate	Flood/Dam Failure % Damage	Loss Estimate		
Public Buildings	Senior Center at Pat Nixon Park	1294 South St, Cerritos, CA 90701	20%	\$2,678,773	5%	15%	\$2,009,079		
Public Buildings	Shore Community & Skate Park	1294 South St, Cerritos, CA 90701	20%	\$36,264	5%	15%	\$27,198		
Schools	Whitney Gym	1680 South Shoreline Ave, Cerritos, CA 90703	20%	\$987	5%	15%	\$717		
Police Building	Sheriff's Station	18132 Bloomfield Ave, Cerritos, CA 90703	20%	\$6,523,650	5%	20%	\$1,630,813		
Public Buildings	Parking Structure	18027 Bloomfield Ave, Cerritos, CA 90703	25%	\$3,840,302	5%	5%	\$766,050		
Public Buildings	Cerritos Towne Center	2724 Walnut Ave, Cerritos, CA 90703	20%	\$17,748	5%	10%	\$6,874		
Parks	Frontier Park	16910 Maple Ave, Cerritos, CA 90703	20%	\$23,806	5%	10%	\$17,864		
Public Buildings	Heritage Park	18600 Bloomfield Ave, Cerritos, CA 90703	20%	\$1,654,377	5%	10%	\$413,584		
Public Buildings	Golf Course Clubhouse	16401 Puma Ave, Cerritos, CA 90703	20%	\$1,88,469	5%	10%	\$47,117		
Public Buildings	Golf Course Café	16401 Puma Ave, Cerritos, CA 90703	20%	\$21,419	5%	10%	\$16,064		
Public Buildings	Liberty Park	18211 Stubbaker Rd, Cerritos, CA 90703	20%	\$2,062,232	10%	20%	\$1,041,116		



City of Cerritos Vulnerability Assessment Calculations										
Type	Name	TOTAL	Earthquake		Urban Fire		Transportation Accident/Incident		Flood/Dam Failure	
			% Damage	Loss Estimate	%	Loss Estimate	%	Loss Estimate	% Damage	Loss Estimate
Parks	18833 South Bay Gabriel Cerritos, CA 90703	\$229,050	20%	\$45,810	15%	\$34,358	5%	\$11,453	10%	\$22,805
Parks	19650 Acorn St. Cerritos, CA 90703	\$45,673	20%	\$9,135	15%	\$6,851	5%	\$2,164	10%	\$4,367
Parks	13611 East 166th St. Cerritos, CA 90703	\$243,784	20%	\$48,757	15%	\$36,568	5%	\$12,189	10%	\$24,378
Parks	17133 Gardley Rd. Cerritos, CA 90703	\$30,576	20%	\$6,115	15%	\$4,586	5%	\$1,529	10%	\$3,058
Parks	16400 Studebaker Cerritos, CA 90703	\$35,502	20%	\$7,100	15%	\$5,325	5%	\$1,775	10%	\$3,550
Parks	Gardley Road & Estrella Cerritos, CA 90703	\$235,525	20%	\$47,105	15%	\$35,329	5%	\$11,776	10%	\$23,553
Parks	Jacob Avenue & Yearling Cerritos, CA 90703	\$40,665	20%	\$8,133	15%	\$6,100	5%	\$2,033	10%	\$4,067
Parks	18600 S. Linda Cir. Cerritos, CA 90703	\$95,793	20%	\$19,157	15%	\$14,367	5%	\$4,789	10%	\$9,578
Parks	16733 Studebaker Rd. Cerritos, CA 90703	\$27,205	20%	\$5,441	15%	\$4,081	5%	\$1,360	10%	\$2,721
Parks	13307 Acorn St. Cerritos, CA 90703	\$15,593	20%	\$3,119	15%	\$2,339	5%	\$789	10%	\$1,559
Parks	12410 Ash Creek Cerritos, CA 90703	\$94,689	20%	\$18,940	15%	\$14,205	5%	\$4,735	10%	\$9,470

City of Cerritos Vulnerability Assessment Calculations										
Type	Name	TOTAL	Earthquake		Urban Fire		Transportation Accident/Incident		Flood/Dam Failure	
			% Damage	Loss Estimate	%	Loss Estimate	%	Loss Estimate	% Damage	Loss Estimate
Parks	18833 South Bay Gabriel Cerritos, CA 90703	\$98,381	20%	\$19,676	15%	\$14,797	5%	\$4,919	10%	\$9,838
Parks	17718 Elm St. Cerritos, CA 90703	\$478,907	20%	\$95,801	15%	\$71,906	5%	\$23,975	10%	\$47,851
Parks	16800 Brookfield Ave. Cerritos, CA 90703	\$4,377,515	20%	\$875,503	15%	\$656,627	5%	\$218,876	10%	\$437,752
Parks	13575 E. Andy St. Cerritos, CA 90703	\$27,055	20%	\$5,411	15%	\$4,058	5%	\$1,353	10%	\$2,706
Parks	7815 Dennis St. Cerritos, CA 90703	\$27,055	20%	\$5,411	15%	\$4,058	5%	\$1,353	10%	\$2,706
Parks	17503 Shark St. Cerritos, CA 90703	\$36,320	20%	\$7,264	15%	\$5,448	5%	\$1,816	10%	\$3,632
Parks	13187 Brookhaven St. Cerritos, CA 90703	\$457,768	20%	\$91,554	15%	\$68,665	5%	\$22,888	10%	\$45,777
Water	Water Well C-1 12701 East Arroyo Blvd. Cerritos, CA 90703	\$2,851,201	35%	\$996,000	40%	\$1,132,480	10%	\$383,120	10%	\$766,240
Water	Water Well C-2 16540 Marquardt Blvd. Cerritos, CA 90703	\$7,238,728	35%	\$2,538,065	40%	\$2,891,491	5%	\$961,436	20%	\$1,922,872
Water	Water Well C-4 16807 Studebaker Rd. Cerritos, CA 90703	\$6,780,000	35%	\$2,373,011	40%	\$2,712,012	10%	\$678,003	10%	\$1,356,006
Water	Water Well C-5 20101 Cabrillo Ln. Cerritos, CA 90703	\$826,925	35%	\$294,424	40%	\$370,770	10%	\$92,693	10%	\$185,386

City of Carrizo Vulnerability Assessment Calculations									
Type	Name	TOTAL	Earthquake % Damage	Urban Fire %	Transients/Accident/Incident %	Flood/Dam Failure % Damage	Less Estimate	%	Less Estimate
Water	Reclaimed Water Pump	\$2,828,901	35%	\$1,131,650	10%	\$282,890	\$282,890	10%	\$282,890
Schools	Range Elementary School	\$12,617,942	35%	\$4,426,790	5%	\$632,387	\$632,387	10%	\$1,264,794
Schools	Clear Elementary School	\$10,205,145	35%	\$3,571,801	5%	\$510,257	\$510,257	10%	\$1,020,515
Schools	Carrizo Elementary School	\$11,037,876	35%	\$3,863,256	5%	\$551,884	\$551,884	10%	\$1,103,788
Schools	Crescent Elementary School	\$11,163,466	35%	\$3,907,212	5%	\$558,173	\$558,173	10%	\$1,116,346
Schools	Lincoln Elementary School	\$11,102,477	35%	\$3,885,866	10%	\$1,110,247	\$1,110,247	10%	\$1,110,247
Schools	Leal Elementary School	\$11,833,889	35%	\$4,071,854	5%	\$581,683	\$581,683	10%	\$1,163,387
Schools	Pin Nixon Elementary School	\$8,793,022	35%	\$3,077,558	5%	\$439,651	\$439,651	10%	\$879,302
Schools	Stowers Elementary School	\$12,900,053	35%	\$4,480,018	5%	\$640,003	\$640,003	10%	\$1,280,006
Schools	Wittmann Elementary School	\$8,384,686	35%	\$2,894,640	5%	\$419,234	\$419,234	10%	\$838,469
Schools	Carmena Middle School	\$24,216,669	35%	\$8,476,832	5%	\$1,210,833	\$1,210,833	10%	\$2,421,666
Schools	Haskell Junior High	\$29,306,781	35%	\$10,257,273	5%	\$1,465,339	\$1,465,339	10%	\$2,930,678

City of Carrizo Vulnerability Assessment Calculations									
Type	Name	TOTAL	Earthquake % Damage	Urban Fire %	Transients/Accident/Incident %	Flood/Dam Failure % Damage	Less Estimate	%	Less Estimate
Schools	Trezzell Junior High	\$19,683,623	35%	\$6,887,338	5%	\$988,191	\$988,191	10%	\$1,976,382
Schools	Carrizo High School	\$64,689,243	35%	\$22,605,885	5%	\$3,229,412	\$3,229,412	10%	\$6,458,824
Schools	Carrizo High School Gym	\$5,000	35%	\$1,750	5%	\$250	\$250	10%	\$500
Schools	Gain High School	\$81,230,009	35%	\$27,433,882	10%	\$6,123,900	\$6,123,900	10%	\$6,123,900
Schools	Tracy High School	\$12,888,621	35%	\$4,511,017	5%	\$644,431	\$644,431	10%	\$1,288,862
Schools	Whitney High School	\$29,357,624	35%	\$9,925,238	5%	\$1,417,891	\$1,417,891	10%	\$2,835,782
City Property	C-46 MWD COM	\$171,718	20%	\$34,344	5%	\$5,096	\$5,096	10%	\$10,192
City Property	La Palma Interconnect	\$9,397	20%	\$1,879	5%	\$272	\$272	10%	\$544
City Property	Santa Fe Interconnect	\$24,321	20%	\$4,864	5%	\$729	\$729	10%	\$1,458
City Property	King Row South Vault	\$42,616	20%	\$8,523	5%	\$1,278	\$1,278	10%	\$2,556
City Property	Studebaker South Vault	\$71,693	20%	\$14,339	5%	\$2,150	\$2,150	10%	\$4,300

City of Carrizo Vulnerability Assessment Calculations									
Type	Name	TOTAL	Earthquake % Damage	Urban Fire %	Transients/Accident/Incident %	Flood/Dam Failure % Damage	Less Estimate	%	Less Estimate
City Property	Carnell/South Vault	\$42,616	20%	10%	5%	10%	\$2,131	5%	\$4,262
City Property	San Gabriel River & South St. Carrizo, CA 90703	\$42,616	20%	10%	5%	10%	\$2,131	5%	\$4,262
City Property	12015 Arrieta Blvd. Carrizo, CA 90703	\$24,795	20%	10%	5%	10%	\$1,240	5%	\$2,480
City Property	183rd & Marquard Ln Station	\$113,951	20%	10%	5%	10%	\$5,698	5%	\$11,395
City Property	16924 Marquard Rd Carrizo, CA 90703	\$12,349	20%	10%	5%	10%	\$617	5%	\$1,235
City Property	183rd & Marquard Ln Station	\$76,548	20%	10%	5%	10%	\$3,827	5%	\$7,655
City Property	Computer Equipment	\$3,445,271	20%	10%	5%	10%	\$172,269	5%	\$344,537
City Property	Radio & Mobile Telephone Equipment	\$501,436	20%	10%	5%	10%	\$25,072	5%	\$50,144
City Property	Shredded & Metal Equipment	\$2,814,696	20%	10%	5%	10%	\$140,735	5%	\$281,470
City Property	On-Premise Auto	\$1,632,707	20%	15%	5%	10%	\$81,635	5%	\$163,271
City Property	State Farm Property & Storage	\$6,019,889	20%	15%	5%	10%	\$300,994	5%	\$601,989
City Property	Mullikan Property	\$5,663,522	20%	15%	5%	10%	\$283,176	5%	\$566,352

City of Carrizo Hazard Mitigation Plan 3-95

City of Carrizo Vulnerability Assessment Calculations									
Type	Name	TOTAL	Earthquake % Damage	Urban Fire %	Transients/Accident/Incident %	Flood/Dam Failure % Damage	Less Estimate	%	Less Estimate
City Property	Licensed & Bonded Equipment	\$1,236,585	20%	15%	5%	10%	\$247,317	15%	\$185,488
City Property	ATM's in Public Places	\$4,751,629	20%	15%	5%	10%	\$950,326	15%	\$712,744
City Property	Avco Station	\$2,300,069	20%	40%	5%	10%	\$460,014	40%	\$320,028
City Property	Office/Warehouse	\$6,125,674	20%	15%	5%	10%	\$1,225,175	15%	\$916,881
City Property	Office Building	\$8,640,719	20%	15%	5%	10%	\$1,728,144	15%	\$1,446,108
City Property	Vacant Building	\$7,445,055	20%	15%	5%	10%	\$1,489,011	15%	\$1,116,758
Fire Service	Fire Service	\$212,040	40%	25%	10%	10%	\$84,816	25%	\$53,010
Police Service	Police Service	\$365,680	40%	25%	10%	10%	\$146,396	25%	\$91,473
Water Service	Water Service	\$4,560,813	35%	10%	10%	10%	\$1,596,285	10%	\$466,081
Electricity	Electricity	\$6,179,166	20%	10%	10%	10%	\$1,235,833	10%	\$617,917
Wastewater	Wastewater	\$2,010,681	35%	10%	10%	10%	\$703,738	10%	\$301,088
			Earthquake	Urban Fire	Transients/Accident/Incident	Flood/Dam Failure	\$215,791,935		\$183,761,378
									\$44,244,477
									\$32,199,436

City of Carrizo Hazard Mitigation Plan 3-96

Table 3.26 Loss Estimates / Vulnerability Assessment – Pipeline Failure/ Hazardous Material Release through Windstorm

City of Corcoran Vulnerability Assessment Calculations				Pipeline Failure/ Hazardous Material Release				Drought				Terrorism				Windstorm			
Type	Name	TOTAL	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate			
Public Buildings	Performing Arts Center	12700 Center Ct Dr Corcoran, CA 93703	5%	\$4,751,662	2%	\$1,900,665	10%	\$9,503,323	5%	\$4,751,662	5%	\$4,751,662							
Public Buildings	Library	161025 Bloomfield Ave. Corcoran, CA 93703	5%	\$3,853,787	2%	\$1,533,515	10%	\$7,667,574	2%	\$1,533,515	2%	\$1,533,515							
City Property	Library Fire Arts	161025 Bloomfield Ave. Corcoran, CA 93703	5%	\$64,172	2%	\$25,669	10%	\$128,344	2%	\$25,669	2%	\$25,669							
Public Buildings	Sculpture Garden	16125 Bloomfield Ave. Corcoran, CA 93703	5%	\$75,460	2%	\$69,384	5%	\$173,460	2%	\$69,384	2%	\$69,384							
Public Buildings	Quintos Park East (CPR)	12524 E 166th St Corcoran, CA 93703	15%	\$1,264,637	2%	\$168,618	5%	\$421,546	2%	\$168,618	2%	\$168,618							
Public Buildings	City Hall	16125 Bloomfield Ave. Corcoran, CA 93703	5%	\$971,648	2%	\$388,659	10%	\$1,943,295	2%	\$388,659	2%	\$388,659							
Public Buildings	Corporal Yard	16540 Marquardt Ave. Corcoran, CA 93703	20%	\$862,013	2%	\$186,201	5%	\$220,503	2%	\$186,201	2%	\$186,201							
Public Buildings	Vehicle Storage	16540 Marquardt Ave. Corcoran, CA 93703	20%	\$286,970	2%	\$26,697	5%	\$71,743	2%	\$26,697	2%	\$26,697							
Fire Building	Fire Station	16300 Pioneer Blvd Corcoran, CA 93703	5%	\$318,896	2%	\$127,558	5%	\$318,896	2%	\$127,558	2%	\$127,558							
Public Buildings	Swim Center	13150 E 166th St Corcoran, CA 93703	15%	\$1,864,425	2%	\$251,257	5%	\$628,142	2%	\$251,257	2%	\$251,257							

City of Corcoran Vulnerability Assessment Calculations

City of Corcoran Vulnerability Assessment Calculations				Pipeline Failure/ Hazardous Material Release				Drought				Terrorism				Windstorm			
Type	Name	TOTAL	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate			
Public Buildings	Senior Center at Park Nixon Park	12545 South St Corcoran, CA 93701	5%	\$668,693	2%	\$267,877	5%	\$668,693	2%	\$267,877	2%	\$267,877							
Public Buildings	Sports Complex & Shuffle Park	12545 South St Corcoran, CA 93701	5%	\$9,066	2%	\$3,626	5%	\$9,066	2%	\$3,626	2%	\$3,626							
Schools	Whitney Gym	16300 South Ave. Sherrill, CA 93703	5%	\$230	2%	\$96	5%	\$230	2%	\$96	2%	\$96							
Police Building	Sheriff's Station	16135 Bloomfield Ave. Corcoran, CA 93703	10%	\$3,261,825	2%	\$652,365	10%	\$3,261,825	2%	\$652,365	2%	\$652,365							
Public Buildings	Parking Structure	16027 Bloomfield Ave. Corcoran, CA 93703	5%	\$768,090	2%	\$307,224	10%	\$768,090	2%	\$307,224	2%	\$307,224							
Public Buildings	Corcoran Towne Center	12731 Towne Center, Corcoran, CA 93703	5%	\$4,437	2%	\$1,775	10%	\$4,437	2%	\$1,775	2%	\$1,775							
Parks	Frontier Park	16193 Main Ave. Corcoran, CA 93703	5%	\$5,951	2%	\$2,380	5%	\$5,951	2%	\$2,380	2%	\$2,380							
Public Buildings	Heritage Park	16800 Bloomfield Ave. Corcoran, CA 93703	5%	\$413,594	2%	\$166,438	5%	\$413,594	2%	\$166,438	2%	\$166,438							
Public Buildings	Golf Course Clubhouse	16401 Pluma Ave. Corcoran, CA 93703	5%	\$47,117	2%	\$18,647	5%	\$47,117	2%	\$18,647	2%	\$18,647							
Public Buildings	Golf Course Café	16401 Pluma Ave. Corcoran, CA 93703	5%	\$5,365	2%	\$2,142	5%	\$5,365	2%	\$2,142	2%	\$2,142							
Public Buildings	Liberty Park	19211 ShuttleBaker Rd. Corcoran, CA 93703	5%	\$520,558	2%	\$208,223	5%	\$520,558	2%	\$208,223	2%	\$208,223							

City of Cerritos Vulnerability Assessment Calculations										
Type	Name	TOTAL	Pipelines, Filled Hazardous Material Release		Drought		Terrorism		Windstorm	
			% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate
Parks	16550 South Sac Gleno Cerritos, CA 90703	\$228,050	5%	\$11,453	2%	\$4,581	5%	\$11,453	2%	\$4,581
Parks	13650 Acero St. Cerritos, CA 90703	\$43,673	5%	\$2,184	2%	\$873	5%	\$2,184	2%	\$873
Parks	13811 East 186th St. Cerritos, CA 90703	\$243,794	5%	\$12,189	2%	\$4,876	5%	\$12,189	2%	\$4,876
Parks	Ecology Park 17133 Gridley Rd. Cerritos, CA 90703	\$30,576	5%	\$1,529	2%	\$612	5%	\$1,529	2%	\$612
Parks	Estrella Utility Clearance 16400 Shurdecker Rd. Cerritos, CA 90703	\$35,502	5%	\$1,775	2%	\$710	5%	\$1,775	2%	\$710
Parks	Gridley Park Cerritos, CA 90703	\$235,525	5%	\$11,776	2%	\$4,711	5%	\$11,776	2%	\$4,711
Parks	Jazoo Park Joseph Aronson & Yvesling Orlino, CA 90703	\$40,665	5%	\$2,033	2%	\$813	5%	\$2,033	2%	\$813
Parks	Rainbow Park 16000 S. Lindo Cr., Cerritos, CA 90703	\$65,765	5%	\$4,789	2%	\$1,916	5%	\$4,789	2%	\$1,916
Parks	Reservoir Hill Park 16733 Shurdecker Rd. Cerritos, CA 90703	\$27,205	5%	\$1,360	2%	\$544	5%	\$1,360	2%	\$544
Parks	Saddleback Park 13037 Acero St. Cerritos, CA 90703	\$15,593	5%	\$780	2%	\$312	5%	\$780	2%	\$312
Parks	Satellite Park 12410 Ash Creek Cerritos, CA 90703	\$64,699	5%	\$4,725	2%	\$1,894	5%	\$4,725	2%	\$1,894

City of Cerritos Vulnerability Assessment Calculations										
Type	Name	TOTAL	Pipelines, Filled Hazardous Material Release		Drought		Terrorism		Windstorm	
			% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate
Parks	16511 Vista Ave. Cerritos, CA 90703	\$88,381	5%	\$4,419	2%	\$1,868	5%	\$4,419	2%	\$1,868
Parks	17718 El Es Cerritos, CA 90703	\$479,507	5%	\$23,975	2%	\$9,590	5%	\$23,975	2%	\$9,590
Parks	15803 Bloomfield Ave. Cerritos, CA 90703	\$4,377,515	5%	\$218,876	2%	\$87,550	5%	\$218,876	2%	\$87,550
Parks	Bettercourt Park 13675 E. Andy St. Cerritos, CA 90703	\$27,095	5%	\$1,353	2%	\$511	5%	\$1,353	2%	\$511
Parks	El Rancho Verde Park 7615 Dene St. Cerritos, CA 90703	\$27,095	5%	\$1,353	2%	\$511	5%	\$1,353	2%	\$511
Parks	Loma Park 17903 Steak St. Cerritos, CA 90703	\$36,320	5%	\$1,816	2%	\$726	5%	\$1,816	2%	\$726
Parks	Brookhaven Park 13167 Brookhaven St. Cerritos, CA 90703	\$457,768	5%	\$22,888	2%	\$9,155	5%	\$22,888	2%	\$9,155
Water	Water Well C-1 12701 East Arroyo Bvd. Cerritos, CA 90703	\$2,831,201	5%	\$141,560	2%	\$56,024	10%	\$283,120	2%	\$56,024
Water	Water Well C-2 16540 Marquardt Cerritos, CA 90703	\$7,228,728	5%	\$361,436	2%	\$144,575	10%	\$722,873	2%	\$144,575
Water	Water Well C-4 14097 Shurdecker Rd. Cerritos, CA 90703	\$6,789,030	5%	\$339,002	2%	\$135,601	10%	\$678,003	2%	\$135,601
Water	Water Well C-5 20101 Cabrillo Ln. Cerritos, CA 90703	\$926,925	5%	\$46,346	2%	\$18,539	10%	\$92,693	2%	\$18,539

City of Cerritos Vulnerability Assessment Calculations									
Type	Name	TOTAL	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	Loss Estimate
Water	Reclaimed Water Plant	\$2,828,801	5%	\$141,440	2%	\$56,578	10%	\$282,880	\$56,578
Schools	Brigg Elementary School	\$12,647,842	5%	\$632,397	2%	\$316,198	10%	\$1,264,794	\$632,397
Schools	Chavez Elementary School	\$10,205,145	5%	\$510,257	2%	\$255,128	10%	\$1,020,515	\$510,257
Schools	Cerritos Elementary School	\$1,037,876	5%	\$51,894	2%	\$25,947	10%	\$1,037,876	\$51,894
Schools	Gonzales Elementary School	\$11,183,462	5%	\$559,173	2%	\$279,586	10%	\$1,118,346	\$559,173
Schools	Juarez Elementary School	\$11,102,473	5%	\$555,124	2%	\$277,562	10%	\$1,110,247	\$555,124
Schools	Leal Elementary School	\$11,633,869	5%	\$581,693	2%	\$290,846	10%	\$1,163,387	\$581,693
Schools	Pitt Nixon Elementary School	\$8,793,022	5%	\$439,651	2%	\$175,825	10%	\$879,302	\$439,651
Schools	Stovens Elementary School	\$12,800,053	5%	\$640,003	2%	\$320,001	10%	\$1,280,005	\$640,003
Schools	William Elementary School	\$8,384,686	5%	\$419,234	2%	\$167,617	10%	\$838,469	\$419,234
Schools	Carmenta Middle School	\$24,216,664	15%	\$3,632,500	2%	\$484,333	10%	\$2,421,666	\$3,632,500
Schools	Haskell Junior High School	\$28,306,781	5%	\$1,415,339	2%	\$707,669	10%	\$2,830,678	\$1,415,339

City of Cerritos Vulnerability Assessment Calculations									
Type	Name	TOTAL	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	Loss Estimate
Schools	Treadell Junior High School	\$19,863,823	5%	\$993,191	2%	\$397,276	10%	\$1,986,382	\$993,191
Schools	Cerritos High School	\$64,588,243	5%	\$3,229,412	2%	\$1,614,706	10%	\$6,458,243	\$3,229,412
Schools	Cerritos High School Gym	\$5,000	5%	\$250	2%	\$100	10%	\$500	\$250
Schools	Gair High School	\$11,111,111	5%	\$555,556	2%	\$277,778	10%	\$1,111,111	\$555,556
Schools	Tracy High School	\$12,888,621	5%	\$644,431	2%	\$322,215	10%	\$1,288,621	\$644,431
Schools	Whitney High School	\$28,357,824	5%	\$1,417,891	2%	\$708,945	10%	\$2,835,782	\$1,417,891
City Property	C-46 MVD COM	\$171,718	5%	\$8,586	2%	\$4,293	5%	\$8,586	\$8,586
City Property	La Palma Interconnect	\$8,397	5%	\$420	2%	\$168	5%	\$420	\$420
City Property	Santa Fe Interconnect	\$24,321	5%	\$1,216	2%	\$486	5%	\$1,216	\$1,216
City Property	Kings Row/South Vault	\$45,616	5%	\$2,281	2%	\$862	5%	\$2,281	\$2,281
City Property	Shudebaker/South Vault	\$71,693	5%	\$3,585	2%	\$1,434	5%	\$3,585	\$3,585

City of Cerritos Vulnerability Assessment Calculations									
Type	Name	TOTAL	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage
City Property	Cornell Ave. & South St. Cerritos, CA 90703	\$42,616	5%	\$2,131	2%	\$852	5%	\$2,131	2%
City Property	San Gabriel River & South St. Cerritos, CA 90703	\$42,616	5%	\$2,131	2%	\$852	5%	\$2,131	2%
City Property	Groyland Vault	\$24,795	5%	\$1,240	2%	\$486	5%	\$1,240	2%
City Property	12015 Arista Blvd. Ave. Cerritos, CA 90703	\$115,951	5%	\$5,698	2%	\$2,279	5%	\$5,698	2%
City Property	16324 Marquardt Station	\$12,349	5%	\$617	2%	\$247	5%	\$617	2%
City Property	Bellecourt Lift Station	\$76,548	5%	\$3,827	2%	\$1,531	5%	\$3,827	2%
City Property	Phokelle Ave. & 90703	\$5,446,371	5%	\$172,269	2%	\$68,907	5%	\$172,269	2%
City Property	Computer Equipment	\$851,436	5%	\$42,572	2%	\$17,029	5%	\$42,572	2%
City Property	Radios & Mobile Telephone Equipment	\$2,814,696	5%	\$140,735	2%	\$56,294	5%	\$140,735	2%
City Property	Statewide & Mobile Equipment	\$7,852,707	5%	\$391,635	2%	\$156,654	5%	\$391,635	2%
City Property	On-Premise Auto	\$50,989	5%	\$2,549	2%	\$98	5%	\$2,549	2%
City Property	State Farm Property & Storage	\$50,989	5%	\$2,549	2%	\$98	5%	\$2,549	2%

City of Cerritos Vulnerability Assessment Calculations									
Type	Name	TOTAL	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage
City Property	Mulliken Property 17415 E. Cerritos, CA 90703	\$6,663,622	5%	\$333,181	2%	\$113,270	5%	\$333,181	2%
City Property	Leased & Rented Equipment	\$1,236,585	5%	\$61,829	2%	\$24,732	5%	\$61,829	2%
City Property	Workshop in Public Places	\$4,751,629	5%	\$237,581	2%	\$96,033	5%	\$237,581	2%
City Property	16015 Cimarras Rd. Cerritos, CA 90703	\$2,310,069	5%	\$115,003	2%	\$46,001	5%	\$115,003	2%
City Property	Office/Warehouse 12883 Morse St. Cerritos, CA 90703	\$6,126,974	5%	\$306,348	2%	\$122,517	5%	\$306,348	2%
City Property	Office Building 12881 169th St. Cerritos, CA 90703	\$9,640,718	5%	\$482,036	2%	\$182,814	5%	\$482,036	2%
City Property	Vacant Building 16201 Shorebaker Rd. Cerritos, CA 90703	\$7,445,055	5%	\$372,253	2%	\$148,901	5%	\$372,253	2%
City Property	Fire Service	\$215,040	5%	\$10,752	15%	\$31,806	15%	\$10,752	15%
City Property	Police Service	\$366,890	5%	\$18,344	15%	\$54,884	15%	\$18,344	15%
City Property	Water Service	\$1,566,813	5%	\$78,340	15%	\$235,020	15%	\$78,340	15%
City Property	Electricity	\$6,179,166	10%	\$617,917	15%	\$122,583	15%	\$617,917	10%
City Property	Wastewater	\$2,010,681	5%	\$100,534	2%	\$40,214	5%	\$100,534	2%

Table 3.27 summarizes the loss estimates for each hazard.

**Table 3.27: Loss Estimates Summary**

Hazard	Estimated Losses
Earthquake	\$215,791,385
Urban Fire	\$189,781,378
Transportation Accident / Incident	\$44,244,477
Flood/ Dam Failure	\$92,190,436
Pipeline Failure/ Hazardous Material Release	\$44,448,879
Drought	\$14,872,057
Terrorism	\$68,415,284
Windstorm	\$18,189,822

\*Values are rounded to the nearest thousand

### 3.14 Information Sources

During the report development, the following sources provided information regarding historical hazard frequencies and probabilities, detailed hazard descriptions, and raw GIS data for hazard mapping:

- California Department of Forestry and Fire Protection (<http://www.fire.ca.gov/php/index.php>)
- California Department of Water Resources (<http://www.water.ca.gov/>)
- California Geological Survey (<http://www.consrv.ca.gov/cgs/>)
- Federal Emergency Management Agency – [www.fema.gov](http://www.fema.gov)
- Federal Highway Administration – [www.fhwa.dot.gov](http://www.fhwa.dot.gov)

City of Cerritos Vulnerability Assessment Calculations			
Type	Name	Pipeline Failure/Hazardous Material Release	Windstorm
		% Damage	Loss Estimate
	TOTAL	Pipeline Failure/Hazardous Material Release	Loss Estimate
		\$44,448,879	\$18,189,822
		Drought	Loss Estimate
		\$14,872,057	\$68,415,284
		Terrorism	% Damage
			Windstorm



# 4 MITIGATION STRATEGIES

Los Angeles County Pandemic Influenza Plan - <http://publichealth.lacounty.gov/acd/docs/Flu/pandemicfluexec011106.pdf>

National Climatic Data Center - <http://www.ncdc.noaa.gov/oa/ncdc.html>

National Flood Insurance Program – [www.floodsmart.gov](http://www.floodsmart.gov)

Southern California Earthquake Data Center - <http://www.data.scec.org/>

The Los Angeles Times - <http://articles.latimes.com/2006/mar/26/local/me-immig26>

The Martin Luther King Jr. Research and Education Institute - <http://mlk-kpp01.stanford.edu/index.php/>

The Right-to-Know Network – [www.rtknet.org](http://www.rtknet.org)

Toxic Release Inventory (TRI) Program - <http://www2.epa.gov/toxics-release-inventory-tri-program>

United States Chemical Safety Board - <http://www.csb.gov/chevron-refinery-fire/>

United States Bureau of Reclamation – FEMA workshop - [http://www.damsafety.org/media/Documents/DownloadableDocuments/ResourcesByTopic/EMI\\_TS20\\_2013/PRESENTATION06.pdf](http://www.damsafety.org/media/Documents/DownloadableDocuments/ResourcesByTopic/EMI_TS20_2013/PRESENTATION06.pdf)

United States Geological Survey - <http://www.usgs.gov/>

United States News - [www.usnews.com](http://www.usnews.com)

Western Regional Climate Center (<http://www.wrcc.dri.edu/htmlfiles/westwind.final.html>)

## Table of Contents

4.1	Mitigation Goals and Objectives.....	4-1
4.2	Identification of Mitigation Recommendations.....	4-6
4.3	National Flood Insurance Program Compliance.....	4-11
4.4	Prioritization of Mitigation Recommendations .....	4-13
4.5	Implementation Strategy .....	4-20

## List of Tables

Table 4.1:	Overall Plan Goals and Objectives.....	2
Table 4.2:	Hazard-Specific Objectives.....	4
Table 4.3:	Mitigation Action Identification.....	8
Table 4.4:	NFIP Participation .....	12
Table 4.5:	Mitigation Action Prioritization: Benefit-Cost Review.....	14
Table 4.6:	Ongoing Mitigation Strategies .....	21

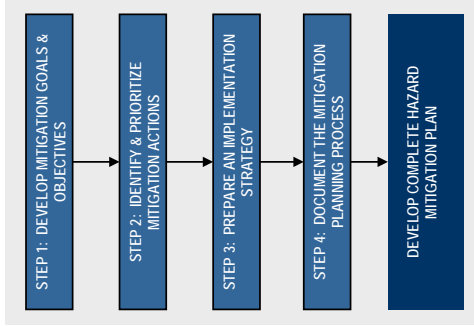
## List of Figures

Figure 4.1:	Mitigation Process.....	4-3
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## 4.1 Mitigation Goals and Objectives

To structure goals and objectives that produce appropriate mitigation actions, the hazard profiles and loss estimates were thoroughly reviewed to identify patterns in the location of potential hazard events and the vulnerability of the infrastructure identified within those locations. This information was used to develop clear goals to mitigate the effects of hazard events.

The mitigation goals provide guidelines for developing mitigation projects to provide prioritized hazard reduction. The goals are based on the goals from the 2004 Natural Hazards Mitigation Plan, the findings of the Risk Assessment, and input from the Steering Committee and characterize long-term hazard reduction targets as well as the enhancement of current mitigation capabilities.



**§201.6(c)(3)(f):** [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Table 4.1 includes the Plan goals and corresponding mitigation objectives. These strategies were developed and reviewed by the Steering Committee using knowledge of the local area (including high-hazard areas and sensitive populations), review of past efforts, findings of the Risk Assessment, and identification of mitigation projects.

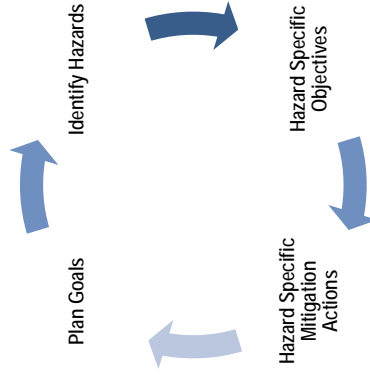
**Table 4.1: Overall Plan Goals and Objectives**

<b>1. Protect Life, Property, and Commerce.</b>	<ul style="list-style-type: none"> <li>• <i>Strategy 1a:</i> Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from hazards.</li> <li>• <i>Strategy 1b:</i> Reduce losses and repetitive damages for chronic hazard events while promoting loss prevention options for catastrophic hazards.</li> <li>• <i>Strategy 1c:</i> Improve hazard assessment information to make recommendations for encouraging preventative measures for new and existing developments which are vulnerable to hazards.</li> <li>• <i>Strategy 1d:</i> Promote business continuity planning for local businesses.</li> </ul>
<b>2. Promote Public Awareness.</b>	<ul style="list-style-type: none"> <li>• <i>Strategy 2a:</i> Develop and implement educational and outreach programs to increase public awareness of the risks associated with hazards.</li> <li>• <i>Strategy 2b:</i> Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.</li> </ul>
<b>3. Protect The Environment.</b>	<ul style="list-style-type: none"> <li>• <i>Strategy 3a:</i> Balance natural resource management and land use planning with hazard mitigation to protect wildlife and the environment.</li> <li>• <i>Strategy 3b:</i> Improve hazard assessment information to make recommendations for encouraging preventative measures for new and existing developments vulnerable to hazards with regard to environmental protection.</li> </ul>
<b>4. Develop and Expand Partnerships and Implementation.</b>	<ul style="list-style-type: none"> <li>• <i>Strategy 4a:</i> Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, businesses, and industries to gain a vested interest in hazard mitigation.</li> <li>• <i>Strategy 4b:</i> Encourage leadership within public and private sector organizations to prioritize and implement local and regional hazard mitigation activities.</li> </ul>

**5. Enhance Emergency Services Capabilities.**

- *Strategy 5a:* Establish a policy to ensure the creation of mitigation projects for critical facilities, services, and infrastructure.
- *Strategy 5b:* Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, businesses, and industries.
- *Strategy 5c:* Coordinate and integrate all-hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

Following the development of the overall Plan goals and strategies, each hazard was reviewed to determine hazard-specific mitigation objectives. These objectives were determined using the overall plan goals, the hazard profiles, and the 2004 Plan hazard-specific objectives, and were used to help establish mitigation action items. Figure 4.1 provides an overview of the mitigation process.



**Figure 4.1: Mitigation Process**

As illustrated in the figure, the hazard mitigation process involves building off of previous steps in order to mitigate each identified hazard. The overall plan goals identified in Table 4.1 are used with the Risk Assessment to identify the hazard-specific objectives, which are then used to brainstorm the mitigation actions. Table 4.2, below, provides the hazard-specific objectives. Table 4.3 in Chapter 4.2 provides the mitigation actions.

**Table 4.2: Hazard-Specific Objectives**

Objectives	
Hazard	Objectives
Earthquake	<p><b>EQ01</b> - Identify potential vulnerabilities in the City and conduct structural improvement projects, as appropriate.</p> <p><b>EQ02</b> - Ensure earthquake preparedness and recovery education remains a priority.</p>
Urban Fire	<p><b>UF01</b> - Identify vulnerable communities that could be affected by urban fires.</p> <p><b>UF02</b> - Ensure urban fire preparedness and recovery education remains a priority.</p>
Transportation Accident/ Incident	<p><b>TA01</b> - Continue to coordinate with affected agencies (NTSB, MTA, local public and private transit agencies, CHP, fire, HazMat department and sheriff) to address effective emergency responses.</p> <p><b>TA02</b> - Ensure heavy industrial traffic is properly managed to minimize the potential for transportation accidents.</p>
Flood/ Dam Failure	<p><b>FL01</b> - Continue to ensure security awareness training is provided to contract agencies and City personnel.</p> <p><b>DF01</b> - Continue to coordinate with the Army Corps of Engineers (for the Prado and Whittier-Narrows Dams) to ensure dam failure preparedness.</p> <p><b>DF02</b> - Continue to update mass evacuation planning with regard to dam failure.</p>
Pipeline Failure/ Hazardous Materials Release	<p><b>PF01</b> - Continue to coordinate with pipeline owners to ensure pipeline integrity is maintained in order to minimize the potential for failures.</p> <p><b>PF02</b> - Continue public education for pipeline safety (Dig Alert).</p>

Hazard	Objectives
Drought	<p><b>DR01</b> - Continue to coordinate with local public and private water agencies to ensure that losses of water have minimal impacts to residents of Cerritos.</p> <p><b>DR02</b> - Continue to expand and improve the City's recycled water systems.</p>
Terrorism	<p><b>TR01</b> - Continue to coordinate with law enforcement and fire to ensure response and recovery procedures are fully established.</p> <p><b>TR02</b> - Coordinate with the City MIS division and contracted service providers to update policies to combat cyber-terrorism.</p> <p><b>TR03</b> - Coordinate with the County Public Health Department to ensure response and recovery in the event of a bio-terrorism/pandemic incident.</p> <p><b>TR04</b> - Continue public education to identify potential acts of terrorism ("See something, say something").</p>
Windstorm	<p><b>WS01</b> - Continue to maintain the tree-trimming program to minimize the effects of severe weather and destructive winds.</p> <p><b>WS02</b> - Ensure that any above-ground public utility assets are analyzed and upgraded to withstand a windstorm.</p>

## 4.2 Identification of Mitigation Recommendations

**§201.6(c)(3)(ii):** [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

Mitigation actions are administrative and/or engineering project recommendations to reduce the City's vulnerability to the identified hazards. Vital City employees are required in the development of actions and projects that are designed to mitigate these hazards and solve problems cost-effectively, as well as ensure consistency with the City's long-term mitigation goals and capital improvements. During the fourth Steering Committee meeting, a team-based approach was used to brainstorm mitigation projects based on the identified hazards and associated loss estimates. In addition, FEMA's Local Mitigation Planning Handbook and the California Adaptation Planning Guide were used to identify actions to mitigate the effects of climate change.

The evaluation and prioritization of the mitigation actions were used as aids to produce a list of recommended mitigation actions to incorporate into the mitigation plan. Each of the mitigation recommendations listed in Table 4.3 fell into one or more of the following categories:

- Prevention – planning and zoning, building codes, capital improvement projects, open space preservation, and storm water management
- Property Protection – acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass
- Personnel Education and Awareness – outreach projects, real estate disclosure, hazard information centers, and education programs
- Natural Resource Protection – sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation
- Emergency Services – warning systems, emergency response services, and protection of critical facilities
- Structural Projects – dams, levees, floodwalls, seawalls, retaining walls, and safe rooms

Table 4.3 provides an overview of the mitigation actions and other relevant information, in no specific order. Following the identification of mitigation actions, a Cost-Benefit Review was conducted in order to determine a prioritization of the items. Chapter 4.4 contains more information on the Cost-Benefit Review and the prioritization of the projects.

Table 4.3: Mitigation Action Identification

Mitigation Activity	Hazards Mitigated	Mitigation Action Category	Corresponding Goals & Objectives	Responsible Department	Resources	Estimated Project Costs	Timeframe	Protects Existing Buildings	Protects New Buildings
2015.HMP.01 - Establish a formal role for the City of Cerritos Hazard Mitigation Committee for implementing, monitoring, and evaluating citywide mitigation activities.	Multi-Hazard	Prevention	1A	Administration	Staff Time	Staff Time	Short	Y	Y
2015.HMP.02 - Develop public and private partnerships to foster hazard mitigation program coordination and collaboration in the City of Cerritos.	Multi-Hazard	Prevention	4A	Community Safety	Staff Time	Staff Time	Ongoing	N	Y
2015.HMP.03 - Conduct evaluations of critical facilities to develop inventories of at-risk buildings and identify areas for improvement. This includes, but is not limited to, incorporating alternative power sources and identifying vulnerabilities to fire and earthquake. Initiate mitigation projects accordingly.	Multi-Hazard	Property Protection	1C	Public Works	Staff Time/ Capital Fund	\$500,000	Medium	N	Y
2015.HMP.04 - Strengthen emergency services preparedness and response by working with hazard mitigation programs and enhancing public education on a regional scale.	Multi-Hazard	Emergency Services	5C	Community Safety	Staff Time	\$5,000 Staff Time	Ongoing	N	Y
2015.HMP.05 - Conduct annual tabletop multi-hazard disaster exercises with local law enforcement, fire and emergency services, and other disaster response agencies to identify vulnerabilities in emergency services and responses.	Multi-Hazard	Emergency Services	5B	Community Safety	Staff Time	\$1,000 Staff Time	Ongoing	N	Y
2015.HMP.06 - Retrofit Traffic Signals for coordination with Emergency Vehicles to decrease response time during a hazard event.	Multi-Hazard	Emergency Services	5A	Public Works	General Fund/ Funding	\$2,000,000	Short	N	Y
2015.HMP.07 - Develop a Business Continuity Planning Display. The display will be designed to raise awareness of why it is important to have a Business Continuity Plan, how to develop a Plan, and will encourage businesses to make sure that their employees have a plan. The display will be developed in partnership with the Chamber of Commerce meetings and activities, civic group gatherings, and other business-related gatherings.	Multi-Hazard	Prevention/ Education Awareness	1D	Community Development	Staff Time/ General Fund	\$1,500 Staff Time	Short	N	Y
2015.HMP.08 - Work with the U.S. Geological Survey (USGS) to verify current GIS earthquake hazard mapping data is accurate for the City of Cerritos and utilize the data to update critical facilities and other citywide facilities in accordance with the Safety Element of the City's General Plan (SPE-2.3).	Earthquake	Prevention	EQ01	Community Development	Grant Fund/Grant Funding	Staff Time	Medium	N	Y
2015.HMP.09 - In accordance with the Safety Element of the City's General Plan (SPE-2.3), the City of Cerritos will conduct a seismic vulnerability study before 1980 to identify vulnerabilities and initiate improvement projects accordingly. These evaluations should highlight potential mitigation actions that would improve public infrastructure and participate critical facilities to meet current seismic standards.	Earthquake	Prevention/ Property Protection	EQ01	Public Works	General Fund/ Funding	\$250,000	Short	N	Y

City of Cerritos Hazard Mitigation Plan

Mitigation Activity	Hazards Mitigated	Mitigation Category	Corresponding Objectives	Responsible Department	Resources	Estimated Project Cost	Timeline	Projects in Progress	Projects in Buildings
2015 IMP 10 - Update the General Plan to include anti-terrorism requirements for new projects/high-profile, private building projects. Anti-terrorism requirements should include, but are not limited to, adequate escape routes for pedestrians & motorists and built-in security systems.	Terrorism	Education and Awareness	EQ02	Administrative Services	General Fund	\$5,000 Staff Time	Ongoing	N	Y
2015 IMP 20 - Continue to update the City's tree inventory and identify high-profile trees according to the standards in the City's Municipal Code to minimize potential hazards.	Wildstorm	Natural Resource Protection	UF01	Administrative Services	General Fund	\$2,000 Staff Time	Short	Y	N
2015 IMP 13 - In accordance with the Safety Element of the City's General Plan (SAF-1.4 & SAF-1.2), conduct evaluations of City flood controls within the City to identify key areas to relate improvement projects accordingly.	Flood/Dam Failure	Prevention/Property Protection	TA02	Community Safety	Staff Time/General Fund	Staff Time	Short	N	Y
2015 IMP 14 - In accordance with the Safety Element of the City's General Plan (SAF-5.3), ensure current maps of underground pipelines are up-to-date and educate the public for pipeline safety (Dig Alert).	Pipeline Hazardous Release	Prevention/Awareness	FL01	Public Works	General Fund	\$20,000 Staff Time	Short	N	Y
2015 IMP 15 - Continue to add recycled water channels to the City's water system to help conserve public water.	Drought	Structural/Natural Resource Protection	PF01	Administrative Services/Community Development	Staff Time/General Fund	\$250 Staff Time	Medium	Y	Y
2015 IMP 16 - Continue public outreach on water conservation.	Drought	Education/Awareness/Natural Resource Protection	DR02	Public Works	General Fund	\$50,000	Ongoing	Y	Y
2015 IMP 17 - Continue public education regarding "See something, say something" for terrorism.	Terrorism	Education/Awareness	DR01	Administrative Services	Staff Time	\$10,000 Staff Time	Ongoing	N	Y
2015 IMP 18 - Coordinate with existing high-profile, private facilities to ensure security and anti-terrorism safety features are in use.	Terrorism	Education/Awareness	TR04	Administrative Services	Staff Time/General Fund	Staff Time	Ongoing	N	Y
	Terrorism	Prevention	4A	Sheriff's Department	Staff Time	Staff Time	Ongoing	N	Y

Notes:  
 1 Values provided by Steering Committee  
 a) Short: Task to be completed within 1-2 years  
 b) Medium: Task to be completed within 3-5 years  
 c) Long: Task to be completed after the 5-year planning period

Mitigation Activity	Hazards Mitigated	Mitigation Category	Corresponding Objectives	Responsible Department	Resources	Estimated Project Cost	Timeline	Projects in Progress	Projects in Buildings
2015 IMP 10 - In accordance with the Safety Element of the City's General Plan (SAF-2.1), create and distribute outreach materials that will increase public awareness to encourage the mitigation of nonstructural and structural projects to minimize vulnerability to earthquakes in the local community.	Earthquake	Education and Awareness	EQ02	Administrative Services	General Fund	\$5,000 Staff Time	Ongoing	N	Y
2015 IMP 11 - Provide information to new home and property buyers on earthquakes, fire and high-hazard safety and encourage the public sector to identify vulnerabilities and funding opportunities.	Urban Fire	Education and Awareness	UF01	Administrative Services	General Fund	\$2,000 Staff Time	Short	Y	N
2015 IMP 12 - Coordinate with County and State (e.g. LERC) representatives to maintain awareness of current trends in illegal transportation of hazardous materials within the City or that may impact the City.	Transportation Hazardous Release	Education/Awareness	TA02	Community Safety	Staff Time/General Fund	Staff Time	Short	N	Y
2015 IMP 13 - In accordance with the Safety Element of the City's General Plan (SAF-1.4 & SAF-1.2), conduct evaluations of City flood controls within the City to identify key areas to relate improvement projects accordingly.	Flood/Dam Failure	Prevention/Property Protection	FL01	Public Works	General Fund	\$20,000 Staff Time	Short	N	Y
2015 IMP 14 - In accordance with the Safety Element of the City's General Plan (SAF-5.3), ensure current maps of underground pipelines are up-to-date and educate the public for pipeline safety (Dig Alert).	Pipeline Hazardous Release	Prevention/Awareness	PF01	Administrative Services/Community Development	Staff Time/General Fund	\$250 Staff Time	Medium	Y	Y
2015 IMP 15 - Continue to add recycled water channels to the City's water system to help conserve public water.	Drought	Structural/Natural Resource Protection	DR02	Public Works	General Fund	\$50,000	Ongoing	Y	Y
2015 IMP 16 - Continue public outreach on water conservation.	Drought	Education/Awareness/Natural Resource Protection	DR01	Administrative Services	Staff Time	\$10,000 Staff Time	Ongoing	N	Y
2015 IMP 17 - Continue public education regarding "See something, say something" for terrorism.	Terrorism	Education/Awareness	TR04	Administrative Services	Staff Time/General Fund	Staff Time	Ongoing	N	Y
2015 IMP 18 - Coordinate with existing high-profile, private facilities to ensure security and anti-terrorism safety features are in use.	Terrorism	Prevention	4A	Sheriff's Department	Staff Time	Staff Time	Ongoing	N	Y

### Mitigation Strategy Discussion

The Mitigation Actions described in Table 4.3, above, and prioritized in Table 4.5, below, are the final products of the Steering Committee's efforts. It should be noted that several actions had been put forth by the Committee, but, upon further discussion, were removed because it was decided the actions would be ineffective in mitigating the specified hazard or that the actions were captured by another Mitigation Strategy. For example, it was suggested the City could educate the public on best driving practices for commercial vehicles to mitigate the potential for future transportation accidents within the City. It was noted, however, that most commercial transportation throughout the City is carried out by companies headquartered outside the City boundaries and would not fall under the City's jurisdiction. Additionally, there was a recommendation to develop, enhance, and implement educational programs aimed at mitigating risk to citizens. This was removed and replaced with several hazard-specific outreach tasks that further defined the City's objectives regarding public education. Lastly, it was suggested the team add a mitigation action to specifically address climate change. In this case, the Steering Committee decided to focus on the effects on climate change and include tasks that were specific to the hazards resulting from climate change impacts, specifically drought, urban fire, and flood.

### 4.3 National Flood Insurance Program Compliance

§201.6(c)(3)(ii): [The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

The National Flood Insurance Program (NFIP) is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an alternative to disaster assistance and reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

Table 4.4 summarizes the City of Cerritos' participation in the program.

Table 4.4: NFIP Participation

CID	Community Name	County	Init. FHBM Identified	Init. FIRM Identified	Curr. Eff. Map Date	Reg. Emer. Date	Tribal
060108	City of Cerritos	Los Angeles	06/28/74	09/26/08	09/26/08	02/20/79	No

### Continued Compliance

As part of the City of Cerritos continued compliance with NFIP, the Cerritos Municipal Code includes Chapter 6.36: Floodplain Management Program and Regulations. This is designed to promote the the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in flood-prone areas. The ordinance outlines several methods of reducing flood losses including documenting standards of construction for utilities, subdivisions, and manufactured homes

### Flood Recommendations/Repetitive Loss Properties

There were no properties identified as having repetitive losses or assets impacted by regular flooding. In fact, the City of Cerritos is located in a Flood Zone X (Map Number 06037C1839F, Panels 1839, 1840, and 1980; dated November 26, 2007). According to the FEMA website, areas of this designation are expected to have minimal flood incidents, are outside the 500-year flood level, and are protected by levees from the 100-year flood. However, the City identified a recommendation for mitigating flood hazards in the "Mitigation Action Identification" table. Specifically, action HMP.2015.13 is designed to minimize losses to critical City facilities as a result of flooding.

## 4.4 Prioritization of Mitigation Recommendations

§201.6(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

A simplified Benefit-Cost Review was applied in order to prioritize the mitigation recommendations for implementation. The priority for implementing mitigation recommendations depends upon the overall cost effectiveness of the recommendation, when taking into account monetary and non-monetary costs and benefits associated with each action. Additionally, the following questions were considered when developing the Benefit-Cost Review:

- How many people will benefit from the action?
- How large an area is impacted?
- How critical are the facilities that benefit from the action?
- Environmentally, does it make sense to do this project for the overall community?

Table 4.5 provides a detailed benefit-cost review for each mitigation recommendation, as well as a relative priority rank (High, Medium, and Low) based upon the judgment of the Steering Committee. The general category guidelines are listed below.

- High – Benefits are perceived to exceed costs without further study or evaluation
- Medium – Benefits are perceived to exceed costs, but may require further study or evaluation prior to implementation
- Low – Benefits and cost evaluations requires additional evaluation prior to implementation

It should be noted that the values for costs (cons), are estimates only.

Table 4.5: Mitigation Action Prioritization: Benefit-Cost Review

Mitigation Activity	Benefits (Pros)	Costs (Cons)	Priority
2015.HMP.01 - Establish a formal role for the City of Cerritos Hazard Mitigation Steering Committee for implementing, monitoring, and evaluating citywide mitigation activities.	<ul style="list-style-type: none"> <li>• Avoids Emergency Management Costs</li> </ul>	<ul style="list-style-type: none"> <li>• Staff time for coordination</li> </ul>	High
2015.HMP.02 - Develop public and private partnerships to foster hazard mitigation program coordination and collaboration in the City of Cerritos.	<ul style="list-style-type: none"> <li>• Avoids Emergency Management Costs</li> </ul>	<ul style="list-style-type: none"> <li>• Staff time for coordination</li> </ul>	High
2015.HMP.03 - Conduct evaluations of critical facilities to develop inventories of at-risk buildings and identify areas for improvement. This includes, but is not limited to, incorporating alternative power sources and identifying vulnerabilities to fire and earthquake. Initiate mitigation projects accordingly.	<ul style="list-style-type: none"> <li>• Avoids Physical Damage</li> <li>• Avoids Loss-of-Function Costs</li> <li>• Avoids Casualties</li> </ul>	<ul style="list-style-type: none"> <li>• \$500,000 (evaluations of all forty-five (45) critical facilities in the City with special attention given to identifying vulnerabilities and mitigation actions)</li> <li>• Construction costs for resulting mitigation projects</li> </ul>	High
2015.HMP.04 - Strengthen emergency services preparedness and response by linking emergency services with hazard mitigation programs and enhancing public education on a regional scale.	<ul style="list-style-type: none"> <li>• Avoids Emergency Management Costs</li> <li>• Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>• Staff time for coordination and to establish the capability of the City to participate in regional safety efforts</li> <li>• \$5,000 (Material costs of outreach program)</li> </ul>	Medium



Mitigation Activity	Benefits (Pros)	Costs (Cons)	Priority
2015.HMP.05 - Conduct annual tabletop multi-hazard disaster exercises with local law enforcement, emergency managers, town and county officials, the Local Emergency Planning Committee (LEPC) and other disaster response agencies to identify vulnerabilities in emergency services and response.	<ul style="list-style-type: none"> <li>Avoids Emergency Management Costs</li> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>\$1,000 (Material costs for exercise development)</li> <li>Staff time for coordination</li> </ul>	High
2015.HMP.06 - Retrofit traffic signals for coordination with Emergency Vehicles to decrease response time during a hazard event.	<ul style="list-style-type: none"> <li>Avoids Physical Damages (Emergency Authorities can respond faster therefore reducing the amount of damage)</li> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>\$2,000,000 (City-wide traffic signal upgrades to respond to Emergency Vehicles)</li> </ul>	Low
2015.HMP.07 - Develop a Business Continuity Planning display. The display will be designed to raise awareness of why it is important to have a Business Continuity Plan, how to develop a Plan, and will encourage businesses to make sure their Plan aligns with the County's Plan. The display will be appropriate for use at local Chamber of Commerce meetings and activities, civic group gatherings, and other business-related gatherings.	<ul style="list-style-type: none"> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>Staff time for coordination</li> <li>\$1,500 (Material Costs of display development)</li> </ul>	Medium

Mitigation Activity	Benefits (Pros)	Costs (Cons)	Priority
2015.HMP.08 - Work with the U.S. Geological Survey (USGS) to verify current GIS earthquake hazard mapping data is accurate for the City of Cerritos and utilize technical analysis of earthquake hazards to identify vulnerabilities in accordance with the Safety Element of the City's General Plan (SAF-2.3).	<ul style="list-style-type: none"> <li>Avoids Physical Damages</li> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>Staff time to ensure the City acquires all new USGS map updates</li> </ul>	High
2015.HMP.09 - In accordance with the Safety Element of the City's General Plan (SAF-2.3), conduct new seismic strength evaluations of critical City facilities built before 1980 to identify vulnerabilities and initiate improvement projects accordingly. These evaluations should highlight potential mitigation actions that would improve public infrastructure and reinforce critical facilities to meet current seismic standards.	<ul style="list-style-type: none"> <li>Avoids Physical Damages</li> <li>Avoids Casualties</li> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>\$250,000 (Cost of new evaluations to pre-1980 facilities including, but not limited to, City Hall, Heritage Park, and Swim Center locations)</li> <li>Construction costs for resulting mitigation projects</li> </ul>	Low
2015.HMP.10 - In accordance with the Safety Element of the City's General Plan (SAF-2.1), create and distribute outreach materials that will increase public awareness and encourage the initiation of nonstructural and structural projects to minimize vulnerability to earthquakes in the local community.	<ul style="list-style-type: none"> <li>Avoids Physical Damages</li> <li>Avoids Casualties</li> <li>Avoids Loss of Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>\$5,000 (Material costs of outreach program)</li> <li>Staff time for coordination</li> </ul>	Medium

Mitigation Activity	Benefits (Pros)	Costs (Cons)	Priority
2015:HMP.11 - Provide information to new home and property buyers on earthquake, fire and multi-hazard safety and encourage the public sector to identify vulnerabilities and initiate improvement projects.	<ul style="list-style-type: none"> <li>Avoids Physical Damages</li> <li>Avoids Casualties</li> <li>Avoids Loss of Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>Staff time for coordination</li> <li>\$5,000 annually (Material costs of outreach program)</li> </ul>	High
2015:HMP.12 - Coordinate with County and State (i.e. Local Emergency Planning Committee (LEPC)) representatives to maintain awareness of current trends in illegal transportation of hazardous materials within the City or that may impact the City.	<ul style="list-style-type: none"> <li>Avoids Physical Damages</li> <li>Avoids Casualties</li> </ul>	<ul style="list-style-type: none"> <li>Staff time for coordination</li> </ul>	High
2015:HMP.13 - In accordance with the Safety Element of the City's General Plan (SAF-1.4 & SAF-1.2), conduct evaluations of City flood controls within the City to ensure efficient operations and identify potential storm drain improvements. Then, identify key areas to initiate improvement projects accordingly.	<ul style="list-style-type: none"> <li>Avoids Physical Damages</li> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>\$50,000 (Flood control evaluation)</li> <li>Construction costs for resulting mitigation projects</li> <li>Staff time for coordination</li> </ul>	Medium
2015:HMP.14 - In accordance with the Safety Element of the City's General Plan (SAF-5.3), ensure current maps of underground pipelines are up-to-date and educate the public for pipeline safety (Dig Alert).	<ul style="list-style-type: none"> <li>Avoids Loss-of-Function Costs</li> <li>Avoids Physical Damages</li> <li>Avoids Casualties</li> </ul>	<ul style="list-style-type: none"> <li>\$500 (Annual cost of map evaluation)</li> <li>Staff time needed to implement public outreach</li> </ul>	High

Mitigation Activity	Benefits (Pros)	Costs (Cons)	Priority
2015:HMP.15 - Continue to add recycled water channels to the City's water system to help conserve potable water.	<ul style="list-style-type: none"> <li>Avoids Physical Damages to Landscaping</li> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>\$50,000 (project cost to add additional water channels)</li> </ul>	Low
2015:HMP.16 - Continue public outreach on water conservation.	<ul style="list-style-type: none"> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>\$10,000 (Material costs of a variety of printed materials to continue high-priority outreach program)</li> <li>Staff time for coordination</li> </ul>	High
2015:HMP.17 - Continue public education regarding "See something, say something" for terrorism.	<ul style="list-style-type: none"> <li>Avoids Physical Damages</li> <li>Avoids Casualties</li> <li>Avoids Loss-of-Function Costs</li> </ul>	<ul style="list-style-type: none"> <li>Staff time for coordination</li> </ul>	Low
2015:HMP.18 - Coordinate with existing high-profile, private facilities to ensure security and anti-terrorism safety features are in use.	<ul style="list-style-type: none"> <li>Avoids Emergency Management Costs</li> <li>Avoids Loss-of-Function Costs</li> <li>Avoids Casualties</li> <li>Avoids Physical Damages</li> </ul>	<ul style="list-style-type: none"> <li>Staff time for coordination</li> </ul>	Medium

## 4.5 Implementation Strategy

Mitigation Actions classified as high-priority mitigation actions provide the most significant vulnerability reduction, as related to cost and probability, and are typically implemented before lower ranked improvements. The City of Cerritos, however, may find that under some circumstances a recommendation classified as a low-priority mitigation action may need to be implemented before a higher priority recommendation. The priority levels associated with each improvement are indicated on the "Mitigation Action Prioritization: Benefit-Cost Review" table in the previous section.

### 2004 Hazard Mitigation Plan Strategies

The Project Team reviewed the mitigation strategies and actions from the 2004 Local Hazard Mitigation Plan. The 2004 Plan outlined mitigation strategies scheduled for completion in the near future and additional projects for consideration. However, as many of these projects are contingent on the City receiving grant funding to implement, few of them have been implemented.

Several of the Future Mitigation Strategies from the 2004 Plan have been carried through into this update. Table 4.6 on the following page provides the mitigation strategies from the 2004 Plan and their correlation to the current Plan. As mentioned, previously, few of the mitigation actions garnered the funding necessary for implementation. The table on the following page denoted whether or not an action was completed since the last Plan update.

Mitigation Activity	Benefits (Pros)	Costs (Cons)	Priority
2015:HMP.19 - Update the General Plan to include anti-terrorism requirements for new projected high-profile, private building projects. Anti-terrorism requirements should include, but are not limited to, adequate escape routes for pedestrians & motorists and built-in security systems.	<ul style="list-style-type: none"> <li>Avoids Emergency Management Costs</li> <li>Avoids Loss-of-Function Costs</li> <li>Avoids Casualties</li> <li>Avoids Physical Damages</li> </ul>	<ul style="list-style-type: none"> <li>\$1,000,000 (Full General Plan update to include anti-terrorism requirements)</li> </ul>	Low
2015:HMP.20 - Continue to update the City's tree inventory and identify vulnerabilities. All trees should be maintained according to the standards in the City's Municipal Code to minimize potential hazards.	<ul style="list-style-type: none"> <li>Avoids Physical Damages</li> <li>Avoids Loss-of-Function Costs</li> <li>Avoids Casualties</li> </ul>	<ul style="list-style-type: none"> <li>Staff Time for coordination</li> </ul>	High

**Table 4.6: Ongoing Mitigation Strategies**

2004 Plan Mitigation Strategies		Correlated Current Mitigation Strategies		Completed
MH #1-1	Integrate the goals and action items from the City's Natural Hazard Mitigation Plan into existing regulatory documents and programs, where appropriate.	As no known plans were set for update within the planning period, this action was removed.		Ongoing
MH #1-2	Identify and pursue funding opportunities to develop and implement local mitigation activities.	This action was not considered relevant to the revision of the Plan and was removed.		No
MH #1-3	Establish a formal role for the City of Cerritos Hazard Mitigation Advisory Committee to develop a sustainable process for implementing, monitoring, and evaluations citywide mitigation activities.	2015:HMP.01 - Establish a formal role for the City of Cerritos hazard Mitigation Steering Committee for implementing, monitoring, and evaluation citywide mitigation activities.		No
MH #1-4	Develop public and private partnerships to foster natural hazard mitigation program coordination and collaboration in the City of Cerritos.	2015:HMP.02 - Develop public and private partnerships to foster hazard mitigation program coordination and collaboration in the City of Cerritos.		Yes/Ongoing
MH #1-5	Develop inventories of at-risk building and infrastructure and prioritize mitigation projects.	2015:HMP.03 - Conduct evaluations of critical facilities to develop inventories of at-risk buildings and identify areas for improvement. This includes, but is not limited to, incorporating alternative power sources and identifying vulnerabilities to fire and earthquake. Initial mitigation projects accordingly.		No
MH #1-6	Strengthen emergency services preparedness and response by linking emergency services with natural hazard mitigation programs and enhancing public education on a regional scale.	2015:HMP.04 - Strengthen emergency services preparedness and response by linking emergency services with hazard mitigation programs and enhancing public education on a regional scale.		No
MH #1-7	Develop, enhance, and implement education program aimed at mitigation natural hazards, and reducing the risk to citizens, public agencies, private property owners, businesses, and schools	This mitigation action was separated into several hazard-specific mitigation actions several with additional directions about the type of information the City would like to share with the public. Please see actions 2015:HMP.07, 20106:HMP.10, 2015:HMP.11, 2015:HMP.16, 2015:HMP.17, and 2015:HMP.18.		Yes/Ongoing

MH #1-8 - Conduct annual tabletop disaster exercises with local law enforcement, emergency managers, town and county officials, the Local Emergency Planning Committee and other disaster response agencies.	2015:HMP.05 - Conduct annual tabletop multi-hazard disaster exercises with local law enforcement, emergency managers, town and county officials, the Local Emergency Planning Committee and other disaster response agencies to identify vulnerabilities in emergency services and response. This mitigation action was not clear. Currently, all City building codes are being enforced. The action was deemed irrelevant.	Yes
MH #1-9 All Building Code Compliance	This mitigation action is already implemented by the City and was therefore deemed irrelevant.	No
MH #1-10 Adopt Uniform Building Code	This mitigation action is already implemented by the City and was therefore deemed irrelevant.	Yes
MH #1-11 - Retrofit Traffic Signals for coordination with Emergency Vehicle Response	2015:HMP.06 - Retrofit Traffic Signals for coordination with Emergency Vehicles to decrease response time during a hazard event.	No
MH #1-12 Develop a Business Continuity Planning Display. The display will be designed to raise the awareness level of why it is important to have a Business Continuity Plan, how to develop a plan, and will encourage business to make sure that their plan fits in with the County's plan. This display will be appropriate for use at local Chamber of Commerce meetings and activities, civic group gatherings and other business-related matters.	2015:HMP.07 - Develop a Business Continuity Planning Display. The display will be designed to raise the awareness level of why it is important to have a Business Continuity Plan, how to develop a plan, and will encourage business to make sure that their plan fits in with the County's plan. This display will be appropriate for use at local Chamber of Commerce meetings and activities, civic group gatherings and other business-related matters.	No
MH #1-13 Conduct a study of Public facilities for redesign	2015:HMP.03 - Conduct evaluations of critical facilities to develop inventories of at-risk buildings and identify areas for improvement. This includes, but is not limited to, incorporating alternative power sources and identifying vulnerabilities to fire and earthquake. Initiate mitigation projects accordingly.	No
EQ #2-1 Integrate new earthquake hazard mapping data for the City of Cerritos and improve technical analysis of earthquake hazards.	2015:HMP.08 - Work with U.S. Geological Survey (USGS) to verify current GOS earthquake hazard mapping data is accurate for the City of Cerritos and utilize technical analysis of earthquake hazards to	Yes

EQ #2-2 - Incorporate the Regional Earthquake Transportation Evacuation Routes developed by the Regional Emergency Manager's groups into the City General Plan.	Identify vulnerabilities in accordance with the Safety Element of the City's General Plan (SAF-2.3). The General Plan update is not anticipated to take place until the next planning period. Therefore, this action was dropped from the list to be inserted again at the appropriate time.	No
EQ #2-3 Identify funding sources for structural and nonstructural retrofitting of structures that are identified as seismically vulnerable.	As an approved HMP inherently makes the City eligible for grant funding, this task was considered irrelevant.	No
EQ #2-4 Encourage seismic strength evaluations of critical facilities in the City to identify vulnerabilities for mitigation of public infrastructure, and critical facilities to meet current seismic standards	2015.HMP.03 - Conduct evaluations of critical facilities to develop inventories of at-risk buildings and identify areas for improvement. This includes, but is not limited to, incorporating alternative power sources and identifying vulnerabilities to fire and earthquake. Initiate mitigation projects accordingly.	No
EQ #2-5 Encourage reduction of nonstructural and structural earthquake hazards in homes, schools, businesses, and government offices.	2015.HMP.11 - Provide information to new home and property buyers on earthquake, fire, and multi-hazard safety and encourage the public sector to identify vulnerabilities and initiate improvement projects.	Yes
EQ #2-6 - Saf-2 Saf-2.1 - Outreach materials	2015.HMP.10 - In accordance with the Safety Element of the City's General Plan (SAF-2.1), create and distribute outreach materials that will increase public awareness to encourage the initiation of nonstructural and structural projects to minimize vulnerability to earthquakes in the local community.	Yes
EQ #2-7 Install and improve back-up power to critical facilities.	This action was deemed no longer critical by the current Steering Committee and was dropped from the action list.	No
EQ #2-8 Provide new home and property buys with information on quality redevelopment. The information is probably most efficiently dispersed at the town hall and other community-owned public facilities	2015.HMP.11 - Provide information to new home and property buyers on earthquake, fire, and multi-hazard safety and encourage the public sector to identify vulnerabilities and initiate improvement projects.	Yes

FLD #3-1 Develop better urban flood warning systems	Any improvements in the flood warning system would have to come from the U.S. Corp of Engineers. As a result, this action was dropped from the Plan revision. The City identify any portions of the City as "flood prone" - A new action was developed to focus on flood controls to highlight storm drain improvements.	No
FLD #3-2 Enhance data and mapping for flooding information within the City and identify and map flood-prone areas.	2015.HMP.13 - In accordance with the Safety Element of the City's General Plan (SAF-1.4 & SAF-1.2), conduct evaluations of City flood controls within the City to ensure efficient operations and identify potential storm drain improvements. Then, identify key areas to initiate improvement projects accordingly.	No
FLD #3-3 - Saf-1 Gen Plan Saf-1.4 maintenance of flood control facilities	2015.HMP.13 - In accordance with the Safety Element of the City's General Plan (SAF-1.4 & SAF-1.2), conduct evaluations of City flood controls within the City to ensure efficient operations and identify potential storm drain improvements. Then, identify key areas to initiate improvement projects accordingly.	No
FLD #3-4 Saf-1 Gen Plan Saf-1.2 Identify storm drain improvements	2015.HMP.13 - In accordance with the Safety Element of the City's General Plan (SAF-1.4 & SAF-1.2), conduct evaluations of City flood controls within the City to ensure efficient operations and identify potential storm drain improvements. Then, identify key areas to initiate improvement projects accordingly.	No
FLD #3-5 Saf-1 Gen Plan saf-1.3 Annual review of SEMS and evacuation route	2015.HMP.04 - Strengthen emergency services preparedness and response by linking emergency services with hazard mitigation programs and enhancing public education on a regional scale.	No
FLD #3-6 saf-1 Gen Plan Saf-1.1 Flood damage control	This action was not complete and unnecessary due to newly added mitigation activities. As a result, this mitigation action was dropped.	No
WS #4-1 Develop and implement programs to keep falling trees from threatening lives, property, and public infrastructure during windstorm events.	2015.HMP.20 - Continue to update the City's tree inventory and identify vulnerabilities. All trees should be maintained according to the standards in the City's Municipal Code to minimize potential hazards.	Yes/Ongoing

## Table of Contents

5.1	Mitigation Progress Monitoring .....	5-1
5.2	Planning Mechanisms .....	5-2
5.2.1	Process to Incorporate the Mitigation Strategy into Other Planning Mechanisms .....	5-2
5.2.2	Available Planning Mechanisms to Incorporate Mitigation Requirements .....	5-3
5.3	Periodic Assessment Requirements .....	5-5
5.4	Update Requirements .....	5-6
5.4.1	Plan Update .....	5-7
5.4.2	Continued Public Involvement .....	5-7

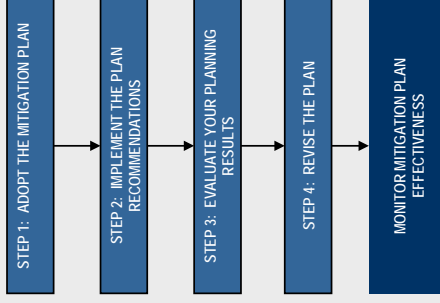
## List of Tables

Table 5.1:	Hazard Mitigation Plan Goals .....	5-7
Table 5.2:	Action Item Implementation .....	5-9

WS #4-2 Enhance strategies for debris management after windstorm events.	The City's debris removal capabilities we deemed sufficient. As a result, this mitigation action was dropped.	No
WS #4-3 Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms.	The City's powerlines are mostly underground. Therefore, this action was no longer relevant and dropped from the action list.	Yes
WS #4-4 Increase public awareness of windstorm mitigation activities.	This mitigation action was separated into several hazard-specific mitigation actions several with additional directions about the type of information the City would like to share with the public. Please see actions 2015:HMP.07, 20105:HMP.10, 2015:HMP.11, 2015:HMP.16, 2015:HMP.17, and 2015:HMP.18.	Yes/Ongoing

## 5.1 Mitigation Progress Monitoring

The Mitigation Strategy section in the Hazard Mitigation Plan identifies mitigation actions that have been prioritized based on the loss estimates and the probability of each hazard, which will typically be implemented according to the priority rank. To thoroughly track hazard mitigation status, the City of Cerritos must continuously monitor and document the progress of the implementation of mitigation actions. Though mitigation actions may be delegated to different departments within the City, the Management Analyst will have the responsibility of monitoring overall progress.



**§201.6(c)(4)(ii):** [The plan maintenance process shall include a] section describing the method and schedule of **monitoring**, evaluating, and updating the mitigation plan within a five-year cycle.

To facilitate this monitoring process, Table 5.2: "Action Item Implementation" was developed to provide a mechanism for monitoring the overall implementation progress. The table is designed to monitor mitigation actions according to project managers, project status, and project milestones.

## 5.2 Planning Mechanisms

**§201.6(c)(4)(ii):** [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

### 5.2.1 Process to Incorporate the Mitigation Strategy into Other Planning Mechanisms

The City of Cerritos maintains the following processes to incorporate mitigation strategies of the Hazard Mitigation Plan into planning mechanisms.

#### Website

The City of Cerritos Hazard Mitigation Plan will be posted on the City website to enable citizens to review and provide feedback regarding mitigation objectives and strategies. Feedback from residents can be incorporated during the annual review or five year update of the Hazard Mitigation Plan.

#### City of Cerritos City Council

The City of Cerritos City Council is responsible for approving projects, plans, and programs on a City-wide level. By providing mitigation planning concepts to the City Council, mitigation actions and projects will be incorporated into relevant planning efforts.

#### Commissions

To assist Cerritos' City Council in reviewing prominent issues, the City has established the five (5) commissions listed below.

- Economic Development
- Fine Arts and Historical
- Parks and Recreation
- Planning
- Property Preservation

As necessary, each specialized commission can review and implement hazard mitigation activities that affect its goals and objectives.

### **Committees**

In addition to the five (5) commissions, the City has also established the Community Safety and Let Freedom Ring Committees to educate and assist the community with relevant safety issues and coordinate local gatherings.

These committees can help raise awareness about hazardous events that can affect the City, educate the public about the actions the City is taking to reduce loss, and supply avenues for the community to provide feedback.

### **Community Development Department**

The Planning Division of Cerritos' Community Development Department works closely with the Planning Commission to ensure that development within the City is consistent with the General Plan goals and policies, as well as in the best interests of the City. This includes development of land use, general planning, zoning requirements, and residential projects. Mitigation measures can be incorporated into potential projects.

The Building and Safety Division (the Division) of Cerritos' Community Development Department is responsible for reviewing construction plans and various building inspection activities. The objective of the Division is to protect the public in regards to building design and construction. Hazard mitigation activities that get incorporated into building codes will be enforced by the Division.

### **5.2.2 Available Planning Mechanisms to Incorporate Mitigation Requirements**

The City of Cerritos uses the following local planning mechanisms for incorporating the mitigation requirements of the Hazard Mitigation Plan.

### **General Planning**

The City of Cerritos is responsible for updating and incorporating mitigation actions and concepts in the General Plan. The General Plan is evaluated on a periodic basis, which includes a review of the policies and programs associated with land use and development, among other things. Mitigation actions from the Hazard Mitigation Plan will be reviewed during the next scheduled update of the General Plan, and incorporated as applicable. As part of this review, ordinances and codes will be reviewed to ensure they are consistent with the mitigation strategies and referred to the appropriate regulatory authority as needed.

### **Urban Water Management Plan**

The City of Cerritos is responsible for updating and incorporating mitigation actions and concepts into the City of Cerritos Urban Water Management Plan (UWMP). The UWMP is updated every five years, which includes a review of the policies and programs associated with providing adequate water supplies to meet demands under a range of water supply conditions. Mitigation actions from the Hazard Mitigation Plan will be reviewed during the next scheduled update of the plan and incorporated as applicable. As part of this review, ordinances and codes will be reviewed to ensure they are consistent with the mitigation strategies and referred to the appropriate regulatory authority as needed. The UWMP was updated in 2010, with its next revision scheduled in the near future.

### **Emergency Operations Plan**

The City of Cerritos maintains an Emergency Operations Plan (EOP) that includes profiles and specific responses for earthquake, hazardous materials incident, flooding and several other hazards mentioned in the Hazard Mitigation Plan. The City will incorporate the Risk Assessment into the EOP in addition to using emergency scenarios outlined in the report to flush out potential mitigation actions.

### **Capital Improvements Program**

The City of Cerritos maintains a Capital Improvements Program (CIP) with projects that are budgeted for at least a five year period. Engineering mitigation projects are included within the CIP. Additionally, the projects already included within the CIP are reviewed for mitigation improvements (e.g., areas prone to flooding are configured with mitigation elements, current seismic design criteria is applied to construction, facility locations are reviewed for special hazards, etc.).



### 5.3 Periodic Assessment Requirements

§201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, **evaluating**, and updating the mitigation plan within a five-year cycle.

Mitigation planning is an ongoing process, and as such, the Hazard Mitigation Plan should be treated as a living document that must grow and adapt in order to keep pace with changes within the City. Continuing from the 2004 Natural Hazards Mitigation Plan, an annual assessment will be completed to document any changes in site hazards (e.g., updated FIRMs maps, contemporary seismic studies, etc.) or the installation and purchase of new equipment (e.g., back-up generators, emergency response equipment, etc.) to ensure they do not have any major effects on City's hazard vulnerabilities that would impact the conclusions or actions associated with the Hazard Mitigation Plan. Prior to the fifth year of the revision cycle, these annual observations will be reviewed to determine what changes should be implemented in the required Hazard Mitigation Plan Update. The results of the annual evaluations will be folded back into each phase of the planning process and should yield decisions on how to update each section of the Plan.

The Management Analyst has the responsibility of implementing these annual and five-year requirements. During the annual review, if any updates are deemed minor, then the Management Analyst or designee will perform the updates. However, if more major updates are required, then the Steering Committee will be reconvened to discuss the effects on the Plan. For the fifth year revision, the entire Steering Committee will reconvene in order to use their expertise to update the Plan in its entirety.

In addition to these periodic requirements, any significant modification to the City's facilities should be considered with respect to a possible impact on the Hazard Mitigation Plan. All Steering Committee members are responsible for providing updates for the Plan to the Management Analyst as necessary. As noted in the following section, the completed Hazard Mitigation Plan will be available on the City's website to allow the public to continue to be involved during these periodic reviews.

### 5.4 Update Requirements

§201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and **updating** the mitigation plan within a five-year cycle.  
§201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

The Emergency Management and Assistance regulations (44 CFR Part 201) state that it is the responsibility of local agencies (i.e., the City of Cerritos) to "at a minimum, review and, if necessary, update the local mitigation plan every five years from date of plan approval to continue program eligibility." As stated in Section 5.3, this responsibility lies with the Management Analyst. The evaluation procedures listed below will provide insight into the major changes that need to be included in the five year update and resubmission to FEMA.

- Annual Hazard Mitigation Plan review with respect to changes in hazard vulnerability (e.g., additional hazards identified, natural hazard events, etc.)
- Annual Hazard Mitigation Plan review with respect to development of new facilities
- Five year comprehensive update to address the findings of the annual reviews
- Re-submittal of the updated Hazard Mitigation Plan to CalOES/FEMA

Additionally, the risk assessment portion of the plan will be reviewed to determine if the information should be updated or modified. Each division/department responsible for the various implementation actions will report on:

- Status of their projects,
- Implementation processes,
- Any difficulties encountered,
- How coordination efforts are proceeding, and
- Which strategies should be revised.

#### 5.4.1 Plan Update

The City's Hazard Mitigation Plan had not been updated since 2004. During Steering Committee Meeting #2, the Plan goals were reviewed for consistency and applicability to the City of Cerritos, along with the goals from the 2013 California State Hazard Mitigation Plan and 2014 Los Angeles County Hazard Mitigation Plan. One of the main objectives of the review process was to convert the fragment concepts in the original Plan into complete, clear goals. Table 5.1 illustrates the changes in the priorities of the Plan.

**Table 5.1: Hazard Mitigation Plan Goals**

2004 Plan Goals		Current Plan Goals	
1. Protect life and property		1. Protect life, property, and commerce	
2. Public Awareness		2. Promote public awareness	
3. Natural Systems		3. Protect the environment	
4. Partnerships and Implementation		4. Develop and expand partnerships and implementation	
5. Emergency Services		5. Enhance emergency services capabilities	

As shown in Table 5.1, the Plan goals are quite similar although further defined. In addition to these general Plan goals, supporting goal objectives and hazard-specific objectives were also validated, as documented in Chapter 4.

#### 5.4.2 Continued Public Involvement

To facilitate ongoing public input, the completed and adopted Hazard Mitigation Plan will be posted on the City's website to allow the public to remain engaged and provide feedback. The website will include a link to a contact form to allow the public to submit comments. When updating the Hazard Mitigation Plan, the City of Cerritos will solicit participation from Steering Committee participants to discuss any issues that need to be addressed in the Hazard Mitigation Plan update. Public participation will be solicited through public notices and advertised on the website.

The goal of outreach regarding update meetings is to solicit public involvement in the Steering Committee, which brainstorms the hazards facing the City and discusses ways

to mitigate those hazards. The public was encouraged to participate in the hazard mitigation process through the release of a public survey. Results from the survey highlighted the hazards that were of most concern to the community. The City of Cerritos can use the information from the survey results when deciding which mitigation action to implement. It can generally be assumed that actions reducing risk for the top rated hazards will be well received by the community. More detailed information regarding the survey results can be found in Chapter 1 and Appendix D.

Table 5.2: Action Item Implementation

Action ID	Recommendation Description	Responsible Department	Implementation on Timeframe	Status	Details/Status Summary
2015.HMP.01:	Establish a formal role for the City of Cerritos Hazard Mitigation Steering Committee for implementing, monitoring, and evaluating citywide mitigation activities.	<ul style="list-style-type: none"> <li>Administration</li> </ul>	Short	Open	
2015.HMP.02	Develop public and private partnerships to foster hazard mitigation program coordination and collaboration in the City of Cerritos.	<ul style="list-style-type: none"> <li>Community Safety</li> </ul>	Ongoing	Open	
2015.HMP.03	Conduct evaluations of critical facilities to develop inventories of at-risk buildings and identify areas for improvement. This includes, but is not limited to, incorporating alternative power sources and identifying vulnerabilities to fire and earthquake. Initiate mitigation projects accordingly.	<ul style="list-style-type: none"> <li>Public Works</li> </ul>	Medium	Open	

Action ID	Recommendation Description	Responsible Department	Implementation on Timeframe	Status	Details/Status Summary
2015.HMP.04	Strengthen emergency services preparedness and response by linking emergency services with hazard mitigation programs and enhancing public education on a regional scale.	<ul style="list-style-type: none"> <li>Community Safety</li> </ul>	Ongoing	Open	
2015.HMP.05	Conduct annual tabletop multi-hazard disaster exercises with local law enforcement, emergency managers, town and county officials, the Local Emergency Planning Committee (LEPC) and other disaster response agencies to identify vulnerabilities in emergency services and response.	<ul style="list-style-type: none"> <li>Community Safety</li> </ul>	Ongoing	Open	
2015.HMP.06	Retrofit Traffic Signals for coordination with Emergency Vehicles to decrease response time during a hazard event.	<ul style="list-style-type: none"> <li>Public Works</li> </ul>	Short	Open	

Action ID	Recommendation Description	Responsible Department	Implementation Timeframe	Status	Details/Status Summary
2015.HMP.07	Develop a Business Continuity Planning Display. The display will be designed to raise awareness of why it is important to have a Business Continuity Plan, how to develop a Plan, and will encourage businesses to make sure that their Plan fits in the County's Plan. The display will be appropriate for use at local Chamber of Commerce meetings and activities, civic group gatherings, and other business-related gatherings.	<ul style="list-style-type: none"> <li>Community Development</li> </ul>	Short	Open	
2015.HMP.08	Work with the U.S. Geological Survey (USGS) to verify current GIS earthquake hazard mapping data is accurate for the City of Cerritos and utilize technical analysis of earthquake hazards to identify vulnerabilities in accordance with the Safety Element of the City's General Plan (SAF-2.3).	<ul style="list-style-type: none"> <li>Community Development</li> </ul>	Medium	Open	

Action ID	Recommendation Description	Responsible Department	Implementation Timeframe	Status	Details/Status Summary
2015.HMP.09	In accordance with the Safety Element of the City's General Plan (SAF-2.3), conduct new seismic strength evaluations of critical City facilities built before 1980 to identify vulnerabilities and initiate improvement projects accordingly. These evaluations should highlight potential mitigation actions that would improve public infrastructure and reinforce critical facilities to meet current seismic standards.	<ul style="list-style-type: none"> <li>Public Works</li> </ul>	Short	Open	
2015.HMP.10	In accordance with the Safety Element of the City's General Plan (SAF-2.1), create and distribute outreach materials that will increase public awareness to encourage the initiation of nonstructural and structural projects to minimize vulnerability to earthquakes in the local community.	<ul style="list-style-type: none"> <li>Administrative Services</li> </ul>	Ongoing	Open	

Action ID	Recommendation Description	Responsible Department	Implementation on Timeframe	Status	Details/Status Summary
2015.HMP.11	Provide information to new home and property buyers on earthquake, fire and multi-hazard safety and encourage the public sector to identify vulnerabilities and initiate improvement projects	<ul style="list-style-type: none"> <li>Administrative Services</li> </ul>	Short	Open	
2015.HMP.12	Coordinate with County and State (e.g. LEPC) representatives to maintain awareness of current trends in illegal transportation of hazardous materials within the City or that may impact the City.	<ul style="list-style-type: none"> <li>Community Safety</li> </ul>	Short	Open	

Action ID	Recommendation Description	Responsible Department	Implementation on Timeframe	Status	Details/Status Summary
2015.HMP.13	In accordance with the Safety Element of the City's General Plan (SAF-1.4 & SAF-1.2), conduct evaluations of City flood controls within the City to ensure efficient operations and identify potential storm drain improvements. Then, identify key areas to initiate improvement projects accordingly.	<ul style="list-style-type: none"> <li>Public Works</li> </ul>	Short	Open	
2015.HMP.14	In accordance with the Safety Element of the City's General Plan (SAF-5.3), ensure current maps of underground pipelines are up-to-date and educate the public for pipeline safety (Dig Alert).	<ul style="list-style-type: none"> <li>Administrative Services</li> <li>Community Development</li> </ul>	Medium	Open	
2015.HMP.15	Continue to add recycled water channels to the City's water system to help conserve potable water.	<ul style="list-style-type: none"> <li>Public Works</li> </ul>	Ongoing	Open	
2015.HMP.16	Continue public outreach on water conservation.	<ul style="list-style-type: none"> <li>Administrative Services</li> </ul>	Ongoing	Open	

Action ID	Recommendation Description	Responsible Department	Implementation on Timeframe	Status	Details/Status Summary
2015.HMP.17	Continue public education regarding "See something, say something" for terrorism.	<ul style="list-style-type: none"> <li>Administrative Services</li> </ul>	Ongoing	Open	
2015.HMP.18	Coordinate with existing high-profile, private facilities to ensure security and anti-terrorism safety features are in use.	<ul style="list-style-type: none"> <li>Sheriff's Department</li> </ul>	Ongoing	Open	
2015.HMP.19	Update the General Plan to include anti-terrorism requirements for new projected high-profile, private building projects. Anti-terrorism requirements should include, but are not limited to, adequate escape routes for pedestrians & motorists and built-in security systems.	<ul style="list-style-type: none"> <li>Community Development</li> </ul>	Long	Open	

Action ID	Recommendation Description	Responsible Department	Implementation on Timeframe	Status	Details/Status Summary
2015.HMP.20	Continue to update the City's tree inventory and identify vulnerabilities. All trees should be maintained according to the standards in the City's Municipal Code to minimize potential hazards.	<ul style="list-style-type: none"> <li>Public Works</li> </ul>	Ongoing	Open	

# A GLOSSARY & HAZUS MODELS

**Active fault** - For implementation of Alquist-Priolo Earthquake Fault Zoning Act (APEFZA) requirements, an active fault is one that shows evidence of, or is suspected of having experienced surface displacement within the last 11,000 years. APEFZA classification is designed for land use management of surface rupture hazards. A more general definition (National Academy of Science, 1988), states "a fault that on the basis of historical, seismological, or geological evidence has the finite probability of producing an earthquake" (see potentially active fault).

**Aftershocks** - Minor earthquakes following a greater one and originating at or near the same place.

**Asset** - Any man-made or natural feature that has value, including, but not limited to people, buildings, infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.

**A zone** - Under the National Flood Insurance Program, area subject to inundation by the 100-year flood where wave action does not occur or where waves are less than 3 feet high, designated Zone A, AE, A1-A30, A0, AH, or AR on a Flood Insurance Rate Map (FIRM).

**Base flood** - Flood that has a 1 percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.

**Bedrock** - The solid rock that underlies loose material, such as soil, sand, clay, or gravel.

**Contour** - A line of equal ground elevation on a topographic (contour) map.

**Critical facility** - Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.

**Debris** - (Seismic) The scattered remains of something broken or destroyed; ruins; rubble; fragments. (Flooding, Coastal) Solid objects or masses carried by or floating on the surface of moving water.

**Debris flow** - A saturated, rapidly moving saturated earth flow with 50 percent rock fragments coarser than 2 mm in size which can occur on natural and graded slopes.

**Duration** - How long a hazard event lasts.

**Earthquake** - Vibratory motion propagating within the Earth or along its surface caused by the abrupt release of strain from elastically deformed rock by displacement along a fault.

**Epicenter** - The point at the Earth's surface directly above where an earthquake originated.

**Erosion** - Under the National Flood Insurance Program, the process of the gradual wearing away of landmasses. In general, erosion involves the detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.

**Essential facility** - Elements that are important to ensure a full recovery of a community or state following a hazard event. These would include: government functions, major employers, banks, schools, and certain commercial establishments, such as grocery stores, hardware stores, and gas stations.

**Extent** - The size of an area affected by a hazard or hazard event.

**Fault** - A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially displaced parallel to the plane of fracture.

**Fault slip rate** - The average long-term movement of a fault (measured in cm/year or mm/year) as determined from geologic evidence.

**Federal Emergency Management Agency (FEMA)** - Independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery.

**Flash flood** - A flood event occurring with little or no warning where water levels rise at an extremely fast rate.

**Flood** - A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.

**Floodplain** - Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.

**Frequency** - A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration,

and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1 percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

**Geographic Information Systems (GIS)** - A computer software application that relates physical features on the Earth to a database to be used for mapping and analysis.

**Ground motion** - 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, but soft soils can further amplify ground motions.

**Ground rupture** - Displacement of the earth's surface as a result of fault movement associated with an earthquake.

**Hailstorm** – Storm associated with spherical balls of ice. Hail is a product of thunderstorms or intense showers. It is generally white and translucent, consisting of liquid or snow particles encased with layers of ice. Hail is formed within the higher reaches of a well-developed thunderstorm. When hailstones become too heavy to be caught in an updraft back into the clouds of the thunderstorm (hailstones can be caught in numerous updrafts adding a coating of ice to the original frozen droplet of rain each time), they fall as hail and a hailstorm ensues.

**Hazard** - A source of potential danger or adverse condition. Hazards in this how to series will include naturally occurring events such as floods, earthquakes, tornadoes, tsunami, coastal storms, landslides, and wildfires that strike populated areas. A natural event is a hazard when it has the potential to harm people or property.

**Hazard event** - A specific occurrence of a particular type of hazard.

**Hazard identification** - The process of identifying hazards that threaten an area.

**Hazard mitigation** - Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.

**Hazard Mitigation Grant Program (HMGP)** – Authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.

**Hazard Mitigation Plan** – A collaborative document in which hazards affecting the community are identified, vulnerability to hazards assessed, and consensus reached on how to minimize or eliminate the effects of these hazards.

**Hazard profile** - A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

**Hazardous Material Facilities** – Facilities housing industrial and hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

**HAZUS (Hazards U.S.)** - A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA.

**Hurricane** - An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74-miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye." Hurricanes develop over the north Atlantic Ocean, northeast Pacific Ocean, or the south Pacific Ocean east of 160°E longitude. Hurricane circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

**Hydrology** - The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.

**Infrastructure** - Refers to the public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots; and waterways, canals, locks, seaports, ferries, harbors, drydocks, piers and regional dams.

**Landslide** - A general term covering a wide variety of mass-movement landforms and processes involving the downslope transport, under gravitational influence, of soil and rock material en masse.

**Liquefaction** - Changing of soils (unconsolidated alluvium) from a solid state to weaker state unable to support structures; where the material behaves similar to a liquid as a consequence of earthquake shaking. The transformation of cohesionless soils from a solid or liquid state as a result of increased pore pressure and reduced effective stress.



**Magnitude** - A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.

**Mitigation plan** - A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state and includes a description of actions to minimize future vulnerability to hazards.

**Nor'easter** - An extra-tropical cyclone producing gale-force winds and precipitation in the form of heavy snow or rain.

**Peak Ground Acceleration (PGA)** - The greatest amplitude of acceleration measured for a single frequency on an earthquake accelerogram. The maximum horizontal ground motion generated by an earthquake. The measure of this motion is the acceleration of gravity (equal to 32 feet per second squared, or 980 centimeter per second squared), and generally expressed as a percentage of gravity.

**Potentially active fault** - A fault showing evidence of movement within the last 1.6 million years (750,000 years according to the U.S. Geological Survey) but before about 11,000 years ago, and that is capable of generating damaging earthquakes.

**Probability** - A statistical measure of the likelihood that a hazard event will occur.

**Replacement value** - The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.

**Retrofit** - Any change made to an existing structure to reduce or eliminate damage to that structure from flooding, erosion, high winds, earthquakes, or other hazards

**Richter scale** - A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935. Seismologists no longer use this magnitude scale because of limitations in how it measures large earthquakes, and prefer instead to use moment magnitude as a measure of the energy released during an earthquake.

**Risk** - The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

**Seismicity** - Describes the likelihood of an area being subject to earthquakes.

**Tectonic plate** - Torsionally rigid, thin segments of the earth's lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that cause seismic activity.

**Topographic** - Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include manmade features.

**Tornado** - A violently rotating column of air extending from a thunderstorm to the ground.

**Tsunami** - Great sea wave produced by a submarine earthquake, landslide, or volcanic eruption.

**Vulnerability** - Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.

**Vulnerability assessment** - The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.

**Wildfire** - An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

**Zone** - A geographical area shown on a Flood Insurance Rate Map.

**100-year flood** – A flood that has a 1-percent chance of being equaled or exceeded in any given year. This flood event is also referred to as the base flood. The term "100-year flood" can be misleading; it is not the flood that will occur once every 100 years. Rather, it is the flood elevation that has a 1- percent chance of being equaled or exceeded each year. Therefore, the 100-year flood could occur more than once in a relatively short period of time. The 100-year flood, which is the standard used by most federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management to determine the need for flood insurance.

**500-year flood** – A flood that has a 0.2-percent chance of being equaled or exceeded in any one year.

## HAZUS Models

After a detailed review of the hazard profiles in Chapter 3, loss estimate calculations for an earthquake scenario was completed using the HAZUS-MH model for a scenario on the Newport-Inglewood Fault and the Puente Hills Fault.

# HAZUS-MH: Earthquake Event Report



**Region Name:** City of Cerritos

**Earthquake Scenario:** Newport Inglewood 1

**Print Date:** October 21, 2015

**Disclaimer:**

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

## Table of Contents

## General Description of the Region

HAZUS is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of HAZUS is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

California

Note:  
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 8.88 square miles and contains 11 census tracts. There are over 15 thousand households in the region and has a total population of 51,463 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 17 thousand buildings in the region with a total building replacement value (excluding contents) of 4,388 (millions of dollars). Approximately 98.00 % of the buildings (and 77.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 363 and 78 (millions of dollars) , respectively.

Section	Page #
General Description of the Region	3
Building and Lifeline Inventory	4
Building Inventory	
Critical Facility Inventory	
Transportation and Utility Lifeline Inventory	6
Earthquake Scenario Parameters	7
Direct Earthquake Damage	
Buildings Damage	
Critical Facilities Damage	
Transportation and Utility Lifeline Damage	
Induced Earthquake Damage	11
Fire Following Earthquake	
Debris Generation	
Social Impact	12
Shelter Requirements	
Casualties	
Economic Loss	13
Building Losses	
Transportation and Utility Lifeline Losses	
Long-term Indirect Economic Impacts	
Appendix A: County Listing for the Region	
Appendix B: Regional Population and Building Value Data	

## Building and Lifeline Inventory

### Building Inventory

HAZUS estimates that there are 17 thousand buildings in the region which have an aggregate total replacement value of 4,388 (millions of dollars). Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 97% of the building inventory. The remaining percentage is distributed between the other general building types.

### Critical Facility Inventory

HAZUS breaks critical facilities into two (2) groups: essential facilities and high potential loss (HPL) facilities. Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 124 beds. There are 23 schools, 1 fire stations, 1 police stations and 0 emergency operation facilities. With respect to HPL facilities, there are 0 dams identified within the region. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 13 hazardous material sites, 0 military installations and 0 nuclear power plants.

### Transportation and Utility Lifeline Inventory

Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 2 and 3.

The total value of the lifeline inventory is over 441.00 (millions of dollars). This inventory includes over 50 kilometers of highways, 30 bridges, 509 kilometers of pipes.

Table 2: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	30	106.00
	Segments	2	247.80
	Tunnels	0	0.00
	<b>Subtotal</b>		<b>353.80</b>
Railways	Bridges	0	0.00
	Facilities	0	0.00
	Segments	1	10.10
	<b>Subtotal</b>		<b>10.10</b>
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Bus	Facilities	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Ferry	Facilities	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Port	Facilities	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Airport	Facilities	0	0.00
	Runways	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
	<b>Total</b>		<b>363.80</b>

Table 3: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)	
Potable Water	Distribution Lines	NA	5.10	
	Facilities	0	0.00	
	Pipelines	0	0.00	
	<b>Subtotal</b>		<b>5.10</b>	
Waste Water	Distribution Lines	NA	3.10	
	Facilities	1	76.60	
	Pipelines	0	0.00	
	<b>Subtotal</b>		<b>81.60</b>	
Natural Gas	Distribution Lines	NA	2.00	
	Facilities	0	0.00	
	Pipelines	0	0.00	
	<b>Subtotal</b>		<b>2.00</b>	
Oil Systems	Facilities	0	0.00	
	Pipelines	0	0.00	
		<b>Subtotal</b>		<b>0.00</b>
Electrical Power	Facilities	0	0.00	
		<b>Subtotal</b>		<b>0.00</b>
	Facilities	0	0.00	
	<b>Subtotal</b>		<b>0.00</b>	
	<b>Total</b>		<b>88.80</b>	

### Earthquake Scenario

HAZUS uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.

Scenario Name	Newport Inglewood 1
Type of Earthquake	Source
Fault Name	Newport-Inglewood
Historical Epicenter ID #	183
Probabilistic Return Period	NA
Longitude of Epicenter	-118.14
Latitude of Epicenter	33.78
Earthquake Magnitude	7.10
Depth (Km)	0.00
Rupture Length (Km)	50.58
Rupture Orientation (degrees)	0.00
Attenuation Function	WUS Shallow Crustal Event - Extensional

## Building Damage

### Building Damage

HAZUS estimates that about 3,636 buildings will be at least moderately damaged. This is over 21.00% of the total number of buildings in the region. There are an estimated 90 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1, Chapter 5 of the HAZUS technical manual. Table 4 below summarizes the expected damage by general occupancy for the buildings in the region. Table 5 summarizes the expected damage by general building type.

Table 4: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	67	1.03	69	0.97	89	2.77	44	12.89	13	14.34
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.01	0	0.04	0	0.05
Industrial	16	0.25	16	0.23	23	0.72	12	3.41	4	3.85
Other Residential	46	0.72	52	0.73	33	1.02	12	3.43	3	3.67
Religion	2	0.03	2	0.03	2	0.07	1	0.32	0	0.36
Single Family	6,343	97.96	6,998	98.04	3,059	95.41	271	79.90	71	77.73
<b>Total</b>	<b>6,475</b>		<b>7,138</b>		<b>3,206</b>		<b>340</b>		<b>91</b>	

Table 5: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	6,337	97.88	7023	98.38	3,043	94.89	255	75.02	70	77.15
Steel	15	0.24	17	0.24	31	0.96	17	5.13	6	6.13
Concrete	14	0.22	17	0.24	18	0.56	10	2.87	3	3.10
Precast	20	0.31	21	0.29	30	0.93	14	4.25	4	4.09
RM	84	1.30	54	0.76	72	2.26	34	9.91	4	4.78
URM	3	0.05	4	0.06	6	0.20	4	1.20	3	2.88
MH	1	0.01	2	0.03	6	0.19	5	1.61	2	1.86
<b>Total</b>	<b>6,475</b>		<b>7,138</b>		<b>3,206</b>		<b>340</b>		<b>91</b>	

\*Note:

RM Reinforced Masonry  
URM Unreinforced Masonry  
MH Manufactured Housing

## Essential Facility Damage

Before the earthquake, the region had 124 hospital beds available for use. On the day of the earthquake, the model estimates that only 71 hospital beds (58.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 93.00% of the beds will be back in service. By 30 days, 100.00% will be operational.

Table 6: Expected Damage to Essential Facilities

Classification	Total	# Facilities	
		At Least Moderate Damage > 50%	Complete With Functionality > 50% on day 1
Hospitals	1	0	0
Schools	23	0	0
EOCs	0	0	0
Police Stations	1	0	0
Fire Stations	1	0	0

**Transportation and Utility Lifeline Damage**

Table 7 provides damage estimates for the transportation system.

**Table 7: Expected Damage to the Transportation Systems**

System	Component	Locations/ Segments	Number of Locations		
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50 % After Day 7
Highway	Segments	2	0	0	2
	Bridges	30	2	0	28
	Tunnels	0	0	0	0
Railways	Segments	1	0	0	1
	Bridges	0	0	0	0
	Tunnels	0	0	0	0
Light Rail	Facilities	0	0	0	0
	Segments	0	0	0	0
	Bridges	0	0	0	0
Bus	Tunnels	0	0	0	0
	Facilities	0	0	0	0
	Runways	0	0	0	0

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 8-10 provide information on the damage to the utility lifeline systems. Table 8 provides damage to the utility system facilities. Table 9 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, HAZUS performs a simplified system performance analysis. Table 10 provides a summary of the system performance information.

**Table 8 : Expected Utility System Facility Damage**

System	Total #	# of Locations		
		With at Least Moderate Damage	With Complete Damage	with Functionality > 50 % After Day 7
Potable Water	0	0	0	0
Waste Water	1	1	0	1
Natural Gas	0	0	0	0
Oil Systems	0	0	0	0
Electrical Power	0	0	0	0
Communication	0	0	0	0

**Table 9 : Expected Utility System Pipeline Damage (Site Specific)**

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	255	156	39
Waste Water	153	123	31
Natural Gas	102	132	33
Oil	0	0	0

**Table 10: Expected Potable Water and Electric Power System Performance**

System	Total # of Households	Number of Households without Service			
		At Day 1	At Day 3	At Day 7	At Day 90
Potable Water	15,389	3,689	0	0	0
Electric Power		1,705	924	311	49

## Induced Earthquake Damage

### Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. HAZUS uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 3 ignitions that will burn about 0.02 sq. mi 0.22 % of the region's total area.) The model also estimates that the fires will displace about 75 people and burn about 7 (millions of dollars) of building value.

### Debris Generation

HAZUS estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.00 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 31.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

## Social Impact

### Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 121 households to be displaced due to the earthquake. Of these, 24 people (out of a total population of 51,483 will seek temporary shelter in public shelters.

### Casualties

HAZUS estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 11 provides a summary of the casualties estimated for this earthquake



Table 11: Casualty Estimates

	Level 1	Level 2	Level 3	Level 4
<b>2 AM</b>				
Commercial	3	1	0	0
Commuting	0	0	0	0
Educational	0	0	0	0
Hotels	0	0	0	0
Industrial	1	0	0	0
Other-Residential	5	1	0	0
Single Family	52	7	0	0
<b>Total</b>	<b>63</b>	<b>9</b>	<b>1</b>	<b>1</b>
<b>2 PM</b>				
Commercial	176	45	7	13
Commuting	0	0	0	0
Educational	26	6	1	2
Hotels	0	0	0	0
Industrial	11	3	0	1
Other-Residential	1	0	0	0
Single Family	8	1	0	0
<b>Total</b>	<b>222</b>	<b>56</b>	<b>9</b>	<b>16</b>
<b>5 PM</b>				
Commercial	125	32	5	9
Commuting	9	12	20	4
Educational	5	1	0	0
Hotels	0	0	0	0
Industrial	7	2	0	1
Other-Residential	2	0	0	0
Single Family	20	3	0	0
<b>Total</b>	<b>168</b>	<b>50</b>	<b>25</b>	<b>14</b>

**Economic Loss**

The total economic loss estimated for the earthquake is 492.83 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

**Building-Related Losses**

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 463.43 (millions of dollars); 10 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 54 % of the total loss. Table 12 below provides a summary of the losses associated with the building damage.

Table 12: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses	Wage	0.00	0.36	16.08	0.88	0.22	17.54
	Capital-Related	0.00	0.16	12.90	0.55	0.09	13.69
	Rental	4.40	0.83	8.03	0.51	0.10	13.86
	Relocation	0.49	0.02	0.50	0.06	0.05	1.12
	<b>Subtotal</b>	<b>4.90</b>	<b>1.37</b>	<b>37.51</b>	<b>1.99</b>	<b>0.45</b>	<b>46.21</b>
Capital Stock Losses	Structural	30.29	1.06	27.67	5.78	1.27	66.06
	Non_Structural	155.48	6.44	65.06	18.98	4.10	250.06
	Content	49.42	1.58	31.10	13.19	1.84	97.12
	Inventory	0.00	0.00	1.76	2.20	0.01	3.98
	<b>Subtotal</b>	<b>235.19</b>	<b>9.07</b>	<b>125.60</b>	<b>40.15</b>	<b>7.22</b>	<b>417.22</b>
	<b>Total</b>	<b>240.09</b>	<b>10.44</b>	<b>163.10</b>	<b>42.14</b>	<b>7.67</b>	<b>463.43</b>

### Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, HAZUS computes the direct repair cost for each component only. There are no losses computed by HAZUS for business interruption due to lifeline outages. Tables 13 & 14 provide a detailed breakdown in the expected lifeline losses.

HAZUS estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region. Table 15 presents the results of the region for the given earthquake.

**Table 13: Transportation System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	247.76	\$0.00	0.00
	Bridges	106.00	\$9.04	8.53
	Tunnels	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>353.80</b>	<b>9.00</b>	
Railways	Segments	10.09	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>10.10</b>	<b>0.00</b>	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
Bus	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
Ferry	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
Port	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
Airport	Facilities	0.00	\$0.00	0.00
	Runways	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
	<b>Total</b>	<b>363.80</b>	<b>9.00</b>	

**Table 14: Utility System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Line	5.10	\$0.70	13.76
	<b>Subtotal</b>	<b>5.10</b>	<b>\$0.70</b>	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	78.60	\$18.51	23.55
	Distribution Line	3.10	\$0.55	18.14
	<b>Subtotal</b>	<b>81.65</b>	<b>\$19.07</b>	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Line	2.00	\$0.59	29.08
	<b>Subtotal</b>	<b>2.04</b>	<b>\$0.59</b>	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>\$0.00</b>	
Electrical Power	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>\$0.00</b>	
Communication	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>\$0.00</b>	
	<b>Total</b>	<b>88.78</b>	<b>\$20.36</b>	

**Appendix A: County Listing for the Region**

Los Angeles, CA

**Table 15. Indirect Economic Impact with outside aid**  
(Employment as # of people and Income in millions of \$)

	<b>LOSS</b>	<b>Total</b>	<b>%</b>
<b>First Year</b>			
	Employment Impact	0	0.00
	Income Impact	(4)	-0.47
<b>Second Year</b>			
	Employment Impact	0	0.00
	Income Impact	(12)	-1.43
<b>Third Year</b>			
	Employment Impact	0	0.00
	Income Impact	(15)	-1.85
<b>Fourth Year</b>			
	Employment Impact	0	0.00
	Income Impact	(15)	-1.85
<b>Fifth Year</b>			
	Employment Impact	0	0.00
	Income Impact	(15)	-1.85
<b>Years 6 to 15</b>			
	Employment Impact	0	0.00
	Income Impact	(15)	-1.85

**Appendix B: Regional Population and Building Value Data**



# HAZUS-MH: Earthquake Event Report

**Region Name:** City of Cerritos

**Earthquake Scenario:** PuenteHills

**Print Date:** October 21, 2015

State	County Name	Population	Building Value (millions of dollars)		Total
			Residential	Non-Residential	
California	Los Angeles	51,483	3,391	996	4,388
Total State		<b>51,483</b>	<b>3,391</b>	<b>996</b>	<b>4,388</b>
Total Region		<b>51,483</b>	<b>3,391</b>	<b>996</b>	<b>4,388</b>

**Disclaimer:**

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific earthquake. These results can be improved by using enhanced inventory, geotechnical, and observed ground motion data.

## Table of Contents

## General Description of the Region

HAZUS is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of HAZUS is to provide a methodology and software application to develop earthquake losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from earthquakes and to prepare for emergency response and recovery.

The earthquake loss estimates provided in this report was based on a region that includes 1 county(ies) from the following state(s):

California

Note:  
Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 8.88 square miles and contains 11 census tracts. There are over 15 thousand households in the region and has a total population of 51,463 people (2000 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 17 thousand buildings in the region with a total building replacement value (excluding contents) of 4,388 (millions of dollars). Approximately 98.00 % of the buildings (and 77.00% of the building value) are associated with residential housing.

The replacement value of the transportation and utility lifeline systems is estimated to be 363 and 78 (millions of dollars) , respectively.

Section	Page #
General Description of the Region	3
Building and Lifeline Inventory	4
Building Inventory	
Critical Facility Inventory	
Transportation and Utility Lifeline Inventory	6
Earthquake Scenario Parameters	7
Direct Earthquake Damage	
Buildings Damage	
Critical Facilities Damage	
Transportation and Utility Lifeline Damage	
Induced Earthquake Damage	11
Fire Following Earthquake	
Debris Generation	
Social Impact	12
Shelter Requirements	
Casualties	
Economic Loss	13
Building Losses	
Transportation and Utility Lifeline Losses	
Long-term Indirect Economic Impacts	
Appendix A: County Listing for the Region	
Appendix B: Regional Population and Building Value Data	

## Building and Lifeline Inventory

### Building Inventory

HAZUS estimates that there are 17 thousand buildings in the region which have an aggregate total replacement value of 4,388 (millions of dollars). Appendix B provides a general distribution of the building value by State and County.

In terms of building construction types found in the region, wood frame construction makes up 97% of the building inventory. The remaining percentage is distributed between the other general building types.

### Critical Facility Inventory

HAZUS breaks critical facilities into two (2) groups: essential facilities and high potential loss (HPL) facilities. Essential facilities include hospitals, medical clinics, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

For essential facilities, there are 1 hospitals in the region with a total bed capacity of 124 beds. There are 23 schools, 1 fire stations, 1 police stations and 0 emergency operation facilities. With respect to HPL facilities, there are 0 dams identified within the region. Of these, 0 of the dams are classified as 'high hazard'. The inventory also includes 13 hazardous material sites, 0 military installations and 0 nuclear power plants.

### Transportation and Utility Lifeline Inventory

Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 2 and 3.

The total value of the lifeline inventory is over 441.00 (millions of dollars). This inventory includes over 50 kilometers of highways, 30 bridges, 509 kilometers of pipes.

Table 2: Transportation System Lifeline Inventory

System	Component	# Locations/ # Segments	Replacement value (millions of dollars)
Highway	Bridges	30	106.00
	Segments	2	247.80
	Tunnels	0	0.00
	<b>Subtotal</b>		<b>353.80</b>
Railways	Bridges	0	0.00
	Facilities	0	0.00
	Segments	1	10.10
	<b>Subtotal</b>		<b>10.10</b>
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Bus	Facilities	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Ferry	Facilities	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Port	Facilities	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Airport	Facilities	0	0.00
	Runways	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
	<b>Total</b>		<b>363.80</b>

Table 3: Utility System Lifeline Inventory

System	Component	# Locations / Segments	Replacement value (millions of dollars)
Potable Water	Distribution Lines	NA	5.10
	Facilities	0	0.00
	Pipelines	0	0.00
	<b>Subtotal</b>		<b>5.10</b>
Waste Water	Distribution Lines	NA	3.10
	Facilities	1	76.60
	Pipelines	0	0.00
	<b>Subtotal</b>		<b>81.60</b>
Natural Gas	Distribution Lines	NA	2.00
	Facilities	0	0.00
	Pipelines	0	0.00
	<b>Subtotal</b>		<b>2.00</b>
Oil Systems	Facilities	0	0.00
	Pipelines	0	0.00
		<b>Subtotal</b>	<b>0.00</b>
Electrical Power	Facilities	0	0.00
		<b>Subtotal</b>	<b>0.00</b>
	Facilities	0	0.00
	<b>Subtotal</b>		<b>0.00</b>
Communication		<b>Subtotal</b>	<b>0.00</b>
		<b>Total</b>	<b>88.80</b>

### Earthquake Scenario

HAZUS uses the following set of information to define the earthquake parameters used for the earthquake loss estimate provided in this report.

Scenario Name	PuenteHills
Type of Earthquake	Source
Fault Name	Puente Hills blind thrust (ne)
Historical Epicenter ID #	537
Probabilistic Return Period	NA
Longitude of Epicenter	-118.04
Latitude of Epicenter	33.93
Earthquake Magnitude	7.10
Depth (Km)	5.00
Rupture Length (Km)	41.02
Rupture Orientation (degrees)	0.00
Attenuation Function	WUS Shallow Crustal Event - Non Extensional

## Building Damage

### Building Damage

HAZUS estimates that about 6,190 buildings will be at least moderately damaged. This is over 36.00 % of the total number of buildings in the region. There are an estimated 236 buildings that will be damaged beyond repair. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the HAZUS technical manual. Table 4 below summarizes the expected damage by general occupancy for the buildings in the region. Table 5 summarizes the expected damage by general building type.

Table 4: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Commercial	33	0.89	56	0.77	98	1.89	66	8.53	29	12.13
Education	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Government	0	0.00	0	0.00	0	0.01	0	0.03	0	0.05
Industrial	7	0.18	12	0.17	25	0.48	18	2.38	9	3.70
Other Residential	25	0.67	51	0.70	46	0.89	17	2.19	6	2.71
Religion	1	0.03	2	0.03	3	0.05	2	0.20	1	0.27
Single Family	3,642	98.22	7,229	98.34	5,008	96.68	671	86.66	192	81.13
<b>Total</b>	<b>3,708</b>		<b>7,352</b>		<b>5,181</b>		<b>774</b>		<b>236</b>	

Table 5: Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	3,645	98.31	7261	98.77	4,997	96.46	638	82.41	186	78.87
Steel	8	0.23	13	0.18	31	0.60	23	3.02	10	4.31
Concrete	7	0.19	14	0.19	20	0.39	14	1.80	6	2.51
Precast	7	0.18	14	0.19	32	0.62	25	3.17	11	4.81
RM	39	1.04	45	0.61	88	1.70	63	8.09	15	6.31
URM	1	0.03	3	0.04	6	0.12	6	0.71	5	2.10
MH	0	0.01	2	0.02	6	0.11	6	0.79	3	1.07
<b>Total</b>	<b>3,708</b>		<b>7,352</b>		<b>5,181</b>		<b>774</b>		<b>236</b>	

\*Note:  
 RM Reinforced Masonry  
 URM Unreinforced Masonry  
 MH Manufactured Housing

## Essential Facility Damage

Before the earthquake, the region had 124 hospital beds available for use. On the day of the earthquake, the model estimates that only 49 hospital beds (40.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 87.00% of the beds will be back in service. By 30 days, 99.00% will be operational.

Table 6: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on day 1
Hospitals	1	0	0	0
Schools	23	0	0	0
EOCs	0	0	0	0
Police Stations	1	0	0	0
Fire Stations	1	0	0	0



**Transportation and Utility Lifeline Damage**

Table 7 provides damage estimates for the transportation system.

**Table 7: Expected Damage to the Transportation Systems**

System	Component	Locations/ Segments	Number of Locations		
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50 % After Day 1
Highway	Segments	2	0	0	2
	Bridges	30	2	0	28
	Tunnels	0	0	0	0
Railways	Segments	1	0	0	1
	Bridges	0	0	0	0
	Tunnels	0	0	0	0
Light Rail	Facilities	0	0	0	0
	Segments	0	0	0	0
	Bridges	0	0	0	0
Bus	Tunnels	0	0	0	0
	Facilities	0	0	0	0
	Runways	0	0	0	0

Note: Roadway segments, railroad tracks and light rail tracks are assumed to be damaged by ground failure only. If ground failure maps are not provided, damage estimates to these components will not be computed.

Tables 8-10 provide information on the damage to the utility lifeline systems. Table 8 provides damage to the utility system facilities. Table 9 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, HAZUS performs a simplified system performance analysis. Table 10 provides a summary of the system performance information.

**Table 8 : Expected Utility System Facility Damage**

System	Total #	# of Locations		
		With at Least Moderate Damage	With Complete Damage	with Functionality > 50 % After Day 1
Potable Water	0	0	0	0
Waste Water	1	1	0	0
Natural Gas	0	0	0	0
Oil Systems	0	0	0	0
Electrical Power	0	0	0	0
Communication	0	0	0	0

**Table 9 : Expected Utility System Pipeline Damage (Site Specific)**

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	255	257	64
Waste Water	153	203	51
Natural Gas	102	217	54
Oil	0	0	0

**Table 10: Expected Potable Water and Electric Power System Performance**

System	Total # of Households	Number of Households without Service			
		At Day 1	At Day 3	At Day 7	At Day 90
Potable Water	15,389	10,678	0	0	0
Electric Power		11,122	6,833	2,763	523

## Induced Earthquake Damage

### Fire Following Earthquake

Fires often occur after an earthquake. Because of the number of fires and the lack of water to fight the fires, they can often burn out of control. HAZUS uses a Monte Carlo simulation model to estimate the number of ignitions and the amount of burnt area. For this scenario, the model estimates that there will be 6 ignitions that will burn about 0.03 sq. mi 0.33 % of the region's total area.) The model also estimates that the fires will displace about 137 people and burn about 15 (millions of dollars) of building value.

### Debris Generation

HAZUS estimates the amount of debris that will be generated by the earthquake. The model breaks the debris into two general categories: a) Brick/Wood and b) Reinforced Concrete/Steel. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 0.00 million tons of debris will be generated. Of the total amount, Brick/Wood comprises 31.00% of the total, with the remainder being Reinforced Concrete/Steel. If the debris tonnage is converted to an estimated number of truckloads, it will require 0 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

## Social Impact

### Shelter Requirement

HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates (274 households to be displaced due to the earthquake. Of these, 55 people (out of a total population of 51,483 will seek temporary shelter in public shelters.

### Casualties

HAZUS estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 11 provides a summary of the casualties estimated for this earthquake

Table 11: Casualty Estimates

	Level 1	Level 2	Level 3	Level 4
<b>2 AM</b>				
Commercial	7	2	0	1
Commuting	0	0	0	0
Educational	0	0	0	0
Hotels	1	0	0	0
Industrial	3	1	0	0
Other-Residential	10	2	0	1
Single Family	99	15	1	1
<b>Total</b>	<b>119</b>	<b>21</b>	<b>2</b>	<b>3</b>
<b>2 PM</b>				
Commercial	351	100	16	32
Commuting	0	0	1	0
Educational	43	12	2	4
Hotels	0	0	0	0
Industrial	22	6	1	2
Other-Residential	1	0	0	0
Single Family	15	2	0	0
<b>Total</b>	<b>433</b>	<b>121</b>	<b>20</b>	<b>39</b>
<b>5 PM</b>				
Commercial	243	69	11	22
Commuting	18	24	40	8
Educational	9	2	0	1
Hotels	0	0	0	0
Industrial	14	4	1	1
Other-Residential	4	1	0	0
Single Family	39	6	0	0
<b>Total</b>	<b>326</b>	<b>106</b>	<b>53</b>	<b>32</b>

**Economic Loss**

The total economic loss estimated for the earthquake is 813.78 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

**Building-Related Losses**

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 770.37 (millions of dollars). 9% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 54% of the total loss. Table 12 below provides a summary of the losses associated with the building damage.

Table 12: Building-Related Economic Loss Estimates

(Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses	Wage	0.00	0.69	23.49	1.42	0.31	25.92
	Capital-Related	0.00	0.31	18.68	0.89	0.13	20.00
	Rental	8.13	1.40	11.84	0.81	0.15	22.34
	Relocation	0.93	0.03	0.73	0.09	0.07	1.85
	<b>Subtotal</b>	<b>9.06</b>	<b>2.44</b>	<b>54.74</b>	<b>3.21</b>	<b>0.66</b>	<b>70.11</b>
Capital Stock Losses	Structural	53.97	1.68	46.44	9.87	1.86	113.82
	Non_Structural	260.00	10.37	108.69	35.06	6.18	420.30
	Content	76.01	2.48	52.86	24.65	2.80	158.80
	Inventory	0.00	0.00	3.24	4.08	0.02	7.34
	<b>Subtotal</b>	<b>389.98</b>	<b>14.54</b>	<b>211.24</b>	<b>73.65</b>	<b>10.86</b>	<b>700.26</b>
<b>Total</b>		<b>399.04</b>	<b>16.98</b>	<b>265.98</b>	<b>76.86</b>	<b>11.52</b>	<b>770.37</b>

### Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, HAZUS computes the direct repair cost for each component only. There are no losses computed by HAZUS for business interruption due to lifeline outages. Tables 13 & 14 provide a detailed breakdown in the expected lifeline losses.

HAZUS estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region. Table 15 presents the results of the region for the given earthquake.

**Table 13: Transportation System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	247.76	\$0.00	0.00
	Bridges	106.00	\$13.14	12.40
	Tunnels	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>353.80</b>	<b>13.10</b>	
Railways	Segments	10.09	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>10.10</b>	<b>0.00</b>	
Light Rail	Segments	0.00	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
Bus	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
Ferry	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
Port	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
Airport	Facilities	0.00	\$0.00	0.00
	Runways	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	
	<b>Total</b>	<b>363.80</b>	<b>13.10</b>	

**Table 14: Utility System Economic Losses**  
(Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Line	5.10	\$1.16	22.67
	<b>Subtotal</b>	<b>5.10</b>	<b>\$1.16</b>	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	78.60	\$27.22	34.63
	Distribution Line	3.10	\$0.91	29.89
	<b>Subtotal</b>	<b>81.65</b>	<b>\$28.13</b>	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Line	2.00	\$0.98	47.92
	<b>Subtotal</b>	<b>2.04</b>	<b>\$0.98</b>	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>\$0.00</b>	
Electrical Power	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>\$0.00</b>	
Communication	Facilities	0.00	\$0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>\$0.00</b>	
	<b>Total</b>	<b>88.78</b>	<b>\$30.26</b>	

**Appendix A: County Listing for the Region**

Los Angeles, CA

**Table 15. Indirect Economic Impact with outside aid**  
(Employment as # of people and Income in millions of \$)

	<b>LOSS</b>	<b>Total</b>	<b>%</b>
<b>First Year</b>			
	Employment Impact	0	0.00
	Income Impact	(6)	-0.80
<b>Second Year</b>			
	Employment Impact	0	0.00
	Income Impact	(20)	-2.42
<b>Third Year</b>			
	Employment Impact	0	0.00
	Income Impact	(25)	-3.12
<b>Fourth Year</b>			
	Employment Impact	0	0.00
	Income Impact	(25)	-3.12
<b>Fifth Year</b>			
	Employment Impact	0	0.00
	Income Impact	(25)	-3.12
<b>Years 6 to 15</b>			
	Employment Impact	0	0.00
	Income Impact	(25)	-3.12

**Appendix B: Regional Population and Building Value Data**

State	County Name	Population	Building Value (millions of dollars)		Total
			Residential	Non-Residential	
<b>California</b>	Los Angeles	51,483	3,391	996	4,388
Total State		<b>51,483</b>	<b>3,391</b>	<b>996</b>	<b>4,388</b>
Total Region		<b>51,483</b>	<b>3,391</b>	<b>996</b>	<b>4,388</b>

# B REGULATIONS

The Disaster Mitigation Act of 2000 (P.L. 106-390) facilitates a new and revitalized approach to mitigation planning. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions (Section 409) and replacing them with a new set of mitigation plan requirements (Section 322). This new section emphasizes the need for state, Tribal, and local entities to closely coordinate mitigation planning and implementation efforts. The following pages provide a description of the Disaster Mitigation Act of 2000, as well as the Interim Final Rule for mitigation planning.

DISASTER MITIGATION ACT OF 2000

Public Law 106-390  
106th Congress

An Act

To amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act to authorize a program for predisaster mitigation, to streamline the administration of disaster relief, to control the Federal costs of disaster assistance, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the “Disaster Mitigation Act of 2000”.  
(b) TABLE OF CONTENTS.—The table of contents of this Act is as follows:

- Sec. 1. Short title; table of contents.
- TITLE I—PREDISASTER HAZARD MITIGATION
- Sec. 101. Findings and purpose.
- Sec. 102. Predisaster hazard mitigation.
- Sec. 103. Interagency task force.
- Sec. 104. Mitigation planning; minimum standards for public and private structures.

TITLE II—STREAMLINING AND COST REDUCTION

- Sec. 201. Technical amendments.
- Sec. 202. Management costs.
- Sec. 203. Public notice, comment, and consultation requirements.
- Sec. 204. State administration of hazard mitigation grant program.
- Sec. 205. Assistance to repair, restore, reconstruct, or replace damaged facilities.
- Sec. 206. Federal assistance to individuals and households.
- Sec. 207. Community disaster teams.
- Sec. 208. Community disaster management of small disasters initiative.
- Sec. 209. Study regarding cost reduction.

TITLE III—MISCELLANEOUS

- Sec. 301. Technical correction of short title.
- Sec. 302. Definitions.
- Sec. 303. Fire management assistance.
- Sec. 304. Disaster grant closure procedures.
- Sec. 305. Emergency relief.
- Sec. 306. Federal participation.
- Sec. 307. Treatment of certain real property.
- Sec. 308. Study of participation by Indian tribes in emergency management.

TITLE I—PREDISASTER HAZARD  
MITIGATION

SEC. 101. FINDINGS AND PURPOSE.  
(a) FINDINGS.—Congress finds that—

42 USC 5133  
note.

Oct. 30, 2000  
[H.R. 707]

Disaster  
Mitigation Act of  
2000.  
42 USC 5121  
note.

(1) natural disasters, including earthquakes, tsunamis, tornadoes, hurricanes, flooding, and wildfires, pose great danger to human life and to property throughout the United States;

(2) greater emphasis needs to be placed on—

(A) identifying and assessing the risks to States and local governments (including Indian tribes) from natural disasters;

(B) implementing adequate measures to reduce losses from natural disasters; and

(C) ensuring that the critical services and facilities of communities will continue to function after a natural disaster;

(3) expenditures for postdisaster assistance are increasing without commensurate reductions in the likelihood of future losses from natural disasters;

(4) in the expenditure of Federal funds under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.), high priority should be given to mitigation of hazards at the local level; and

(5) with a unified effort of economic incentives, awareness and education, technical assistance, and demonstrated Federal support, States and local governments (including Indian tribes) will be able to—

(A) form effective community-based partnerships for hazard mitigation purposes;

(B) implement effective hazard mitigation measures that reduce the potential damage from natural disasters;

(C) ensure continued functionality of critical services;

(D) leverage additional non-Federal resources in meeting natural disaster resistance goals; and

(E) make commitments to long-term hazard mitigation efforts to be applied to new and existing structures.

(b) PURPOSE.—The purpose of this title is to establish a national disaster hazard mitigation program—

(1) to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters; and

(2) to provide a source of predisaster hazard mitigation funding that will assist States and local governments (including Indian tribes) in implementing effective hazard mitigation measures that are designed to ensure the continued functionality of critical services and facilities after a natural disaster.

**SEC. 102. PREDISASTER HAZARD MITIGATION.**

(a) IN GENERAL.—Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) is amended by adding at the end the following:

**“SEC. 203. PREDISASTER HAZARD MITIGATION.**

“(a) DEFINITION OF SMALL IMPOVERISHED COMMUNITY.—In this section, the term ‘small impoverished community’ means a community of 3,000 or fewer individuals that is economically disadvantaged, as determined by the State in which the community is located and based on criteria established by the President.

“(b) ESTABLISHMENT OF PROGRAM.—The President may establish a program to provide technical and financial assistance to States and local governments to assist in the implementation of

President,  
42 USC 5133.

predisaster hazard mitigation measures that are cost-effective and are designed to reduce injuries, loss of life, and damage and destruction of property, including damage to critical services and facilities under the jurisdiction of the States or local governments.

“(c) APPROVAL BY PRESIDENT.—If the President determines that a State or local government has identified natural disaster hazards in areas under its jurisdiction and has demonstrated the ability to form effective public-private natural disaster hazard mitigation partnerships, the President, using amounts in the National Predisaster Mitigation Fund established under subsection (i) (referred to in this section as the ‘Fund’), may provide technical and financial assistance to the State or local government to be used in accordance with subsection (e).

**“(d) STATE RECOMMENDATIONS.—**

**“(1) IN GENERAL.—**

“(A) RECOMMENDATIONS.—The Governor of each State may recommend to the President not fewer than five local governments to receive assistance under this section.

“(B) DEADLINE FOR SUBMISSION.—The recommendations under subparagraph (A) shall be submitted to the President not later than October 1, 2001, and each October 1st thereafter or such later date in the year as the President may establish.

“(C) CRITERIA.—In making recommendations under subparagraph (A), a Governor shall consider the criteria specified in subsection (g).

**“(2) USE.—**

“(A) IN GENERAL.—Except as provided in subparagraph (B), in providing assistance to local governments under this section, the President shall select from local governments recommended by the Governors under this subsection.

“(B) EXTRAORDINARY CIRCUMSTANCES.—In providing assistance to local governments under this section, the President may select a local government that has not been recommended by a Governor under this subsection if the President determines that extraordinary circumstances justify the selection and that making the selection will further the purpose of this section.

“(3) EFFECT OF FAILURE TO NOMINATE.—If a Governor of a State fails to submit recommendations under this subsection in a timely manner, the President may select, subject to the criteria specified in subsection (g), any local governments of the State to receive assistance under this section.

**“(e) USES OF TECHNICAL AND FINANCIAL ASSISTANCE.—**

“(1) IN GENERAL.—Technical and financial assistance provided under this section—

“(A) shall be used by States and local governments principally to implement predisaster hazard mitigation measures that are cost-effective and are described in proposals approved by the President under this section; and

“(B) may be used—

“(i) to support effective public-private natural disaster hazard mitigation partnerships;

“(ii) to improve the assessment of a community’s vulnerability to natural hazards; or

President.



“(iii) to establish hazard mitigation priorities, and an appropriate hazard mitigation plan, for a community.

“(2) DISSEMINATION.—A State or local government may use not more than 10 percent of the financial assistance received by the State or local government under this section for a fiscal year to fund activities to disseminate information regarding cost-effective mitigation technologies.

“(f) ALLOCATION OF FUNDS.—The amount of financial assistance made available to a State (including amounts made available to local governments of the State) under this section for a fiscal year—

“(1) shall be not less than the lesser of—

“(A) \$500,000; or

“(B) the amount that is equal to 1.0 percent of the total funds appropriated to carry out this section for the fiscal year;

“(2) shall not exceed 15 percent of the total funds described in paragraph (1)(B); and

“(3) shall be subject to the criteria specified in subsection (g).

“(g) CRITERIA FOR ASSISTANCE AWARDS.—In determining whether to provide technical and financial assistance to a State or local government under this section, the President shall take into account—

“(1) the extent and nature of the hazards to be mitigated; (2) the degree of commitment of the State or local government to reduce damages from future natural disasters;

“(3) the degree of commitment by the State or local government to support ongoing non-Federal support for the hazard mitigation measures to be carried out using the technical and financial assistance;

“(4) the extent to which the hazard mitigation measures to be carried out using the technical and financial assistance contribute to the mitigation goals and priorities established by the State;

“(5) the extent to which the technical and financial assistance is consistent with other assistance provided under this Act;

“(6) the extent to which prioritized, cost-effective mitigation activities that produce meaningful and definable outcomes are clearly identified;

“(7) if the State or local government has submitted a mitigation plan under section 322, the extent to which the activities identified under paragraph (6) are consistent with the mitigation plan;

“(8) the opportunity to fund activities that maximize net benefits to society;

“(9) the extent to which assistance will fund mitigation activities in small impoverished communities; and

“(10) such other criteria as the President establishes in consultation with State and local governments.

“(h) FEDERAL SHARE.—

“(1) IN GENERAL.—Financial assistance provided under this section may contribute up to 75 percent of the total cost of mitigation activities approved by the President.

President.

“(2) SMALL IMPOVERISHED COMMUNITIES.—Notwithstanding paragraph (1), the President may contribute up to 90 percent of the total cost of a mitigation activity carried out in a small impoverished community.

“(i) NATIONAL PREDISASTER MITIGATION FUND.—

“(1) ESTABLISHMENT.—The President may establish in the Treasury of the United States a fund to be known as the ‘National Predisaster Mitigation Fund’, to be used in carrying out this section.

“(2) TRANSFERS TO FUND.—There shall be deposited in the Fund—

“(A) amounts appropriated to carry out this section, which shall remain available until expended; and

“(B) sums available from gifts, bequests, or donations of services or property received by the President for the purpose of predisaster hazard mitigation.

“(3) EXPENDITURES FROM FUND.—Upon request by the President, the Secretary of the Treasury shall transfer from the Fund to the President such amounts as the President determines are necessary to provide technical and financial assistance under this section.

“(4) INVESTMENT OF AMOUNTS.—

“(A) IN GENERAL.—The Secretary of the Treasury shall invest such portion of the Fund as is not, in the judgment of the Secretary of the Treasury, required to meet current withdrawals. Investments may be made only in interest-bearing obligations of the United States.

“(B) ACQUISITION OF OBLIGATIONS.—For the purpose of investments under subparagraph (A), obligations may be acquired—

“(i) on original issue at the issue price; or

“(ii) by purchase of outstanding obligations at the market price.

“(C) SALE OF OBLIGATIONS.—Any obligation acquired by the Fund may be sold by the Secretary of the Treasury at the market price.

“(D) CREDITS TO FUND.—The interest on, and the proceeds from the sale or redemption of, any obligations held in the Fund shall be credited to and form a part of the Fund.

“(E) TRANSFERS OF AMOUNTS.—

“(i) IN GENERAL.—The amounts required to be transferred to the Fund under this subsection shall be transferred at least monthly from the general fund of the Treasury to the Fund on the basis of estimates made by the Secretary of the Treasury.

“(ii) ADJUSTMENTS.—Proper adjustment shall be made in amounts subsequently transferred to the extent prior estimates were in excess of or less than the amounts required to be transferred.

“(j) LIMITATION ON TOTAL AMOUNT OF FINANCIAL ASSISTANCE.—The President shall not provide financial assistance under this section in an amount greater than the amount available in the Fund.

“(k) MULTHAZARD ADVISORY MAPS.—

“(1) DEFINITION OF MULTHAZARD ADVISORY MAP.—In this subsection, the term ‘multihazard advisory map’ means a map

on which hazard data concerning each type of natural disaster is identified simultaneously for the purpose of showing areas of hazard overlap.

President.

“(2) DEVELOPMENT OF MAPS.—In consultation with States, local governments, and appropriate Federal agencies, the President shall develop multihazard advisory maps for areas, in not fewer than five States, that are subject to commonly recurring natural hazards (including flooding, hurricanes and severe winds, and seismic events).

“(3) USE OF TECHNOLOGY.—In developing multihazard advisory maps under this subsection, the President shall use, to the maximum extent practicable, the most cost-effective and efficient technology available.

“(4) USE OF MAPS.—  
“(A) ADVISORY NATURE.—The multihazard advisory maps shall be considered to be advisory and shall not require the development of any new policy by, or impose any new policy on, any government or private entity.

“(B) AVAILABILITY OF MAPS.—The multihazard advisory maps shall be made available to the appropriate State and local governments for the purposes of—

- “(i) informing the general public about the risks of natural hazards in the areas described in paragraph (2);
- “(ii) supporting the activities described in subsection (e); and
- “(iii) other public uses.

Deadline.

“(1) REPORT ON FEDERAL AND STATE ADMINISTRATION.—Not later than 18 months after the date of the enactment of this section, the President, in consultation with State and local governments, shall submit to Congress a report evaluating efforts to implement this section and recommending a process for transferring greater authority and responsibility for administering the assistance program established under this section to capable States.

“(m) TERMINATION OF AUTHORITY.—The authority provided by this section terminates December 31, 2003.”

(b) CONFORMING AMENDMENT.—Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) is amended by striking the title heading and inserting the following:

“TITLE II—DISASTER PREPAREDNESS AND MITIGATION ASSISTANCE”.

SEC. 103. INTERAGENCY TASK FORCE.

Title II of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5131 et seq.) (as amended by section 102(a)) is amended by adding at the end the following:

42 USC 5134.

“SEC. 204. INTERAGENCY TASK FORCE.

“(a) IN GENERAL.—The President shall establish a Federal interagency task force for the purpose of coordinating the implementation of predisaster hazard mitigation programs administered by the Federal Government.

“(b) CHAIRPERSON.—The Director of the Federal Emergency Management Agency shall serve as the chairperson of the task force.

“(c) MEMBERSHIP.—The membership of the task force shall include representatives of—

- “(1) relevant Federal agencies;
- “(2) State and local government organizations (including Indian tribes); and
- “(3) the American Red Cross.”.

SEC. 104. MITIGATION PLANNING; MINIMUM STANDARDS FOR PUBLIC AND PRIVATE STRUCTURES.

(a) IN GENERAL.—Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) is amended by adding at the end the following:

42 USC 5165.

“SEC. 322. MITIGATION PLANNING.

“(a) REQUIREMENT OF MITIGATION PLAN.—As a condition of receipt of an increased Federal share for hazard mitigation measures under subsection (e), a State, local, or tribal government shall develop and submit for approval to the President a mitigation plan that outlines processes for identifying the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government.

“(b) LOCAL AND TRIBAL PLANS.—Each mitigation plan developed by a local or tribal government shall—

- “(1) describe actions to mitigate hazards, risks, and vulnerabilities identified under the plan; and
- “(2) establish a strategy to implement those actions.

“(c) STATE PLANS.—The State process of development of a mitigation plan under this section shall—

- “(1) identify the natural hazards, risks, and vulnerabilities of areas in the State;
- “(2) support development of local mitigation plans;
- “(3) provide for technical assistance to local and tribal governments for mitigation planning; and
- “(4) identify and prioritize mitigation actions that the State will support, as resources become available.

“(d) FUNDING.—

“(1) IN GENERAL.—Federal contributions under section 404 may be used to fund the development and updating of mitigation plans under this section.

“(2) MAXIMUM FEDERAL CONTRIBUTION.—With respect to any mitigation plan, a State, local, or tribal government may use an amount of Federal contributions under section 404 not to exceed 7 percent of the amount of such contributions available to the government as of a date determined by the government.

“(e) INCREASED FEDERAL SHARE FOR HAZARD MITIGATION MEASURES.—

“(1) IN GENERAL.—If, at the time of the declaration of a major disaster, a State has in effect an approved mitigation plan under this section, the President may increase to 20 percent, with respect to the major disaster, the maximum percentage specified in the last sentence of section 404(a).

“(2) FACTORS FOR CONSIDERATION.—In determining whether to increase the maximum percentage under paragraph (1), the President shall consider whether the State has established—

President.

“(A) eligibility criteria for property acquisition and other types of mitigation measures;

“(B) requirements for cost effectiveness that are related to the eligibility criteria;

“(C) a system of priorities that is related to the eligibility criteria; and

“(D) a process by which an assessment of the effectiveness of a mitigation action may be carried out after the mitigation action is complete.

“SEC. 323. MINIMUM STANDARDS FOR PUBLIC AND PRIVATE STRUCTURES. 42 USC 5165a.

“(a) IN GENERAL.—As a condition of receipt of a disaster loan or grant under this Act—

“(1) the recipient shall carry out any repair or construction to be financed with the loan or grant in accordance with applicable standards of safety, decency, and sanitation and in conformity with applicable codes, specifications, and standards; and

“(2) the President may require safe land use and construction practices, after adequate consultation with appropriate State and local government officials.

“(b) EVIDENCE OF COMPLIANCE.—A recipient of a disaster loan or grant under this Act shall provide such evidence of compliance with this section as the President may require by regulation.”

“(c) LOSSES FROM STRAIGHT LINE WINDS.—The President shall increase the maximum percentage specified in the last sentence of section 404(a) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c(a)) from 15 percent to 20 percent with respect to any major disaster that is in the State of Minnesota and for which assistance is being provided as of the date of the enactment of this Act except that additional assistance provided under this subsection shall not exceed \$6,000,000. The mitigation measures assisted under this subsection shall be related to losses in the State of Minnesota from straight line winds.

“(c) CONFORMING AMENDMENTS.— (1) Section 404(a) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c(a)) is amended—

(A) in the second sentence, by striking “section 409” and inserting “section 322”; and

(B) in the third sentence, by striking “The total” and inserting “Subject to section 322, the total”.

(2) Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5176) is repealed.

TITLE II—STREAMLINING AND COST REDUCTION

SEC. 201. TECHNICAL AMENDMENTS.

Section 311 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5154) is amended in subsections (a)(1), (b), and (c) by striking “section 803 of the Public Works and Economic Development Act of 1965” each place it appears

and inserting “section 209(c)(2) of the Public Works and Economic Development Act of 1965 (42 U.S.C. 3149(c)(2)).”

SEC. 202. MANAGEMENT COSTS.

“(a) IN GENERAL.—Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) (as amended by section 104(a)) is amended by adding at the end the following:

“SEC. 324. MANAGEMENT COSTS.

“(a) DEFINITION OF MANAGEMENT COST.—In this section, the term ‘management cost’ includes any indirect cost, any administrative expense, and any other expense not directly chargeable to a specific project under a major disaster, emergency, or disaster preparedness or mitigation activity or measure.

Regulations.

“(b) ESTABLISHMENT OF MANAGEMENT COST RATES.—Notwithstanding any other provision of law (including any administrative rule or guidance), the President shall by regulation establish management cost rates for grantees and subgrantees that shall be used to determine contributions under this Act for management costs.

Deadline.

“(c) REVIEW.—The President shall review the management cost rates established under subsection (b) not later than 3 years after the date of establishment of the rates and periodically thereafter.”

42 USC 5165b

note.

President.

(1) IN GENERAL.—Subject to paragraph (2), subsections (a) and (b) of section 324 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as added by subsection (a)) shall apply to major disasters declared under that Act on or after the date of the enactment of this Act.

(2) INTERIM AUTHORITY.—Until the date on which the President establishes the management cost rates under section 324 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as added by subsection (a)), section 406(f) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172(f)) (as in effect on the day before the date of the enactment of this Act) shall be used to establish management cost rates.

“(c) PUBLIC NOTICE, COMMENT, AND CONSULTATION REQUIREMENTS.— Title III of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5141 et seq.) (as amended by section 202(a)) is amended by adding at the end the following:

“SEC. 325. PUBLIC NOTICE, COMMENT, AND CONSULTATION REQUIREMENTS.

“(a) PUBLIC NOTICE AND COMMENT CONCERNING NEW OR MODIFIED POLICIES.— (1) IN GENERAL.—The President shall provide for public notice and opportunity for comment before adopting any new or modified policy that— (A) governs implementation of the public assistance program administered by the Federal Emergency Management Agency under this Act; and (B) could result in a significant reduction of assistance under the program.

42 USC 5165c.

President.

"(2) APPLICATION.—Any policy adopted under paragraph (1) shall apply only to a major disaster or emergency declared on or after the date on which the policy is adopted.

"(b) CONSULTATION CONCERNING INTERIM POLICIES.—  
"(1) IN GENERAL.—Before adopting any interim policy under the public assistance program to address specific conditions that relate to a major disaster or emergency that has been declared under this Act, the President, to the maximum extent practicable, shall solicit the views and recommendations of grantees and subgrantees with respect to the major disaster or emergency concerning the potential interim policy, if the interim policy is likely—

"(A) to result in a significant reduction of assistance to applicants for the assistance with respect to the major disaster or emergency; or

"(B) to change the terms of a written agreement to which the Federal Government is a party concerning the declaration of the major disaster or emergency.

"(2) NO LEGAL RIGHT OF ACTION.—Nothing in this subsection confers a legal right of action on any party.

"(c) PUBLIC ACCESS.—The President shall promote public access to policies governing the implementation of the public assistance program."

President.

**SEC. 204. STATE ADMINISTRATION OF HAZARD MITIGATION GRANT PROGRAM.**

Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5170c) is amended by adding at the end the following:

"(c) PROGRAM ADMINISTRATION BY STATES.—  
"(1) IN GENERAL.—A State desiring to administer the hazard mitigation grant program established by this section with respect to hazard mitigation assistance in the State may submit to the President an application for the delegation of the authority to administer the program.

"(2) CRITERIA.—The President, in consultation and coordination with States and local governments, shall establish criteria for the approval of applications submitted under paragraph (1). The criteria shall include, at a minimum—

"(A) the demonstrated ability of the State to manage the grant program under this section;

"(B) there being in effect an approved mitigation plan under section 322; and

"(C) a demonstrated commitment to mitigation activities

"(3) APPROVAL.—The President shall approve an application submitted under paragraph (1) that meets the criteria established under paragraph (2).

"(4) WITHDRAWAL OF APPROVAL.—If, after approving an application of a State submitted under paragraph (1), the President determines that the State is not administering the hazard mitigation grant program established by this section in a manner satisfactory to the President, the President shall withdraw the approval.

"(5) AUDITS.—The President shall provide for periodic audits of the hazard mitigation grant programs administered by States under this subsection."

President.

**SEC. 205. ASSISTANCE TO REPAIR, RESTORE, RECONSTRUCT, OR REPLACE DAMAGED FACILITIES.**

(a) CONTRIBUTIONS.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (a) and inserting the following:

"(1) IN GENERAL.—The President may make contributions—  
"(A) to a State or local government for the repair, restoration, reconstruction, or replacement of a public facility damaged or destroyed by a major disaster and for associated expenses incurred by the government; and  
"(B) subject to paragraph (3), to a person that owns or operates a private nonprofit facility damaged or destroyed by a major disaster for the repair, restoration, reconstruction, or replacement of the facility and for associated expenses incurred by the person.

"(2) ASSOCIATED EXPENSES.—For the purposes of this section, associated expenses shall include—

"(A) the costs of mobilizing and employing the National Guard for performance of eligible work;

"(B) the costs of using prison labor to perform eligible work, including wages actually paid, transportation to a worksite, and extraordinary costs of guards, food, and lodging; and

"(C) base and overtime wages for the employees and extra hires of a State, local government, or person described in paragraph (1) that perform eligible work, plus fringe benefits on such wages to the extent that such benefits were being paid before the major disaster.

**"(3) CONDITIONS FOR ASSISTANCE TO PRIVATE NONPROFIT FACILITIES.—**

"(A) IN GENERAL.—The President may make contributions to a private nonprofit facility under paragraph (1)(B) only if—

"(i) the facility provides critical services (as defined by the President) in the event of a major disaster; or

"(ii) the owner or operator of the facility—

"(I) has applied for a disaster loan under section 7(b) of the Small Business Act (15 U.S.C. 636(b)); and

"(II)(aa) has been determined to be ineligible for such a loan; or

"(bb) has obtained such a loan in the maximum amount for which the Small Business Administration determines the facility is eligible.

"(B) DEFINITION OF CRITICAL SERVICES.—In this paragraph, the term critical services includes power, water (including water provided by an irrigation organization or facility), sewer, wastewater treatment, communications, and emergency medical care.

"(4) NOTIFICATION TO CONGRESS.—Before making any contribution under this section in an amount greater than \$20,000,000, the President shall notify—

"(A) the Committee on Environment and Public Works of the Senate;

“(B) the Committee on Transportation and Infrastructure of the House of Representatives;

“(C) the Committee on Appropriations of the Senate; and

“(D) the Committee on Appropriations of the House of Representatives.”

(b) FEDERAL SHARE.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (b) and inserting the following:“(b) FEDERAL SHARE.—

“(1) MINIMUM FEDERAL SHARE.—Except as provided in paragraph (2), the Federal share of assistance under this section shall be not less than 75 percent of the eligible cost of repair, restoration, reconstruction, or replacement carried out under this section.

President.  
Regulations.

“(2) REDUCED FEDERAL SHARE.—The President shall promulgate regulations to reduce the Federal share of assistance under this section to not less than 25 percent in the case of the repair, restoration, reconstruction, or replacement of any eligible public facility or private nonprofit facility following an event associated with a major disaster—

“(A) that has been damaged, on more than one occasion within the preceding 10-year period, by the same type of event; and

“(B) the owner of which has failed to implement appropriate mitigation measures to address the hazard that caused the damage to the facility.”

(c) LARGE IN-LIEU CONTRIBUTIONS.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (c) and inserting the following:“(c) LARGE IN-LIEU CONTRIBUTIONS.—

“(1) FOR PUBLIC FACILITIES.—

“(A) IN GENERAL.—In any case in which a State or local government determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing any public facility owned or controlled by the State or local government, the State or local government may elect to receive, in lieu of a contribution under subsection (a)(1)(A), a contribution in an amount equal to 75 percent of the Federal share of the Federal estimate of the cost of repairing, restoring, reconstructing, or replacing the facility and of management expenses.

“(B) AREAS WITH UNSTABLE SOIL.—In any case in which a State or local government determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing any public facility owned or controlled by the State or local government because soil instability in the disaster area makes repair, restoration, reconstruction, or replacement infeasible, the State or local government may elect to receive, in lieu of a contribution under subsection (a)(1)(A), a contribution in an amount equal to 90 percent of the Federal share of the Federal estimate of the cost of repairing, restoring, reconstructing, or replacing the facility and of management expenses.

“(C) USE OF FUNDS.—Funds contributed to a State or local government under this paragraph may be used—

“(i) to repair, restore, or expand other selected public facilities;

“(ii) to construct new facilities; or

“(iii) to fund hazard mitigation measures that the State or local government determines to be necessary to meet a need for governmental services and functions in the area affected by the major disaster.

“(D) LIMITATIONS.—Funds made available to a State or local government under this paragraph may not be used for—

“(i) any public facility located in a regulatory floodway (as defined in section 59.1 of title 44, Code of Federal Regulations (or a successor regulation)); or

“(ii) any uninsured public facility located in a special flood hazard area identified by the Director of the Federal Emergency Management Agency under the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.).

“(2) FOR PRIVATE NONPROFIT FACILITIES.—

“(A) IN GENERAL.—In any case in which a person that owns or operates a private nonprofit facility determines that the public welfare would not best be served by repairing, restoring, reconstructing, or replacing the facility, the person may elect to receive, in lieu of a contribution under subsection (a)(1)(B), a contribution in an amount equal to 75 percent of the Federal share of the Federal estimate of the cost of repairing, restoring, reconstructing, or replacing the facility and of management expenses.

“(B) USE OF FUNDS.—Funds contributed to a person under this paragraph may be used—

“(i) to repair, restore, or expand other selected private nonprofit facilities owned or operated by the person;

“(ii) to construct new private nonprofit facilities to be owned or operated by the person; or

“(iii) to fund hazard mitigation measures that the person determines to be necessary to meet a need for the person's services and functions in the area affected by the major disaster.

“(C) LIMITATIONS.—Funds made available to a person under this paragraph may not be used for—

“(i) any private nonprofit facility located in a regulatory floodway (as defined in section 59.1 of title 44, Code of Federal Regulations (or a successor regulation)); or

“(ii) any uninsured private nonprofit facility located in a special flood hazard area identified by the Director of the Federal Emergency Management Agency under the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.).”

(d) ELIGIBLE COST.—

(1) IN GENERAL.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (e) and inserting the following:“(e) ELIGIBLE COST.—

“(1) DETERMINATION.—

“(A) IN GENERAL.—For the purposes of this section, the President shall estimate the eligible cost of repairing, restoring, reconstructing, or replacing a public facility or private nonprofit facility—

“(i) on the basis of the design of the facility as the facility existed immediately before the major disaster; and

“(ii) in conformity with codes, specifications, and standards (including floodplain management and hazard mitigation criteria required by the President or under the Coastal Barrier Resources Act (16 U.S.C. 3501 et seq.)) applicable at the time at which the disaster occurred.

“(B) COST ESTIMATION PROCEDURES.—

“(i) IN GENERAL.—Subject to paragraph (2), the President shall use the cost estimation procedures established under paragraph (3) to determine the eligible cost under this subsection.

“(ii) APPLICABILITY.—The procedures specified in this paragraph and paragraph (2) shall apply only to projects the eligible cost of which is equal to or greater than the amount specified in section 422.

“(2) MODIFICATION OF ELIGIBLE COST.—

“(A) ACTUAL COST GREATER THAN CEILING PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is greater than the ceiling percentage established under paragraph (3) of the cost estimated under paragraph (1), the President may determine that the eligible cost includes a portion of the actual cost of the repair, restoration, reconstruction, or replacement that exceeds the cost estimated under paragraph (1).

“(B) ACTUAL COST LESS THAN ESTIMATED COST.—

“(i) GREATER THAN OR EQUAL TO FLOOR PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is less than 100 percent of the cost estimated under paragraph (1), but is greater than or equal to the floor percentage established under paragraph (3) of the cost estimated under paragraph (1), the State or local government or person receiving funds under this section shall use the excess funds to carry out cost-effective activities that reduce the risk of future damage, hardship, or suffering from a major disaster.

“(ii) LESS THAN FLOOR PERCENTAGE OF ESTIMATED COST.—In any case in which the actual cost of repairing, restoring, reconstructing, or replacing a facility under this section is less than the floor percentage established under paragraph (3) of the cost estimated under paragraph (1), the State or local government or person receiving assistance under this section shall reimburse the President in the amount of the difference.

“(C) NO EFFECT ON APPEALS PROCESS.—Nothing in this paragraph affects any right of appeal under section 423.

“(3) EXPERT PANEL.—

“(A) ESTABLISHMENT.—Not later than 18 months after the date of the enactment of this paragraph, the President, acting through the Director of the Federal Emergency Management Agency, shall establish an expert panel, which shall include representatives from the construction industry and State and local government.

“(B) DUTIES.—The expert panel shall develop recommendations concerning—

“(i) procedures for estimating the cost of repairing, restoring, reconstructing, or replacing a facility consistent with industry practices; and

“(ii) the ceiling and floor percentages referred to in paragraph (2).

“(C) REGULATIONS.—

Taking into account the recommendations of the expert panel under subparagraph (B), the President shall promulgate regulations that establish—

“(i) cost estimation procedures described in subparagraph (B)(i); and

“(ii) the ceiling and floor percentages referred to in paragraph (2).

“(D) REVIEW BY PRESIDENT.—

Not later than 2 years after the date of promulgation of regulations under subparagraph (C) and periodically thereafter, the President shall review the cost estimation procedures and the ceiling and floor percentages established under this paragraph.

“(E) REPORT TO CONGRESS.—Not later than 1 year after the date of promulgation of regulations under subparagraph (C), 3 years after that date, and at the end of each 2-year period thereafter, the expert panel shall submit to Congress a report on the appropriateness of the cost estimation procedures.

“(4) SPECIAL RULE.—In any case in which the facility being repaired, restored, reconstructed, or replaced under this section was under construction on the date of the major disaster, the cost of repairing, restoring, reconstructing, or replacing the facility shall include, for the purposes of this section, only those costs that, under the contract for the construction, are the owner's responsibility and not the contractor's responsibility.”

“(2) EFFECTIVE DATE.—The amendment made by paragraph (1) takes effect on the date of the enactment of this Act and applies to funds appropriated after the date of the enactment of this Act, except that paragraph (1) of section 406(e) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (as amended by paragraph (1)) takes effect on the date on which the cost estimation procedures established under paragraph (3) of that section take effect.

“(e) CONFORMING AMENDMENT.—Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172) is amended by striking subsection (f).

SEC. 206. FEDERAL ASSISTANCE TO INDIVIDUALS AND HOUSEHOLDS. (a) IN GENERAL.—Section 408 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5174) is amended to read as follows:

President.

Deadline.

Deadline.

42 USC 5172 note.

“SEC. 408. FEDERAL ASSISTANCE TO INDIVIDUALS AND HOUSEHOLDS.

“(a) IN GENERAL.—In accordance with this section, the President, in consultation with the Governor of a State, may provide financial assistance, and, if necessary, direct services, to individuals and households in the State who, as a direct result of a major disaster, have necessary expenses and serious needs in cases in which the individuals and households are unable to meet such expenses or needs through other means.

“(2) RELATIONSHIP TO OTHER ASSISTANCE.—Under paragraph (1), an individual or household shall not be denied assistance under paragraph (1), (3), or (4) of subsection (c) solely on the basis that the individual or household has not applied for or received any loan or other financial assistance from the Small Business Administration or any other Federal agency.

“(b) HOUSING ASSISTANCE.—“(1) ELIGIBILITY.—The President may provide financial or other assistance under this section to individuals and households to respond to the disaster-related housing needs of individuals and households who are displaced from their pre-disaster primary residences or whose pre-disaster primary residences are rendered uninhabitable as a result of damage caused by a major disaster.

“(2) DETERMINATION OF APPROPRIATE TYPES OF ASSISTANCE.—“(A) IN GENERAL.—The President shall determine appropriate types of housing assistance to be provided under this section to individuals and households described in subsection (a)(1) based on considerations of cost effectiveness, convenience to the individuals and households, and such other factors as the President may consider appropriate.

“(B) MULTIPLE TYPES OF ASSISTANCE.—One or more types of housing assistance may be made available under this section, based on the suitability and availability of the types of assistance, to meet the needs of individuals and households in the particular disaster situation.

“(c) TYPES OF HOUSING ASSISTANCE.—“(1) TEMPORARY HOUSING.—“(A) FINANCIAL ASSISTANCE.—“(i) IN GENERAL.—The President may provide financial assistance to individuals or households to rent alternate housing accommodations, existing rental units, manufactured housing, recreational vehicles, or other readily fabricated dwellings.

“(ii) AMOUNT.—The amount of assistance under clause (i) shall be based on the fair market rent for the accommodation provided plus the cost of any transportation, utility hookups, or unit installation not provided directly by the President.

“(B) DIRECT ASSISTANCE.—“(i) IN GENERAL.—The President may provide temporary housing units, acquired by purchase or lease, directly to individuals or households who, because of a lack of available housing resources, would be unable

to make use of the assistance provided under subparagraph (A).

“(ii) PERIOD OF ASSISTANCE.—The President may not provide direct assistance under clause (i) with respect to a major disaster after the end of the 18-month period beginning on the date of the declaration of the major disaster by the President, except that the President may extend that period if the President determines that due to extraordinary circumstances an extension would be in the public interest.

“(iii) COLLECTION OF RENTAL CHARGES.—After the end of the 18-month period referred to in clause (ii), the President may charge fair market rent for each temporary housing unit provided.

“(2) REPAIRS.—“(A) IN GENERAL.—The President may provide financial assistance for—

“(i) the repair of owner-occupied private residences, utilities, and residential infrastructure (such as a private access route) damaged by a major disaster to a safe and sanitary living or functioning condition; and

“(ii) eligible hazard mitigation measures that reduce the likelihood of future damage to such residences, utilities, or infrastructure.

“(B) RELATIONSHIP TO OTHER ASSISTANCE.—A recipient of assistance provided under this paragraph shall not be required to show that the assistance can be met through other means, except insurance proceeds.

“(C) MAXIMUM AMOUNT OF ASSISTANCE.—The amount of assistance provided to a household under this paragraph shall not exceed \$5,000, as adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.

“(3) REPLACEMENT.—“(A) IN GENERAL.—The President may provide financial assistance for the replacement of owner-occupied private residences damaged by a major disaster.

“(B) MAXIMUM AMOUNT OF ASSISTANCE.—The amount of assistance provided to a household under this paragraph shall not exceed \$10,000, as adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.

“(C) APPLICABILITY OF FLOOD INSURANCE REQUIREMENT.—With respect to assistance provided under this paragraph, the President may not waive any provision of Federal law requiring the purchase of flood insurance as a condition of the receipt of Federal disaster assistance.

“(4) PERMANENT HOUSING CONSTRUCTION.—The President may provide financial assistance or direct assistance to individuals or households to construct permanent housing in insular areas outside the continental United States and in other remote locations in cases in which—

“(A) no alternative housing resources are available; and

“(B) the types of temporary housing assistance described in paragraph (1) are unavailable, infeasible, or not cost-effective.

“(d) TERMS AND CONDITIONS RELATING TO HOUSING ASSISTANCE.—

“(1) SITES.—

“(A) IN GENERAL.—Any readily fabricated dwelling provided under this section shall, whenever practicable, be located on a site that—

“(i) is complete with utilities; and

“(ii) is provided by the State or local government, by the owner of the site, or by the occupant who was displaced by the major disaster.

“(B) SITES PROVIDED BY THE PRESIDENT.—A readily fabricated dwelling may be located on a site provided by the President if the President determines that such a site would be more economical or accessible.

“(2) DISPOSAL OF UNITS.—

“(A) SALE TO OCCUPANTS.—

“(i) IN GENERAL.—Notwithstanding any other provision of law, a temporary housing unit purchased under this section by the President for the purpose of housing disaster victims may be sold directly to the individual or household who is occupying the unit if the individual or household lacks permanent housing.

“(ii) SALE PRICE.—A sale of a temporary housing unit under clause (i) shall be at a price that is fair and equitable.

“(iii) DEPOSIT OF PROCEEDS.—Notwithstanding any other provision of law, the proceeds of a sale under clause (i) shall be deposited in the appropriate Disaster Relief Fund account.

“(iv) HAZARD AND FLOOD INSURANCE.—A sale of a temporary housing unit under clause (i) shall be made on the condition that the individual or household purchasing the housing unit agrees to obtain and maintain hazard and flood insurance on the housing unit.

“(v) USE OF GSA SERVICES.—The President may use the services of the General Services Administration to accomplish a sale under clause (i).

“(B) OTHER METHODS OF DISPOSAL.—If not disposed of under subparagraph (A), a temporary housing unit purchased under this section by the President for the purpose of housing disaster victims—

“(i) may be sold to any person; or

“(ii) may be sold, transferred, donated, or otherwise made available directly to a State or other governmental entity or to a voluntary organization for the sole purpose of providing temporary housing to disaster victims in major disasters and emergencies if, as a condition of the sale, transfer, or donation, the State, other governmental agency, or voluntary organization agrees—

“(I) to comply with the nondiscrimination provisions of section 308; and

“(II) to obtain and maintain hazard and flood insurance on the housing unit.

“(e) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.—

“(1) MEDICAL, DENTAL, AND FUNERAL EXPENSES.—The President, in consultation with the Governor of a State, may provide financial assistance under this section to an individual or household in the State who is adversely affected by a major disaster to meet disaster-related medical, dental, and funeral expenses.

“(2) PERSONAL PROPERTY, TRANSPORTATION, AND OTHER EXPENSES.—The President, in consultation with the Governor of a State, may provide financial assistance under this section to an individual or household described in paragraph (1) to address personal property, transportation, and other necessary expenses or serious needs resulting from the major disaster.

“(f) STATE ROLE.—

“(1) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.—

“(A) GRANT TO STATE.—Subject to subsection (g), a Governor may request a grant from the President to provide financial assistance to individuals and households in the State under subsection (e).

“(B) ADMINISTRATIVE COSTS.—A State that receives a grant under subparagraph (A) may expend not more than 5 percent of the amount of the grant for the administrative costs of providing financial assistance to individuals and households in the State under subsection (e).

“(2) ACCESS TO RECORDS.—In providing assistance to individuals and households under this section, the President shall provide for the substantial and ongoing involvement of the States in which the individuals and households are located, including by providing to the States access to the electronic records of individuals and households receiving assistance under this section in order for the States to make available any additional State and local assistance to the individuals and households.

“(g) COST SHARING.—

“(1) FEDERAL SHARE.—Except as provided in paragraph (2), the Federal share of the costs eligible to be paid using assistance provided under this section shall be 100 percent.

“(2) FINANCIAL ASSISTANCE TO ADDRESS OTHER NEEDS.—

In the case of financial assistance provided under subsection (e)—

“(A) the Federal share shall be 75 percent; and

“(B) the non-Federal share shall be paid from funds made available by the State.

“(h) MAXIMUM AMOUNT OF ASSISTANCE.—

“(1) IN GENERAL.—No individual or household shall receive financial assistance greater than \$25,000 under this section with respect to a single major disaster.

“(2) ADJUSTMENT OF LIMIT.—The limit established under paragraph (1) shall be adjusted annually to reflect changes in the Consumer Price Index for All Urban Consumers published by the Department of Labor.

“(i) RULES AND REGULATIONS.—The President shall prescribe rules and regulations to carry out this section, including criteria, standards, and procedures for determining eligibility for assistance.”

“(b) CONFORMING AMENDMENT.—Section 502(a)(6) of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5192(a)(6)) is amended by striking “temporary housing”.

President.



(c) ELIMINATION OF INDIVIDUAL AND FAMILY GRANT PROGRAMS.—Section 411 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5178) is repealed.

(d) EFFECTIVE DATE.—The amendments made by this section take effect 18 months after the date of the enactment of this Act.

**SEC. 207. COMMUNITY DISASTER LOANS.**

Section 417 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5184) is amended—

(1) by striking “(a) The President” and inserting the following:

“(a) IN GENERAL.—The President”;

(2) by striking “The amount” and inserting the following: “(b) AMOUNT.—The amount”;

(3) by striking “Repayment” and inserting the following: “(c) REPAYMENT.—

“(1) CANCELLATION.—Repayment”;

(4) by striking “(b) Any loans” and inserting the following: “(d) EFFECT ON OTHER ASSISTANCE.—Any loans”;

(5) in subsection (b) (as designated by paragraph (2))—  
(A) by striking “and shall” and inserting “shall”; and  
(B) by inserting before the period at the end the following: “, and shall not exceed \$5,000,000”; and  
(6) in subsection (c) (as designated by paragraph (3)), by adding at the end the following:

“(2) CONDITION ON CONTINUING ELIGIBILITY.—A local government shall not be eligible for further assistance under this section during any period in which the local government is in arrears with respect to a required repayment of a loan under this section.”.

**SEC. 208. REPORT ON STATE MANAGEMENT OF SMALL DISASTERS INITIATIVE.**

Not later than 3 years after the date of the enactment of this Act, the President shall submit to Congress a report describing the results of the State Management of Small Disasters Initiative, including—

- (1) identification of any administrative or financial benefits of the initiative; and
- (2) recommendations concerning the conditions, if any, under which States should be allowed the option to administer parts of the assistance program under section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5172).

**SEC. 209. STUDY REGARDING COST REDUCTION.**

Not later than 3 years after the date of the enactment of this Act, the Director of the Congressional Budget Office shall complete a study estimating the reduction in Federal disaster assistance that has resulted and is likely to result from the enactment of this Act.

42 USC 5121 note. Deadline.

**TITLE III—MISCELLANEOUS**

**SEC. 301. TECHNICAL CORRECTION OF SHORT TITLE.**

The first section of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 note) is amended to read as follows:

**“SECTION 1. SHORT TITLE.**

“This Act may be cited as the ‘Robert T. Stafford Disaster Relief and Emergency Assistance Act’.”.

**SEC. 302. DEFINITIONS.**

Section 102 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5122) is amended—

(1) in each of paragraphs (3) and (4), by striking “the Northern” and all that follows through “Pacific Islands” and inserting “and the Commonwealth of the Northern Mariana Islands”;

(2) by striking paragraph (6) and inserting the following: “(6) LOCAL GOVERNMENT.—The term ‘local government’ means—

“(A) a county, municipality, city, town, township, local public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government;

“(B) an Indian tribe or authorized tribal organization, or Alaska Native village or organization; and

“(C) a rural community, unincorporated town or village, or other public entity, for which an application for assistance is made by a State or political subdivision of a State.”;

and

(3) in paragraph (9), by inserting “irrigation,” after “utility.”.

**SEC. 303. FIRE MANAGEMENT ASSISTANCE.**

(a) IN GENERAL.—Section 420 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5187) is amended to read as follows:

**“SEC. 420. FIRE MANAGEMENT ASSISTANCE.**

“(a) IN GENERAL.—The President is authorized to provide assistance, including grants, equipment, supplies, and personnel, to any State or local government for the mitigation, management, and control of any fire on public or private forest land or grassland that threatens such destruction as would constitute a major disaster.

“(b) COORDINATION WITH STATE AND TRIBAL DEPARTMENTS OF FORESTRY.—In providing assistance under this section, the President shall coordinate with State and tribal departments of forestry.

“(c) ESSENTIAL ASSISTANCE.—In providing assistance under this section, the President may use the authority provided under section 403.

President.

“(d) RULES AND REGULATIONS.—The President shall prescribe such rules and regulations as are necessary to carry out this section.”

President.

“(b) EFFECTIVE DATE.—The amendment made by subsection (a) takes effect 1 year after the date of the enactment of this Act.”

42 USC 5187

note.

42 USC 5206.

**SEC. 304. DISASTER GRANT CLOSURE PROCEDURES.**

Title VII of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5101 et seq.) is amended by adding at the end the following:

**“(SEC. 706. DISASTER GRANT CLOSURE PROCEDURES.**

“(a) STATUTE OF LIMITATIONS.—

“(1) IN GENERAL.—Except as provided in paragraph (2), no administrative action to recover any payment made to a State or local government for disaster or emergency assistance under this Act shall be initiated in any forum after the date that is 3 years after the date of transmission of the final expenditure report for the disaster or emergency.

“(2) FRAUD EXCEPTION.—The limitation under paragraph (1) shall apply unless there is evidence of civil or criminal fraud.

“(b) REBUTTAL OF PRESUMPTION OF RECORD MAINTENANCE.—

“(1) IN GENERAL.—In any dispute arising under this section after the date that is 3 years after the date of transmission of the final expenditure report for the disaster or emergency, there shall be a presumption that accounting records were maintained that adequately identify the source and application of funds provided for financially assisted activities.

“(2) AFFIRMATIVE EVIDENCE.—The presumption described in paragraph (1) may be rebutted only on production of affirmative evidence that the State or local government did not maintain documentation described in that paragraph.

“(3) INABILITY TO PRODUCE DOCUMENTATION.—The inability of the Federal, State, or local government to produce source documentation supporting expenditure reports later than 3 years after the date of transmission of the final expenditure report shall not constitute evidence to rebut the presumption described in paragraph (1).

“(4) RIGHT OF ACCESS.—The period during which the Federal, State, or local government has the right to access source documentation shall not be limited to the required 3-year retention period referred to in paragraph (3), but shall last as long as the records are maintained.

“(c) BINDING NATURE OF GRANT REQUIREMENTS.—A State or local government shall not be liable for reimbursement or any other penalty for any payment made under this Act if—

- “(1) the payment was authorized by an approved agreement specifying the costs;
- “(2) the costs were reasonable; and
- “(3) the purpose of the grant was accomplished.”.

**SEC. 305. PUBLIC SAFETY OFFICER BENEFITS FOR CERTAIN FEDERAL AND STATE EMPLOYEES.**

(a) IN GENERAL.—Section 1204 of the Omnibus Crime Control and Safe Streets Act of 1968 (42 U.S.C. 3796b) is amended by striking paragraph (7) and inserting the following:

“(7) ‘public safety officer’ means—

“(A) an individual serving a public agency in an official capacity, with or without compensation, as a law enforcement officer, as a firefighter, or as a member of a rescue squad or ambulance crew;

“(B) an employee of the Federal Emergency Management Agency who is performing official duties of the Agency in an area, if those official duties—

“(i) are related to a major disaster or emergency that has been, or is later, declared to exist with respect to the area under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.); and

“(ii) are determined by the Director of the Federal Emergency Management Agency to be hazardous duties; or

“(C) an employee of a State, local, or tribal emergency management or civil defense agency who is performing official duties in cooperation with the Federal Emergency Management Agency in an area, if those official duties—

“(i) are related to a major disaster or emergency that has been, or is later, declared to exist with respect to the area under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.); and

“(ii) are determined by the head of the agency to be hazardous duties.”.

(b) EFFECTIVE DATE.—The amendment made by subsection (a) applies only to employees described in subparagraphs (B) and (C) of section 1204(7) of the Omnibus Crime Control and Safe Streets Act of 1968 (as amended by subsection (a)) who are injured or who die in the line of duty on or after the date of the enactment of this Act.

42 USC 3796b

note.

**SEC. 306. BUY AMERICAN.**

(a) COMPLIANCE WITH BUY AMERICAN ACT.—No funds authorized to be appropriated under this Act or any amendment made by this Act may be expended by an entity unless the entity, in expending the funds, complies with the Buy American Act (41 U.S.C. 10a et seq.).

(b) DEBARMENT OF PERSONS CONVICTED OF FRAUDULENT USE OF “MADE IN AMERICA” LABELS.—

(1) IN GENERAL.—If the Director of the Federal Emergency Management Agency determines that a person has been convicted of intentionally affixing a label bearing a “Made in America” inscription to any product sold in or shipped to the United States that is not made in America, the Director shall determine, not later than 90 days after determining that the person has been so convicted, whether the person should be debarred from contracting under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. 5121 et seq.).

(2) DEFINITION OF DEBAR.—In this subsection, the term “debar” has the meaning given the term in section 2393(c) of title 10, United States Code.

42 USC 5206.

Deadline.

**SEC. 307. TREATMENT OF CERTAIN REAL PROPERTY.**

(a) IN GENERAL.—Notwithstanding the National Flood Insurance Act of 1968 (42 U.S.C. 4001 et seq.), the Flood Disaster

Protection Act of 1973 (42 U.S.C. 4002 et seq.), or any other provision of law, or any flood risk zone identified, delineated, or established under any such law (by flood insurance rate map or otherwise), the real property described in subsection (b) shall not be considered to be, or to have been, located in any area having special flood hazards (including any floodway or floodplain).

(b) **REAL PROPERTY.**—The real property described in this subsection is all land and improvements on the land located in the Maple Terrace Subdivisions in the City of Sycamore, DeKalb County, Illinois, including—

- (1) Maple Terrace Phase I;
- (2) Maple Terrace Phase II;
- (3) Maple Terrace Phase III Unit 1;
- (4) Maple Terrace Phase III Unit 2;
- (5) Maple Terrace Phase III Unit 3;
- (6) Maple Terrace Phase IV Unit 1;
- (7) Maple Terrace Phase IV Unit 2; and
- (8) Maple Terrace Phase IV Unit 3.

(c) **REVISION OF FLOOD INSURANCE RATE LOT MAPS.**—As soon as practicable after the date of the enactment of this Act, the Director of the Federal Emergency Management Agency shall revise the appropriate flood insurance rate lot maps of the agency to reflect the treatment under subsection (a) of the real property described in subsection (b).

**SEC. 308. STUDY OF PARTICIPATION BY INDIAN TRIBES IN EMERGENCY MANAGEMENT.** 42 USC 5121 note.

(a) **DEFINITION OF INDIAN TRIBE.**—In this section, the term “Indian tribe” has the meaning given the term in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450b).

(b) **STUDY.**—

(1) **IN GENERAL.**—The Director of the Federal Emergency Management Agency shall conduct a study of participation by Indian tribes in emergency management.

(2) **REQUIRED ELEMENTS.**—The study shall—  
(A) survey participation by Indian tribes in training, predisaster and postdisaster mitigation, disaster preparedness, and disaster recovery programs at the Federal and State levels; and

(B) review and assess the capacity of Indian tribes to participate in cost-shared emergency management programs and to participate in the management of the programs.

(3) **CONSULTATION.**—In conducting the study, the Director shall consult with Indian tribes.

(c) **REPORT.**—Not later than 1 year after the date of the enactment of this Act, the Director shall submit a report on the study under subsection (b) to—

- (1) the Committee on Environment and Public Works of the Senate;
- (2) the Committee on Transportation and Infrastructure of the House of Representatives;
- (3) the Committee on Appropriations of the Senate; and

Deadline.

(4) the Committee on Appropriations of the House of Representatives.

Approved October 30, 2000.

**LEGISLATIVE HISTORY—H.R. 707 (S. 1691):**

HOUSE REPORTS: No. 106-40 (Comm. on Transportation and Infrastructure).  
SENATE REPORTS: No. 106-295 (accompanying S. 1691 (Comm. on Environment and Public Works)).

**CONGRESSIONAL RECORD:**

Vol. 145 (1999): Mar. 4, considered and passed House.  
July 19, considered and passed Senate, amended.  
Oct. 3, House concurred in Senate amendment with an amendment.  
Oct. 5, Senate concurred in House amendment with an amendment.  
Oct. 10, House concurred in Senate amendment.



# Federal Register

Tuesday,  
February 26, 2002

8844 Federal Register / Vol. 67, No. 38 / Tuesday, February 26, 2002 / Rules and Regulations

## FEDERAL EMERGENCY MANAGEMENT AGENCY

44 CFR Parts 201 and 206  
RIN 3067-AD22

### Hazard Mitigation Planning and Hazard Mitigation Grant Program

**AGENCY:** Federal Emergency  
Management Agency.

**ACTION:** Interim final rule.

**SUMMARY:** This rule addresses State local mitigation planning, identifies new local mitigation planning requirements, authorizes Hazard Mitigation Grant Program (HMGP) funds for planning activities, and increases the amount of HMGP funds available to States that develop a comprehensive, enhanced mitigation plan. This rule also requires that repairs or construction funded by a disaster loan or grant must be carried out in accordance with applicable standards and says that FEMA may practice as a condition of grantees receiving disaster assistance under the Stafford Act.

**DATES:** *Effective Date:* February 26, 2002.  
*Comment Date:* We will accept written comments through April 29, 2002.

**ADDRESSES:** Please send written comments to the Rules Docket Clerk, Office of the General Counsel, Federal Emergency Management Agency, 500 C Street, SW., room 840, Washington, DC 20472. (facsimile) 202-646-4536, or (email) [rules@fema.gov](mailto:rules@fema.gov).

**FOR FURTHER INFORMATION CONTACT:** Margaret E. Lawless, Federal Insurance and Mitigation Administration, Federal Emergency Management Agency, 500 C Street, SW., Washington, DC, 20472. 202-646-3027. (facsimile) 202-646-3104, or (email) [margaret.lawless@fema.gov](mailto:margaret.lawless@fema.gov).

**SUPPLEMENTARY INFORMATION:**

#### Introduction

Throughout the preamble and the rule the terms "we", "our", and "us" refer to FEMA.

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under § 104 the Disaster Mitigation Act of 2000, (DMA 2000) P.L. 106-390, provides new and revitalized approaches to mitigation planning. This section: (1) Continues the requirement for a Standard State Mitigation plan as a condition of disaster assistance; (2) provides for States to receive an increased

percentage of HMGP funds (from 15 to 20 percent of the total estimated eligible Federal assistance) if, at the time of the declaration of a major disaster, they have in effect a FEMA-approved Enhanced State Mitigation Plan that meets the factors listed in this rule; (3) establishes a new requirement for local mitigation plans; and (4) authorizes up to 7 percent of the HMGP funds available to a State to be used for development of State, tribal, and local mitigation plans. We will give Indian tribal governments the opportunity to fulfill the requirements of § 322 either as a grantee or a subgrantee. An Indian tribal government may choose to apply for HMGP funding directly to us and would then serve as a grantee, meeting the State level responsibilities, or it may apply through the State, meeting the local government or subgrantee responsibilities.

Section 322, in concert with other sections of the Act, provides a significant opportunity to reduce the Nation's disaster losses through mitigation planning. In addition, implementation of planned, pre-identified, cost-effective mitigation measures will streamline the disaster recovery process. The Act provides a framework for linking pre- and post-disaster mitigation planning and initiatives with public and private interests to ensure an integrated, comprehensive approach to disaster loss reduction. The language in the Act, taken as a whole, emphasizes the importance of strong State and local planning processes and comprehensive program management at the State level. The new planning criteria also support State administration of the HMGP, and contemplate a significant State commitment to mitigation activities, comprehensive State mitigation planning, and strong program management.

The planning process also provides a link between State and local mitigation programs. Both State level and local plans should address strategies for incorporating post-disaster early mitigation implementation strategies and sustainable recovery actions. We also recognize that governments are involved in a range of planning activities and that mitigation plans may be linked to or reference hazardous materials and other non-natural hazard plans. Improved mitigation planning will result in a better understanding of risks and vulnerabilities, as well as to expedite implementation of measures and activities to reduce those risks, both pre- and post-disaster.

Section 409 of the Stafford Act, 42 U.S.C. 5176, which required mitigation

plans and the use of minimum codes and standards, was repealed by the DMA 2000. These issues are now addressed in two separate sections of the law: mitigation planning is in section 322 of the Act, and minimum codes and standards are in section 323 of the Act. We previously implemented section 409 through 44 CFR Part 206, Subpart M. Since current law now distinguishes the planning from the codes and standards in separate sections, we will address them in different sections of the CFR. We address the new planning regulations in Part 201 to reflect the broader relevance of planning to all FEMA mitigation programs, while the minimum standards remain in Part 206. Federal Disaster Assistance, Subpart M. The regulations implementing the Hazard Mitigation Grant Program are in Part 206, Subpart N. This rule also contains changes to Subpart N, to reflect the new planning criteria identified in section 322 of the Act.

The administration is considering changes to FEMA's mitigation programs in the President's Budget for FY 2003. However, States and localities still would be required to have plans in effect, which meet the minimum requirements under this rule, as a condition of receiving mitigation assistance after November 1, 2003.

**Implementation Strategy.** States must have an approved hazard mitigation plan in order to receive Stafford Act assistance, excluding assistance provided pursuant to emergency provisions. These regulations provide criteria for the new two-tiered State mitigation plan process: Standard State Mitigation Plans, which allow a State to receive HMGP funding based on 15 percent of the total estimated eligible Stafford Act disaster assistance, and Enhanced State Mitigation Plans, which allow a State to receive HMGP funds based on 20 percent of the total estimated eligible Stafford Act disaster assistance. Enhanced State Mitigation Plans must demonstrate that the State has developed a comprehensive mitigation program, that it effectively uses available mitigation funding, and that it is capable of managing the increased funding. All State Mitigation Plans must be reviewed, revised, and approved by FEMA every three years. An important requirement of the legislation is that we must approve a completed enhanced plan *before* a disaster declaration, in order for the State to be eligible for the increased funding.

We will no longer require States to revise their mitigation plan after every disaster declaration, as under former

section 409 of the Act, 42 U.S.C. 5176. We consider, however, that States can reconsider their plan if a disaster or other circumstances significantly affect its mitigation priorities. States with existing mitigation plans, approved under former section 409, will continue to be eligible for the 15 percent HMGCP funding until November 1, 2003, when all State mitigation plans must meet the requirements of these regulations. If State plans are not revised and approved to meet the Standard State Mitigation Plan requirements by that time, they will be ineligible for Stafford Act assistance, excluding emergency assistance.

Indian tribal governments may choose to apply directly to us for HMGCP funding, and would therefore be responsible for having an approved State level mitigation plan, and would act as the grantee. If an Indian tribal government chooses to apply for HMGCP grants through the State, they would be responsible for having an approved local level mitigation plan, and would serve as a grantee accountable to the State as grantee.

This rule also establishes local planning criteria so that these jurisdictions can actively begin the hazard mitigation planning process. This requirement is to encourage the development of comprehensive mitigation plans before disaster events. Section 322 requires local governments to have an approved local mitigation plan to be eligible to receive an HMGCP project grant; however, this requirement will not fully take effect until November 1, 2003. FEMA Regional Directors dated this provision of section 322 was effective for disasters declared on or after October 30, 2000; the date on which the Disaster Mitigation Act of 2000 became law. Regional Directors are encouraging States to make these funds immediately available to local and Indian tribal governments, although the funds can be used for plan development and review at the State level as well.

As discussed earlier in this Supplementary Information, subsection 5166(a) of the Stafford Act, 42 U.S.C. 5166(a), requires as a precondition to receiving disaster assistance under the Act that State and local governments, as well as eligible private nonprofit entities, must agree to carry out repair and reconstruction activities "in accordance with applicable standards of safety, decency, and sanitation and in conformity with applicable codes, specifications, and standards." In addition, that subsection authorizes the President (FEMA, by virtue of Executive Order 12148, as amended) to "require safe land use and construction practices, is contrary to the public interest to delay

after adequate consultation with appropriate State and local officials" in the course of the use of Federal disaster assistance and restore disaster-damaged repair and eligible disaster-damaged facilities.

At the same time that we implement the planning mandates of section 322 of the Stafford Act, we are also implementing the Minimum Standards for Public and Private Structures provision of section 323 of the Act. This rule appears at Subpart M of Part 206 of Title 44 of the Code of Federal Regulations. As mentioned earlier, the section 322 planning regulations are in Part 201, while Part 206, Subpart M includes only the minimum codes and standards regulations mandated in § 323. The rule to implement § 323 of the Act reinforces the link between pre-disaster planning, building and construction standards, and post-disaster reconstruction efforts.

We encourage comments on this interim final rule, and we will make every effort to involve all interested parties prior to the development of the Final Rule.

**Justification for Interim Final Rule**

In general, FEMA publishes a rule for public comment before issuing a final rule, under the Administrative Procedure Act, 5 U.S.C. 533 and 44 CFR Procedure Act, 5 U.S.C. 533 and 44 CFR 1.12. The Administrative Procedure Act, however, provides an exception from that general rule where the agency for good cause finds the procedures for comment and response contrary to public interest. Section 322 of the Stafford Act allows States to receive increased post-disaster grant funding for projects designed to reduce future disaster losses. States will only be eligible for these increased funds if they have a FEMA-approved Enhanced State Mitigation Plan.

the benefits of this rule. In accordance with the Administrative Procedure Act, 5 U.S.C. 553(d)(3), we find that there is "significant regulatory action" as one take effect immediately upon publication in the Federal Register in order to meet the needs of States and communities by identifying criteria for mitigation plans in order to reduce risks nationwide, establish criteria for minimum codes and standards in post-disaster reconstruction, and to allow States to adjust their mitigation plans to receive the increase in mitigation funding.

In addition, we believe that, under the circumstances, delaying the effective date of this rule until after the comment period would not further the public interest. Prior to this rulemaking, FEMA hosted a meeting where interested parties provided comments and suggestions on how we could implement these planning requirements. Participants in this meeting included representatives from the National Emergency Management Association, the Association of State Floodplain Managers, the National Governors' Association, the International Association of Emergency Managers, the National Association of Development Organizations, the American Public Works Association, the National League of Cities, the National Association of State Legislatures, the International City/County Management Association, and the Bureau of Indian Affairs. We took comments and suggestions provided at this meeting into account in developing this interim final rule.

Therefore, we find that prior notice and comment on this rule would not further the public interest. We actively encourage and solicit comments on this interim final rule from interested parties, and we will consider them in preparing the final rule. For these reasons, we believe we have good cause to publish an interim final rule.

**National Environmental Policy Act**

44 CFR 10.8(d)(2)(ii) excludes this rule from the preparation of an environmental assessment or environmental impact statement, where the rule relates to actions that qualify for categorical exclusion under 44 CFR 10.8(d)(2)(ii), such as the development of plans under this section.

**Executive Order 12866, Regulatory Planning and Review**

We have prepared and reviewed this rule under the provisions of E.O. 12866, Regulatory Planning and Review. Under Executive Order 12866, 58 FR 51735, October 4, 1993, a significant regulatory

environment, in a manner that ensures that those programs, policies, and activities do not have the effect of excluding persons from participation in our programs, denying persons the benefits of our programs, or subjecting persons to discrimination because of their race, color, or national origin.

No action that we can anticipate under the final rule will have a disproportionately high or adverse human health and environmental effect on any segment of the population. Section 322 focuses specifically on mitigation planning to: Identify the natural hazards, risks, and vulnerabilities of areas in States, localities, and tribal areas; support development of local mitigation plans; provide for technical assistance to local and tribal governments for mitigation planning, and identify and prioritize mitigation actions that the State will support, as resources become available.

Section 323 requires compliance with applicable codes and standards in repair and construction, and use of safe land use and construction standards. Accordingly, the requirements of Executive Order 12898 do not apply to this interim final rule.

**Paperwork Reduction Act of 1995**

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) and concurrent with the publication of this interim final rule, we have submitted a request for review and approval of a new collection of information, which is contained in this interim final rule. Under the Paperwork Reduction Act of 1995, a person may not be penalized for failing to comply with an information collection that does not display a currently valid Office of Management and Budget (OMB) control number. The request was submitted to OMB for approval under the emergency processing procedures in OMB regulation 5 CFR 1320.1. OMB has approved this collection of information for use through August 31, 2002, under OMB Number 3067-0297.

We expect to follow this emergency request with a request for OMB approval to continue the use of the collection of information for a term of three years.

The request will be processed under OMB's normal clearance procedures in accordance with provisions of OMB regulation 5 CFR 1320.10. To help us with the timely processing of the emergency and normal clearance submissions to OMB, we invite the general public to comment on the collection of information. This notice and request for comments complies with the provisions of the Paperwork

action is subject to OMB review and the requirements of the Executive Order. The Executive Order defines "significant regulatory action" as one that is likely to result in a rule that may: (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The purpose of this rule is to implement section 322 of the Stafford Act which addresses mitigation levels, identifies new local planning requirements, allows Hazard Mitigation Grant Program (HMGCP) funds for planning activities, and increases the amount of HMGCP funds available to States that develop a comprehensive, enhanced mitigation plan. The rule identifies local mitigation planning requirements before approval of project grants, and requires our approval of an Enhanced State Mitigation Plan as a condition for increased mitigation funding. The rule also implements section 323 of the Stafford Act, which requires that repairs or construction funded by disaster loans or grants must comply with applicable standards and safe land use and construction practices. As such the rule itself will not have an effect on the economy of more than \$100,000,000.

Therefore, this rule is a significant regulatory action and is not an economically significant rule under Executive Order 12866. The Office of Management and Budget (OMB) has reviewed this rule under Executive Order 12866.

**Executive Order 12898, Environmental Justice**

Under Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629, February 16, 1994, we incorporate environmental justice into our policies and programs. The Executive Order requires each Federal agency to conduct its programs, policies, and activities that substantially affect human health or the

environment, in a manner that ensures that those programs, policies, and activities do not have the effect of excluding persons from participation in our programs, denying persons the benefits of our programs, or subjecting persons to discrimination because of their race, color, or national origin.

No action that we can anticipate under the final rule will have a disproportionately high or adverse human health and environmental effect on any segment of the population. Section 322 focuses specifically on mitigation planning to: Identify the natural hazards, risks, and vulnerabilities of areas in States, localities, and tribal areas; support development of local mitigation plans; provide for technical assistance to local and tribal governments for mitigation planning, and identify and prioritize mitigation actions that the State will support, as resources become available.

Section 323 requires compliance with applicable codes and standards in repair and construction, and use of safe land use and construction standards. Accordingly, the requirements of Executive Order 12898 do not apply to this interim final rule.

**Paperwork Reduction Act of 1995**

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) and concurrent with the publication of this interim final rule, we have submitted a request for review and approval of a new collection of information, which is contained in this interim final rule. Under the Paperwork Reduction Act of 1995, a person may not be penalized for failing to comply with an information collection that does not display a currently valid Office of Management and Budget (OMB) control number. The request was submitted to OMB for approval under the emergency processing procedures in OMB regulation 5 CFR 1320.1. OMB has approved this collection of information for use through August 31, 2002, under OMB Number 3067-0297.

We expect to follow this emergency request with a request for OMB approval to continue the use of the collection of information for a term of three years.

The request will be processed under OMB's normal clearance procedures in accordance with provisions of OMB regulation 5 CFR 1320.10. To help us with the timely processing of the emergency and normal clearance submissions to OMB, we invite the general public to comment on the collection of information. This notice and request for comments complies with the provisions of the Paperwork

Reduction Act of 1995 (44 U.S.C. 3506(c)(2)(A)).

**Collection of Information**

*Title:* State/Local/Tribal Hazard Mitigation Plans under Section 322 of the Disaster Mitigation Act of 2000.

*Abstract:* Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended by Section 104 of the Disaster Mitigation Act of 2000, provides new and revitalized approaches to mitigation planning. To obtain Federal assistance, new planning provisions require that each state, local, and tribal government prepare a hazard mitigation plan to include sections that describe the planning process, an assessment of the risks, a mitigation strategy, and identification of the plan maintenance and updating process. The Act provides a framework for linking pre- and post-disaster mitigation planning and initiatives with public and

consider them in preparing the final rule.

**Executive Order 13175, Consultation and Coordination With Indian Tribal Governments**

We have reviewed this interim final rule under Executive Order 13175, which became effective on February 6, 2001. Under the Hazard Mitigation Grant Program (HMGP), Indian tribal governments will have the option to apply for grants directly to us and to serve as "grantee" carrying out "State" roles. If they choose this option, tribal governments may submit either a State-level Standard HMGP Plan for the 15 percent HMGP funding or a State-level Enhanced Mitigation Plan for 20 percent HMGP funding. In either case, Indian tribal governments would be able to spend up to 7 percent of those funds on planning. Before developing this rule, we met with representatives from State and local governments and the Bureau of Indian Affairs, to discuss the new planning opportunities and requirements of § 322 of the Stafford Act. We received valuable input from all parties, which helped us to develop this interim final rule.

In reviewing the interim final rule, we find that it does not have "tribal implications" as defined in Executive Order 13175 because it will not have a substantial direct effect on one or more Indian tribes, on the relationship between the Federal Government and Indian tribes, or on the distribution of power and responsibilities between the Federal Government and Indian tribes. Moreover, the interim final rule does not impose substantial direct compliance costs on tribal governments, nor does it preempt tribal law, impair treaty rights or limit the self-governing powers of tribal governments.

**Congressional Review of Agency Rulemaking**

We have sent this interim final rule to the Congress and to the General Accounting Office under the Congressional Review Act, Public Law 104-421. The rule is a not "major rule" within the meaning of that Act. It is an administrative action in support of normal day-to-day mitigation planning activities required by section 322 and the compliance under section 323 of the Stafford Act, as enacted in DMA 2000.

The rule will not result in a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. It will not have "significant adverse effects" on competition, employment, investment,

estimated eligible Federal disaster assistance. This plan must be approved by us within the 3 years prior to the current major disaster declaration. It must demonstrate that a State has developed a comprehensive mitigation program, is effectively using available mitigation funding, and is capable of managing the increased funding.

To be eligible to receive HMGP project grants, local governments must develop Local Mitigation Plans that include a risk assessment and mitigation strategy to reduce potential losses and target resources. Plans must be reviewed, revised, and submitted to us for approval every 5 years.

To receive HMGP project grants, tribal governments may apply as a grantee or subgrantee, and will be required to meet the planning requirements of a State or local government.

*Estimated Total Annual Burden:*

Type of collection/forms	No. of respondents	Hours per response	Annual burden hours
Update state or tribal mitigation plans (standard state mitigation plans)	18	320	5,760
State review of local plans	500 local plans	8	4,000
States develop Enhanced State Mitigation Plans	7	100	700
Local or tribal governments develop mitigation plans	500 local plans	300	150,000
Total burden			160,460

does it limit State policymaking discretion.

However, we have consulted with State and local officials. In order to assist us in the development of this rule, we hosted a meeting to allow interested parties an opportunity to provide their perspectives on the legislation and options for implementation of § 322. Stakeholders who attended the meeting included representatives from the National Emergency Management Association, the Association of State Floodplain Managers, the National Governors' Association, the International Association of Emergency Managers, the National Association of Development Organizations, the American Public Works Association, the National League of Cities, the National Association of Counties, the National Conference of State Legislatures, the International City/County Management Association, and the Bureau of Indian Affairs. We received valuable input from all parties at the meeting, which we took into account in the rule development of this rule. Additionally, we actively encourage and solicit comments on this interim final rule from interested parties, and we will

contacting Ms. Anderson at (202) 646-2625 (voice), (202) 646-3347 (facsimile), or by e-mail at [maribel.anderson@fema.gov](mailto:maribel.anderson@fema.gov).

**Executive Order 13132, Federalism**

Executive Order 13132, Federalism, dated August 4, 1999, sets forth principles and criteria that agencies must adhere to in formulating and implementing policies that have federalism implications, that is, regulations that have substantial direct effects on the States, or on the distribution of power and responsibilities among the various levels of government. Federal agencies must closely examine the statutory authority supporting any action that would limit the policymaking discretion of the States, and to the extent practicable, must consult with State and local officials before implementing any such action.

We have reviewed this rule under E.O. 13132 and have concluded that the rule does not have federalism implications as defined by the Executive Order. We have determined that the rule does not significantly affect the rights, roles, and responsibilities of States, and involves no preemption of State law nor

the State is the grantee. However, after a declaration, an Indian tribal government may choose to be a grantee, or may act as a subgrantee under the State. An Indian tribal government acting as grantee will assume the responsibilities of a "state", as described in this part, for the purposes of administering the grant.

**Hazard mitigation** means any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards.

**Hazard Mitigation Grant Program** means the program authorized under section 404 of the Stafford Act, 42 U.S.C. 5170c and implemented at 44 CFR Part 206, Subpart N, which authorizes funding for certain mitigation measures identified through the evaluation of natural hazards conducted under section 322 of the Stafford Act 42 U.S.C. 51165.

**Indian tribal government** means any Federally recognized governing body of an Indian or Alaska Native tribe, band, nation, pueblo, village, or community that the Secretary of Interior acknowledges to exist as an Indian tribe under the Federally Recognized Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

**Local government** is any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization; or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

**Managing State** means a State to which FEMA has delegated the authority to administer and manage the HMGP under the criteria established by FEMA pursuant to 42 U.S.C. 5170(c)(1). FEMA may also delegate authority to tribal governments to administer and manage the HMGP as a Managing State.

**Regional Director** is a director of a regional office of FEMA, or his/her designated representative.

**Small and impoverished communities** means a community of 3,000 or fewer individuals that is identified by the State as a rural community, and is not a remote area within the corporate boundaries of a larger city; is economically disadvantaged; by having an average per capita annual income of residents not exceeding 80 percent of national, per capita income, based on

productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises. This final rule is subject to the information collection requirements of the Paperwork Reduction Act, and OMB has assigned Control No. 3067-0297. The rule is not an unfunded Federal mandate within the meaning of the Unfunded Mandates Reform Act of 1995, Public Law 104-4, and any enforceable duties that it impose are a condition of Federal assistance or a duty arising from participation in a voluntary Federal program.

**List of Subjects in 44 CFR Part 201 and Part 206**

Administrative practice and procedure, Disaster assistance, Grant programs, Mitigation planning, Reporting and recordkeeping requirements.

Accordingly, Amend 44 CFR, Subchapter D—Disaster Assistance, as follows:

1. Add Part 201 to read as follows:

**PART 201—MITIGATION PLANNING**

Sec.

201.1 Purpose.

201.2 Definitions.

201.3 Responsibilities.

201.4 Standard State Mitigation Plans.

201.5 Enhanced State Mitigation Plans.

201.6 Local Mitigation Plans.

**Authority:** Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121-5206; Reorganization Plan No. 3 of 1978-43 FR 41943, 3 CFR, 1978 Comp., p. 329; E.O. 12127, 44 FR 19367, 3 CFR, 1979 Comp., p. 376; E.O. 12148, 44 FR 43239, 3 CFR, 1979 Comp., p. 412; and E.O. 12673, 54 FR 12571, 3 CFR, 1989 Comp., p. 214.

**§ 201.1 Purpose.**

(a) The purpose of this part is to provide information on the policies and procedures for mitigation planning as required by the provisions of section 322 of the Stafford Act, 42 U.S.C. 5165.

(b) The purpose of mitigation planning is for State, local, and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources.

**§ 201.2 Definitions.**

**Grantee** means the government to which a grant is awarded, which is accountable for the use of the funds provided. The grantee is the entire legal entity even if only a particular component of the entity is designated in the grant award document. Generally,

means a community of 3,000 or fewer individuals that is identified by the State as a rural community, and is not a remote area within the corporate boundaries of a larger city; is economically disadvantaged; by having an average per capita annual income of residents not exceeding 80 percent of national, per capita income, based on

productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises. This final rule is subject to the information collection requirements of the Paperwork Reduction Act, and OMB has assigned Control No. 3067-0297. The rule is not an unfunded Federal mandate within the meaning of the Unfunded Mandates Reform Act of 1995, Public Law 104-4, and any enforceable duties that it impose are a condition of Federal assistance or a duty arising from participation in a voluntary Federal program.

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**Grantee** means the government to which a grant is awarded, which is accountable for the use of the funds provided. The grantee is the entire legal entity even if only a particular component of the entity is designated in the grant award document. Generally,

best available data; the local unemployment rate exceeds by one percentage point or more, the most recently reported, average yearly national unemployment rate; and any other factors identified in the State Plan in which the community is located. The Stafford Act refers to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended (42 U.S.C. 5121-5206).

State is any State of the United States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands.

State Hazard Mitigation Officer is the official representative of a State government who is the primary point of contact with FEMA, other Federal agencies, and local governments in mitigation planning and implementation of mitigation programs and activities required under the Stafford Act.

Subgrantee means the government or other legal entity to which a subgrant is awarded and which is accountable to the grantee for the use of the funds provided. Subgrantees can be a State agency, local government, private non-profit organizations, or Indian tribal government. Indian tribal governments acting as a subgrantee are accountable to the State grantee.

**§ 201.3 Responsibilities.**

(a) General. This section identifies the key responsibilities of FEMA, States, and local/tribal governments in carrying out section 322 of the Stafford Act, 42 U.S.C. 5165.

(b) FEMA. The key responsibilities of the Regional Director are to:

- (1) Oversee all FEMA related pre- and post-disaster hazard mitigation programs and activities;
- (2) Provide technical assistance and training to State, local, and Indian tribal governments regarding the mitigation planning process;
- (3) Review and approve all Standard and Enhanced State Mitigation Plans;
- (4) Review and approve all local mitigation plans, unless that authority has been delegated to the State in accordance with § 201.6(d);
- (5) Conduct reviews, at least once every three years, of State mitigation activities, plans, and programs to ensure that mitigation commitments are fulfilled, and when necessary, take action, including recovery of funds or denial of future funds, if mitigation commitments are not fulfilled.

(c) State. The key responsibilities of the State are to coordinate all State and

to be made available. In any case, emergency assistance provided under 42 U.S.C. 5170a, 5170b, 5173, 5174, 5177, 5179, 5180, 5182, 5183, 5184, 5192 will not be affected. The mitigation plan is the demonstration of the State's commitment to reduce risks from natural hazards and serves as a guide for State decision makers as they commit resources to reducing the effects of natural hazards. States may choose to include the requirements of the HMCP Administrative Plan in their mitigation plan.

(b) Planning process. An effective planning process is essential in developing and maintaining a good plan. The mitigation planning process should include coordination with other State agencies, appropriate Federal agencies, interested groups, and be integrated to the extent possible with other ongoing State planning efforts as well as other FEMA mitigation programs and initiatives.

(c) Plan content. To be effective the plan must include the following elements:

- (1) Description of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how other agencies participated.
- (2) Risk assessments that provide the factual basis for activities proposed in the strategy portion of the mitigation plan. Statewide risk assessments must characterize and analyze natural hazards and risks to provide a statewide overview. This overview will allow the State to compare potential losses throughout the State and to determine their priorities for implementing mitigation measures under the strategy, and to prioritize jurisdictions for receiving technical and financial support in developing more detailed local risk and vulnerability assessments. The risk assessment shall include the following:
  - (i) An overview of the type and location of all natural hazards that can affect the State, including information on previous occurrences of hazard events, as well as the probability of future hazard events, using maps where appropriate;
  - (ii) An overview and analysis of the State's vulnerability to the hazards described in this paragraph (c)(2), based on estimates provided in local risk assessments as well as the State risk assessment. The State shall describe vulnerability in terms of the jurisdictions most threatened by the identified hazards, and most vulnerable to damage and loss associated with hazard events. State owned critical or operated facilities located in the

identified hazard areas shall also be addressed:

- (iii) An overview and analysis of potential losses to the identified vulnerable structures, based on estimates provided in local risk assessments as well as the State risk assessment. The State shall estimate the potential dollar losses to State owned or operated buildings, infrastructure, and critical facilities located in the identified hazard areas;
- (iv) A Mitigation Strategy that provides the State's blueprint for reducing the losses identified in the risk assessment. This section shall include:
  - (i) A description of State goals to mitigate and reduce potential losses;
  - (ii) A discussion of the State's pre- and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as development in hazard-prone areas; a discussion of State funding capabilities for hazard mitigation projects; and a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities;
  - (iii) An identification, evaluation, and prioritization of cost-effective, environmentally sound, and technically feasible mitigation actions and activities the State is considering and an explanation of how each mitigation contributes to the overall mitigation strategy. This section should be linked to local plans, where specific local actions and projects are identified;
  - (iv) Identification of current and potential sources of Federal, State, local, or private funding to implement mitigation activities.

(A) A section on the Coordination of Local Mitigation Planning that includes the following:

- (i) A description of the State process to support, through funding and technical assistance, the development of local mitigation plans;
- (ii) A description of the State process and timeframe by which the local plans will be reviewed, coordinated, and linked to the State Mitigation Plan;
- (iii) Criteria for prioritizing communities and local jurisdictions that would receive planning and project grants under available funding programs, which should include consideration for communities with the highest risks, repetitive loss properties, and most intense development pressures. Further, that for non-planning grants, a principal criterion for prioritizing grants shall be the extent to which benefits are maximized according

to a cost benefit review of proposed projects and their associated costs.

(5) A Plan Maintenance Process that includes:

- (i) An established method and schedule for monitoring, evaluating, and updating the plan;
- (ii) A system for monitoring implementation of mitigation measures and project closeouts;
- (iii) A system for reviewing progress and achieving goals as well as activities and projects identified in the Mitigation Strategy;
- (iv) A Plan Adoption Process. The plan must be formally adopted by the State prior to submittal to us for final review and approval;
- (v) Assurances. The plan must include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). The State will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d).
- (vi) Review and updates. Plan must be reviewed and revised to reflect changes in development, progress in statewide mitigation efforts, and changes in priorities and resubmitted for approval to the appropriate Regional Director every three years. The Regional review will be completed within 45 days after receipt from the State, whenever possible. We also encourage a State to review its plan in the post-disaster timeframe to reflect changing priorities, but it is not required.

**§ 201.5 Enhanced State Mitigation Plans.**

Enhanced State Mitigation Plan at the time of a disaster declaration is eligible to receive increased funds under the HMCP, based on twenty percent of the total estimated eligible Stafford Act disaster assistance. The Enhanced State Mitigation Plan must demonstrate that a State has developed a comprehensive mitigation program, that the State effectively uses available mitigation funding, and that it is capable of managing the increased funding. In order for the State to be eligible for the 20 percent HMCP funding, FEMA must have approved the plan within three years prior to the disaster declaration.

(b) Enhanced State Mitigation Plans must include all elements of the Standard State Mitigation Plan identified in § 201.4, as well as document the following:

- (i) Demonstration that the plan is integrated to the extent practicable with other State and/or regional planning

initiatives (comprehensive, growth management, economic development, capital improvement, land development, and/or emergency management plans) and FEMA mitigation programs and initiatives that provide guidance to State and regional agencies;

- (2) Documentation of the State's project implementation capability, identifying and demonstrating the ability to implement the plan, including:
  - (i) Established eligibility criteria for multi-hazard mitigation measures;
  - (ii) A system to determine the cost effectiveness of mitigation measures, consistent with OMB Circular A-94, Benefit-Cost Analysis of Federal Programs, and to rank the measures according to the State's eligibility criteria;
  - (iii) Demonstration that the State has the capability to effectively manage the HMCP as well as other mitigation grant programs, including a record of the following:
    - (A) Meeting HMCP and other mitigation grant application timeframes and submitting complete, technically feasible, and eligible project applications with appropriate supporting documentation;
    - (B) Preparing and submitting accurate environmental reviews and benefit-cost analyses;
    - (C) Submitting complete and accurate quarterly progress and financial reports on time; and
    - (D) Completing HMCP and other mitigation grant projects within established performance periods, including financial reconciliation;
  - (iv) A system and strategy by which the State will conduct an assessment of the completed mitigation actions and include a record of the effectiveness (factual cost avoidance) of each mitigation action;
  - (3) Demonstration that the State effectively uses existing mitigation programs to achieve its mitigation goals;
  - (4) Demonstration that the State is committed to a comprehensive state mitigation program, which might include any of the following:
    - (i) A commitment to support local mitigation planning by providing workshops and training; State planning grants, or coordinated capability development of local officials, including Emergency Management and Floodplain Management certifications;
    - (ii) A statewide program of hazard mitigation through the development of legislative initiatives, mitigation councils, formation of public/private

**§ 201.6 Standard State Mitigation Plans.**

(a) Plan requirement. By November 1, 2003, States must have an approved Standard State Mitigation plan meeting the requirements of this section, in order to receive assistance under the Stafford Act, although assistance authorized under disasters declared prior to November 1, 2003 will continue.





Indian tribal governments acting as a subgrantee are accountable to the State grantee.

4. Revise § 206.432(b) to read as follows:

**§ 206.432 Federal grant assistance.**

(a) *Amounts of assistance.* The total of Federal assistance under this subpart shall not exceed either 15 or 20 percent of the total estimated Federal assistance (excluding administrative costs) provided for a major disaster under 42 U.S.C. 5170b, 5172, 5173, 5174, 5177, 5178, 5183, and 5201 as follows:

(1) *Fifteen (15) percent.* Effective November 1, 2003, a State with an approved Standard State Mitigation Plan, which meets the requirements outlined in 44 CFR 201.4, shall be eligible for assistance under the HMGP not to exceed 15 percent of the total estimated Federal assistance described in this paragraph. Until that date, existing, approved State Mitigation Plans will be accepted.

(2) *Twenty (20) percent.* A State with an approved Enhanced State Mitigation Plan, in effect prior to the disaster declaration, which meets the requirements outlined in 44 CFR 201.5 shall be eligible for assistance under the HMGP not to exceed 20 percent of the total estimated Federal assistance described in this paragraph.

(3) The estimates of Federal assistance under this paragraph (b) shall be based on the Regional Director's estimate of all eligible costs, actual grants, and appropriate mission assignments.

5. Section 206.434 is amended by redesignating paragraphs (b) through (g) respectively; adding a new paragraph (h); revising redesignated paragraphs (c) introductory text and (c)(1); and revising redesignated paragraph (d) to read as follows:

**§ 206.434 Eligibility.**

(a) *Plan requirement.* (1) For all disasters declared on or after November 1, 2003, local and tribal government applicants for subgrants must have an approved local mitigation plan in accordance with 44 CFR 201.6 prior to receipt of HMGP subgrant funding. Until November 1, 2003, local mitigation plans may be developed concurrent with the implementation of subgrants.

(2) Regional Directors may grant an exception to this requirement in extraordinary circumstances, such as in a small and impoverished community

when justification is provided. In these cases, a plan will be completed within 12 months of the award of the project grant. If a plan is not provided within this timeframe, the project grant will be terminated, and any costs incurred after notice of grant's termination will not be reimbursed by FEMA.

(c) *Minimum project criteria.* To be eligible for the Hazard Mitigation Grant Program, a project must:

- Be in conformance with the State Mitigation Plan and Local Mitigation Plan approved under 44 CFR part 201;
- Be in conformance with the State Mitigation Plan and Local Mitigation Plan approved under 44 CFR part 201;

(d) *Eligible activities.* (1) *Planning.* Up to 7% of the State's HMGP grant may be used to develop State, tribal and/or local mitigation plans to meet the planning criteria outlined in 44 CFR part 201.

(2) *Types of projects.* Projects may be of any nature that will result in protection to public or private property. Eligible projects include, but are not limited to:

- Structural hazard control or protection projects;
- Construction activities that will result in protection from hazards;
- Retrofitting of facilities;
- Property acquisition or relocation, as defined in paragraph (e) of this section;
- Development of State or local mitigation standards;
- Development of comprehensive mitigation programs with implementation as an essential component;
- Development or improvement of warning systems.

6. Revise § 206.435(c) to read as follows:

**§ 206.435 Project identification and selection criteria.**

(a) *Identification.* It is the State's responsibility to identify and select eligible hazard mitigation projects. All funded projects must be consistent with the State Mitigation Plan. Hazard Mitigation projects shall be identified and prioritized through the State, Indian tribal, and local planning process.

7. Revise § 206.436 to read as follows:

**§ 206.436 Application procedures.**

(a) *General.* This section describes the procedures to be used by the grantees in submitting an application for HMGP funding. Under the HMGP, the State or Indian tribal government is the grantee and is responsible for processing subgrants to applicants in accordance with 44 CFR part 13 and this part 206. Subgrantees are accountable to the grantee.

increments, not to exceed a total of 180 days. The grantee must include a justification in its request.

(f) *FEMA approval.* The application and supplement(s) will be submitted to the FEMA Regional Director for Project Administration. I—Public Assistance Insurance Requirements, J—Coastal Barrier Resources Act, and M—Minimum Standards, Regulations under 44 CFR part 9—Floodplain Management and 44 CFR part 10—Environmental Considerations, also apply to this assistance.

9. Section 206.226 is amended by redesignating paragraphs (b) through (f) as paragraphs (c) through (g), respectively; adding a new paragraph (h); and revising redesignated paragraph (g)(5) to read as follows:

**§ 206.226 Restoration of damaged facilities.**

(a) *General.* This subpart provides policies and procedures for determinations of eligibility of applicants for public assistance, eligibility of work, and eligibility of costs for assistance under sections 402, 403, 406, 407, 418, 419,

(b) *Mitigation planning.* In order to receive assistance under this section, as

421(d), 502, and 503 of the Stafford Act. Assistance under this subpart must also conform to requirements of 44 CFR part 201, Mitigation Planning, and 44 CFR part 206, subparts G—Public Assistance Project Administration, I—Public Assistance Insurance Requirements, J—Coastal Barrier Resources Act, and M—Minimum Standards, Regulations under 44 CFR part 9—Floodplain Management and 44 CFR part 10—Environmental Considerations, also apply to this assistance.

(g) *Indian tribal grantees.* Indian tribal governments may submit a SF 424 directly to the Regional Director.

(h) *Indian tribal grantees.* Indian tribal governments may submit a SF 424 directly to the Regional Director.

(i) *Indian tribal grantees.* Indian tribal governments may submit a SF 424 directly to the Regional Director.

(j) *Indian tribal grantees.* Indian tribal governments may submit a SF 424 directly to the Regional Director.

(k) *Indian tribal grantees.* Indian tribal governments may submit a SF 424 directly to the Regional Director.

(l) *Indian tribal grantees.* Indian tribal governments may submit a SF 424 directly to the Regional Director.

(m) *Indian tribal grantees.* Indian tribal governments may submit a SF 424 directly to the Regional Director.

(5) If relocation of a facility is not feasible or cost effective, the Regional Director shall disapprove Federal funding for the original location when he/she determines in accordance with 44 CFR parts 9, 10, 201, or subpart M of this part 206, that restoration in the original location is not allowed. In such cases, an alternative project may be applied for.

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# Hazard Mitigation Assistance Unified Guidance

Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program,  
and Flood Mitigation Assistance Program

July 12, 2013



Federal Emergency Management Agency  
Department of Homeland Security  
500 C Street, S.W.  
Washington, DC 20472

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#### **Titles of Opportunities:**

- ◆ Hazard Mitigation Grant Program (HMGFP)
- ◆ Pre-Disaster Mitigation (PDM) Program
- ◆ Flood Mitigation Assistance (FMA)

#### **Funding Opportunity Numbers:**

The Catalog of Federal Domestic Assistance (CFDA) numbers for the three Hazard Mitigation Assistance (HMA) programs are:

- ◆ 97.039 Hazard Mitigation Grant Program (HMGFP)
- ◆ 97.047 Pre-Disaster Mitigation (PDM) Program
- ◆ 97.029 Flood Mitigation Assistance (FMA)

#### **Federal Agency Name:**

U.S. Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA)

#### **Announcement Type:**

Initial

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# CONTENTS

<b>Part I. Funding Opportunity Description.....</b>	<b>1</b>
A. Authorization and Appropriation.....	2
B. Additional Program Information.....	3
B.1 Programmatic Changes.....	4
<b>Part II. Frontloading HMA Program Eligibility Requirements .....</b>	<b>9</b>
A. Mitigation Planning.....	11
B. Technical Feasibility and Effectiveness.....	11
C. Floodplain Management and Protection of Wetlands.....	11
D. Environmental Planning and Historic Preservation Review and Compliance.....	12
E. Cost-effectiveness.....	12
F. Cost Review.....	12
G. Project Development.....	14
H. Advance Assistance.....	14
I. Strategic Funds Management.....	14
J. Project Monitoring.....	15
K. Closeout.....	15
<b>Part III. Award Information.....</b>	<b>16</b>
<b>Part IV. Eligibility Information.....</b>	<b>17</b>
A. Eligible Applicants.....	17
A.1 Eligible Subapplicants.....	17
B. Cost Sharing.....	18
B.1 Federal Funds Allowed to Be Used as Non-Federal Cost Share.....	20
B.2 Increased Cost of Compliance as Non-Federal Cost Share.....	20
C. Restrictions.....	20
C.1 Non-Discrimination Compliance.....	20
C.2 Conflict of Interest.....	21
C.3 Duplication of Programs.....	21
C.4 Duplication of Benefits.....	21
D. General Program Requirements.....	22
D.1 Eligible Activities.....	22
D.1.1 Mitigation Projects.....	23
D.1.2 Hazard Mitigation Planning.....	27
D.1.3 Management Costs.....	29

D.2 Ineligible Activities.....	30
D.3 Cost-effectiveness.....	31
D.4 Feasibility and Effectiveness.....	32
D.5 Hazard Mitigation Plan Requirement.....	32
D.5.1 Indian Tribal Government Hazard Mitigation Plan Requirement.....	34
D.5.2 Conformance with Hazard Mitigation Plans.....	34
D.6 Environmental Planning and Historic Preservation Requirement.....	34
D.6.1 Floodplain Management and Protection of Wetlands.....	35
D.7 National Flood Insurance Program Eligibility Requirements.....	35
D.7.1 Special Flood Hazard Area Requirements.....	36
D.8 Statutory, Regulatory, and Other Requirements.....	36
<b>Part V. Application and Submission Information .....</b>	<b>38</b>
A. Address to Request Application Package.....	38
B. Content and Form of Application.....	38
C. Submission Dates and Times.....	39
D. Intergovernmental Review.....	39
E. Funding Restrictions.....	39
E.1 HMGP Funding Restrictions.....	39
E.2 PDM Program Funding Restrictions.....	40
E.3 FMA Funding Restrictions.....	40
E.4 Management Costs Funding Restrictions.....	40
F. Other Submission Requirements.....	41
F.1 Application Consideration under Multiple HMA Programs.....	41
F.2 Pre-Award Costs.....	41
G. Applicant Guidance.....	41
G.1 General Applicant Guidance.....	41
G.2 Minimum Eligibility and Completeness Criteria.....	42
H. Scope of Work.....	43
H.1 Project Scope of Work.....	43
H.2 Hazard Mitigation Planning Scope of Work.....	44
H.3 Management Costs Scope of Work.....	46
H.4 Schedule.....	46
H.5 Cost Estimate.....	46
H.5.1 Project Cost Estimate.....	47
H.5.2 Hazard Mitigation Planning Cost Estimate.....	47
H.5.3 Management Cost Estimate.....	48
I. Cost-effectiveness.....	48

I.1	Substantial Damage Waiver.....	48
I.2	Aggregation.....	49
I.3	5 Percent Initiative.....	49
I.4	Pre-calculated Benefits (Safe rooms).....	49
I.5	Greatest Savings to the Fund.....	49
I.6	Environmental Benefits.....	49
I.7	Benefit-Cost Analysis Resources.....	50
J.	Feasibility and Effectiveness Documentation.....	50
K.	Environmental Planning and Historic Preservation Documentation.....	51
<b>Part VI. Application Review Information..... 54</b>		
A.	Review Criteria.....	54
A.1	Application Review.....	54
A.2	Cost-effectiveness Review.....	54
A.3	Feasibility and Effectiveness Review.....	54
A.4	Environmental Planning and Historic Preservation Review.....	55
A.5	HMA Efficiencies.....	55
A.5.1	Safe Room Projects.....	55
A.5.2	Wind Retrofit Projects.....	56
A.5.3	Certain Flood Mitigation Projects.....	56
B.	Review and Selection Process.....	56
B.1	Technical Review.....	56
B.2	Requests for Information.....	56
B.2.1	Request for Information Timelines.....	57
B.3	Selection.....	59
B.4	Notification.....	59
B.5	Reconsideration Process.....	59
B.5.1	Consideration of Additional Information.....	60
<b>Part VII. Award Administration Information..... 61</b>		
A.	Notice of Award.....	61
B.	Administrative and National Policy Requirements.....	61
B.1	Cost-Share Documentation.....	61
B.2	Scope of Work Changes.....	62
B.3	Budget Changes.....	62
B.3.1	Non-construction Projects.....	62
B.3.2	Construction Projects.....	62
B.3.3	Cost Overruns and Underruns.....	62

B.4	Program Period of Performance.....	63
B.4.1	Extensions.....	63
B.5	Requests for Advances and Reimbursements.....	63
B.5.1	Strategic Funds Management.....	64
B.6	Program Income.....	64
B.7	Federal Income Tax on Mitigation Project Funds.....	64
B.8	Noncompliance.....	65
C.	Reporting Requirements.....	65
C.1	Federal Financial Reports.....	65
C.2	Performance Reports.....	66
C.3	Final Reports.....	67
D.	Closeout.....	67
D.1	Subgrant Closeout.....	67
D.2	Grant Closeout.....	68
D.2.1	Update of Repetitive Loss Database.....	69
<b>Part VIII. FEMA Contacts..... 71</b>		
<b>Part IX. Additional Program Guidance..... 72</b>		
A.	Hazard Mitigation Grant Program.....	72
A.1	Grantee Request for HMGP Funds.....	72
A.2	State Administrative Plan.....	72
A.2.1	Designation of Grantee and SHMO.....	73
A.2.2	Staffing Requirements and the Mitigation Team.....	73
A.2.3	Procedures to Guide Implementation Activities.....	74
A.2.4	Sliding Scale.....	74
A.2.5	Management Costs.....	75
A.2.6	Submission and Approval Deadlines.....	75
A.3	HMGP Funding.....	75
A.4	HMGP Management Costs.....	76
A.5	Eligible Subapplicants.....	77
A.6	Submission of HMGP Subapplications.....	78
A.7	Grant Cost-share Requirements.....	78
A.8	Post-Disaster Code Enforcement Projects.....	79
A.9	Advance Assistance.....	80
A.10	Phased Projects.....	82
A.10.1	Pre-Screening Process.....	83
A.10.2	Phase I Conditional Approval.....	83

A.10.3 Phase II Approval-Construction Process.....	84
A.11 The 5 Percent Initiative .....	84
A.11.1 Availability of Additional Funds for Tornado Mitigation.....	85
A.12 Appeal Process .....	85
B. Pre-Disaster Mitigation Program .....	87
B.1 Allocation .....	87
B.2 Small Impoverished Communities .....	87
B.3 Information Dissemination.....	87
B.4 Applicant Ranking of Subapplications.....	88
B.5 Selection.....	88
C. Flood Mitigation Assistance Program .....	89
C.1 Eligible Properties.....	89
C.2 Repetitive Loss Strategy.....	89
C.3 Cost Sharing.....	90
C.4 Applicant Ranking of Subapplications.....	90
C.5 Selection.....	90
<b>Part X. Appendices .....</b>	<b>92</b>
A. Acronyms.....	92
B. Glossary .....	95
C. Additional Resources .....	103
D. Referenced Regulations, Statutes, Directives, and Guidance.....	107
E. Eligibility and Completeness Review Checklist for Project Subapplications .....	117
F. Safe Room Application Using Pre-Calculated Benefits .....	120
G. Generator FAQ.....	125
H. Eligibility and Completeness Review Checklist for Planning Subapplications .....	133
I. EHP Checklist.....	135
J. 8-Step Decision Making Process for Floodplain Management Considerations .....	137
K. Section 106 Process under the National Historic Preservation Act.....	138
L. Application for Advance Assistance.....	140

**List of Figures**

Figure 1: Overall Project Lifecycle.....	9
Figure 2: General Steps in Project Scoping Process.....	10
Figure 3: Frontloading EHP Considerations and the NEPA Process .....	13
Figure 4: RFI Flowchart.....	58

**List of Tables**

Table 1: Eligible Subapplicants.....	18
Table 2: Cost-Share Requirements .....	19
Table 3: Eligible Activities by Program .....	23
Table 4: Green Open Space and Riparian Benefits .....	50
Table 5: RFI Timelines.....	57
Table 6: FEMA Regions.....	71

## PART I. FUNDING OPPORTUNITY DESCRIPTION

Part I of the Hazard Mitigation Assistance (HMA) Unified Guidance introduces the three HMA programs and outlines the organization of the document.

The U.S. Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) HMA programs present a critical opportunity to reduce the risk to individuals and property from natural hazards while simultaneously reducing reliance on Federal disaster funds. On March 30, 2011, the President signed Presidential Policy Directive 8: National Preparedness (PPD-8), and the National Mitigation Framework was finalized in May 2013. The National Mitigation Framework comprises seven core capabilities, including Threats and Hazard Identification, Risk and Disaster Resilience Assessment, Planning, Community Resilience, Public Information and Warning, Long-term Vulnerability Reduction, and Operational Coordination. HMA programs provide funding for eligible activities that are consistent with the National Mitigation Framework's Long-term Vulnerability Reduction capability. HMA programs reduce community vulnerability to disasters and their effects, promote individual and community safety and resilience, and promote community vitality after an incident. Furthermore, HMA programs reduce response and recovery resource requirements in the wake of a disaster or incident, which results in a safer community that is less reliant on external financial assistance.

Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and property from natural hazards and their effects. This definition distinguishes actions that have a long-term impact from those that are more closely associated with immediate preparedness, response, and recovery activities. Hazard mitigation is the only phase of emergency management specifically dedicated to breaking the cycle of damage, reconstruction, and repeated damage. Accordingly, States, Territories, Indian Tribal governments, and communities are encouraged to take advantage of funding that HMA programs provide in both the pre- and post-disaster timelines.

Together, these programs provide significant opportunities to reduce or eliminate potential losses to State, Indian Tribal government, and local assets through hazard mitigation planning and project grant funding. Each HMA program was authorized by separate legislative action, and as such, each program differs slightly in scope and intent.

The Hazard Mitigation Grant Program (HMGP) provides funds to States, Territories, Indian Tribal governments, local governments, and eligible private non-profits (PNPs) following a Presidential major disaster declaration. The Pre-Disaster Mitigation (PDM) Program and Flood Mitigation Assistance (FMA) programs provide funds annually to States, Territories, Indian Tribal governments, and local governments. Although the statutory origins of the programs

differ, both share the common goal of reducing the risk of loss of life and property due to natural hazards.

This guidance applies to HMGP funds available for disasters declared on or after the date of publication. The guidance in this document is subject to change based on new laws or regulations enacted after publication. This guidance is applicable to the PDM and FMA programs; the application cycles are announced via <http://www.grants.gov/>. For additional information, please contact FEMA.

State, Territory, or Indian Tribal governments are eligible Applicants for HMA programs. The Applicant is responsible for soliciting subapplications from eligible subapplicants, assisting in the preparation of them, and submitting eligible, complete applications to FEMA in priority order. HMA grant funds are awarded to Applicants. When funding is awarded, the Applicant then becomes the "Grantee" and is accountable for the use of the funds, responsible for administering the grant, and responsible for complying with program requirements and other applicable Federal, State, Territorial, and Indian Tribal laws and regulations. As the Grantee, the Applicant is also responsible for financial management of the program and overseeing all approved projects. In general, the "subapplicant" is a State-level agency, Indian Tribal government, local government, or other eligible entity that submits a subapplication for FEMA assistance to the Applicant. If HMA funding is awarded, the subapplicant becomes the "subgrantee" and is responsible for managing the subgrant and complying with program requirements and other applicable Federal, State, Territorial, Indian Tribal, and local laws and regulations. An Indian Tribal government may participate as either the Applicant/Grantee or the subapplicant/subgrantee (see [Part IV.A](#)). For **HMGP**, "subapplicant" has the same meaning given to the term "Applicant" in the HMGP regulations at Title 44 of the Code of Federal Regulations (CFR) Part 206.431.

### A. Authorization and Appropriation

**HMGP** is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (the Stafford Act), Title 42, U.S. Code (U.S.C.) 5170c. The key purpose of HMGP is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. HMGP is available, when authorized under a Presidential major disaster declaration, in the areas of the State requested by the Governor. Indian Tribal governments may also submit a request for a major disaster declaration within their impacted area. The amount of HMGP funding available to the Applicant is based upon the estimated total of Federal assistance, subject to the sliding scale formula outlined in 44 CFR Section 206.432(b) that FEMA provides for disaster recovery under the Presidential major disaster declaration. The formula provides for up to 15 percent of the first \$2 billion of estimated aggregate amounts of disaster assistance, up to 10 percent for amounts between \$2 billion and \$10 billion, and up to 7.5 percent for amounts between \$10 billion and \$35.333 billion. For States with enhanced

plans, the eligible assistance is up to 20 percent for estimated aggregate amounts of disaster assistance not to exceed \$35.333 billion.

The **PDM** Program is authorized by Section 203 of the Stafford Act, 42 U.S.C. 5133. The PDM Program is designed to assist States, Territories, Indian Tribal governments, and local communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on Federal funding in future disasters.

The **FMA** program is authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended (NFIA), 42 U.S.C. 4104c, with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).

The National Flood Insurance Fund (NFIF) provides the funding for the FMA program. The PDM and FMA programs are subject to the availability of appropriation funding, as well as any program-specific directive or restriction made with respect to such funds.

More information about each program can be found on the FEMA HMA Web site at <https://www.fema.gov/hazard-mitigation-assistance>.

## B. Additional Program Information

This guidance consolidates the common requirements for all HMA programs and explains the unique elements of the programs in individual sections. Additionally, it provides information for Federal, State, Indian Tribal, and local officials on how to apply for HMA funding for a proposed mitigation activity.

The organization of this HMA Unified Guidance provides clarity and ease of use by presenting information common to all programs in general order of the grant life cycle. As a result, closely related topics may be presented in different sections of the guidance. This guidance is organized in the following manner:

- ◆ [Part I](#), Funding Opportunity Description, introduces the HMA programs;
- ◆ [Part II](#), Frontloading HMA Program Eligibility Requirements, provides general information to facilitate project scoping and the overall decision-making process;
- ◆ [Part III](#), Award Information, provides information about available funding and application deadlines;
- ◆ [Part IV](#), Eligibility Information, provides information about eligible Applicants and subapplicants, cost-sharing requirements, and other program requirements;
- ◆ [Part V](#), Application and Submission Information, provides information regarding application development including funding restrictions;

- ◆ [Part VI](#), Application Review Information, summarizes the FEMA review and selection process;

- ◆ [Part VII](#), Award Administration Information, highlights grants management requirements from the time an award is made through closeout;

- ◆ [Part VIII](#), FEMA Contacts, provides Regional and State contact information;

- ◆ [Part IX](#), Additional Program Guidance, provides information that is unique to each program; and

- ◆ [Part X](#), Appendices, includes acronyms, a glossary, additional resources, and referenced regulations and statutes.

- ◆ Additional guidance for particular activity types is provided as an Addendum to this guidance. This additional guidance provides information specific to property acquisition and structure demolition or relocation, wildfire mitigation, safe room construction, mitigation reconstruction, and structure elevation projects.

## B.1 Programmatic Changes

Although many of the specific requirements of each program remain the same, significant revisions to programmatic requirements included in this HMA Unified Guidance are:

- ◆ Per the Sandy Recovery Improvement Act of 2013 (SRIA), Indian Tribal governments can submit a request for a major disaster declaration within their impacted areas;
- ◆ A new [Part II](#) has been created to outline the importance of “frontloading” HMA program requirements in the project scoping and development process;
- ◆ The Biggert-Waters Flood Insurance Reform Act of 2012 eliminated the Repetitive Flood Claims and Severe Repetitive Loss programs and made the following significant changes to the FMA program:
  - The definitions of repetitive loss and severe repetitive loss properties have been modified ([Part IX, C.1](#));
  - There is no longer a State cap of \$10 million or a community cap of \$3.3 million for any 5-year period;
  - There is no longer a limit on in-kind contributions for the non-Federal cost share (previously limited to one-half of the non-Federal share);
  - Mitigation reconstruction is an eligible activity;
  - Cost-share requirements have changed to allow more Federal funds for properties with repetitive flood claims and severe repetitive loss properties ([Part IV, B](#));



- The development or update of mitigation plans shall not exceed \$50,000 Federal share to any Applicant or \$25,000 Federal share to any subapplicant ([Part V.E.3](#)); and
- There is no longer a restriction that a planning grant can only be awarded not more than once every 5 years to a State or community.
- ◆ For Duplication of Benefits (DOB), HMA does not require that property owners seek assistance from other sources (with the exception of insurance);
- ◆ However, other assistance anticipated or received must be reported ([Part IV.C.4](#)). A Privacy Act notice is required to be provided to homeowners participating in mitigation projects;
- ◆ For **HMGP**, the purchase and installation of stand-alone generators are eligible under regular HMGP funding if they protect a critical facility and meet all other program eligibility criteria ([Part IV.D.1.1](#));
- ◆ For **HMGP** and the **PDM Program**, generators and/or related equipment purchases (e.g., generator hook-ups) that are not stand-alone are considered eligible when the generator and related equipment directly relates to the hazard being mitigated and is part of a more comprehensive project ([Part IV.D.1.1](#));
- ◆ For non-structural retrofits, the elevation of utilities is an eligible activity ([Part IV.D.1.1](#));
- ◆ FEMA Policy 104-008-01, "Hazard Mitigation Assistance for Wind Retrofit Projects for Existing Residential Buildings" dated November 16, 2012, has been incorporated ([Part IV.D.1.1](#)). With the release of this HMA Unified Guidance, the policy has been superseded;
- ◆ A mitigation planning subgrant award can result in a mitigation plan adopted by the jurisdiction(s) and approved by FEMA or it can also include planning-related activities as outlined in 44 CFR Parts 201 and 206 ([Part IV.D.1.2](#));
- ◆ FEMA Mitigation Planning Memorandum (MT-PL) #2 "Guidance For FEMA Regional Directors Regarding "Extraordinary Circumstances" under which an HMGP Project Grant may be awarded to Local Jurisdictions without an Approved Local Mitigation Plan" dated October 28, 2005, has been incorporated. With the release of this HMA Unified Guidance, the memo has been superseded;
- ◆ For **PDM** and **FMA** project subgrants, the Region may apply extraordinary circumstances, when justification is provided, with concurrence received from FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) prior to granting an exception ([Part IV.D.5](#));
- ◆ For the PDM Program, the Federal share to update a hazard mitigation plan has been reduced to \$300,000 ([Part V.E.2](#));
- ◆ Applications must contain minimal information in order for FEMA to be able to make a general eligibility determination ([Part V.G.2](#));

- ◆ Applications or subapplications submitted to FEMA that do not contain the minimal eligibility criteria are subject to immediate denial ([Part V.G.2](#));
- ◆ Greatest Savings to the Fund (GSTF) extends to properties under HMA ([Part V.L](#));
- ◆ An expedited cost-effectiveness methodology (substantial damage waiver) is available for property acquisition projects when certain conditions are met under all HMA programs; this was previously limited to HMGP ([Part V.J](#));
- ◆ FEMA Policy 108-024-01, "Consideration of Environmental Benefits in the Evaluation of Acquisition Projects under the Hazard Mitigation Assistance (HMA) Programs" dated June 18, 2013, has been incorporated ([Part V.J](#)). With the release of this HMA Unified Guidance, this policy has been incorporated;
- ◆ Green open space and riparian area benefits can now be included in the project benefit cost ratio (BCR) once the project BCR reaches 0.75 or greater. The inclusion of environmental benefits in the project BCR is limited to acquisition-related activities;
- ◆ FEMA recommends several HMA efficiencies to facilitate FEMA review and approval ([Part VI.A.5](#));
- ◆ FEMA provides timelines for Applicants to comply with requests for information (RFI) ([Part VI.B.2.1](#));
- ◆ FEMA clarifies the consideration of additional information in support of a subapplication ([Part VI.B.5](#));
- ◆ FEMA clarifies that requests for Scope of Work Changes must address the need for the change through a revised scope, schedule, and budget ([Part VII.B.2](#));
- ◆ FEMA clarifies when prior FEMA approval is needed for a budget change ([Part VII.B.3](#));
- ◆ With the publication of this HMA Unified Guidance, the Period of Performance (POP) for the programs begins with the opening of the application period and ends no later than 36 months from the close of the application period. All requests to extend the grant POP beyond 12 months from the original grant POP termination date must be approved by FEMA Headquarters ([Part VII.B.4](#));
- ◆ FEMA may elect to provide funding for certain projects in incremental amounts (Strategic Funds Management [SFM]) ([Part VII.B.5.1](#));
- ◆ The Grantee must notify FEMA of each property for which settlement was completed in that quarter ([Part VII.C.2](#));
- ◆ The HMGP final lock-in will be established 12 months after date of declaration. The final lock-in amount may be greater than or less than the previous calculations. Because the lock-in estimate is subject to change, FEMA will not obligate more than 75 percent of any estimate prior to the calculation of the final lock-in without concurrence of the Regional Administrator or Federal Coordinating Officer with Disaster Recovery Manager



Authority and the Office of Chief Financial Officer ([Part IX, A.3](#));

- ◆ With the release of this guidance, Section 1104 of the SRIA is incorporated as Advance Assistance in ([Part IX, A.9](#));
- ◆ Advance Assistance can be used to accelerate the implementation of the HMGP. Applicants may use Advance Assistance to develop mitigation strategies and obtain data to prioritize, select, and develop complete HMGP applications in a timely manner ([Part IX, A.9](#));
- ◆ For acquisition projects, clarifications were made regarding the purchase of vacant land, land already owned by an eligible entity, and outstanding tax liens (Addendum, Part A);
- ◆ FEMA will make a determination on the open space compatibility of access to a subsurface resource (e.g., mineral rights) on a case-by-case basis (Addendum, Part A);
- ◆ Acquisitions in Coastal Barrier Resource System (CBRS) units and Other Protected Areas (OPAs) are eligible under all HMA programs if the projects are otherwise eligible under the requirements in the 44 CFR and this guidance (Addendum, Part A);
- ◆ FEMA clarifies that the relevant event may vary under the HMA programs; however, pre-market value or current market value can be used at the Applicant's discretion for all HMA programs (Addendum, Part A);
- ◆ In accordance with Section 203(a)(1) of the Uniform Relocation Assistance and Real Property Acquisition Policies Act, the replacement housing allowance for homeowners may increase from \$22,500 to \$31,000 on October 1, 2014 (Addendum, Part A);
- ◆ With the release of this HMA Unified Guidance, certified clean is defined as a letter from the appropriate local, State, Indian Tribal, or Federal entity determining that no further remedial action is required to protect human health or the environment (Addendum, Part A);
- ◆ FEMA Policy MRR-2-08-1, "Wildfire Mitigation Policy for the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) Program," dated September 8, 2008, has been incorporated. With the release of this HMA Unified Guidance, this policy has now been superseded (Addendum, Part B);
- ◆ FEMA urges communities to implement wildfire projects using the materials and technologies that are in accordance with the International Code Council, FEMA, U.S. Fire Administration, and the National Fire Protection Association (NFPA) Firewise recommendations, whenever applicable (Addendum, Part B);
- ◆ For wildfire projects, the application will include a narrative statement acknowledging the information required in the final operations and maintenance plan. The final operations and maintenance plans must be submitted to FEMA prior to project closeout (Addendum, Part B);

- ◆ FEMA Interim Policy MRR-2-09-1, "Hazard Mitigation Assistance for Safe Rooms," dated April 30, 2009, and FEMA Memorandum, subject "Waiver of Two Provisions of Mitigation Interim Policy MRR-2-09-1, "Hazard Mitigation Assistance for Safe Rooms," dated February 07, 2012, have been incorporated. With the release of this HMA Unified Guidance both policies are now superseded (Addendum, Part C);
- ◆ For safe room projects, costs associated with the acquisition of land for a community safe room are eligible costs (Addendum, Part C);
- ◆ For safe room projects, FEMA will review final operations and maintenance plans during project closeout (Addendum, Part C); and
- ◆ For safe room projects, costs associated with fire suppression sprinklers and heating, ventilation, and air-conditioning (HVAC) systems are an eligible cost (Addendum, Part C).

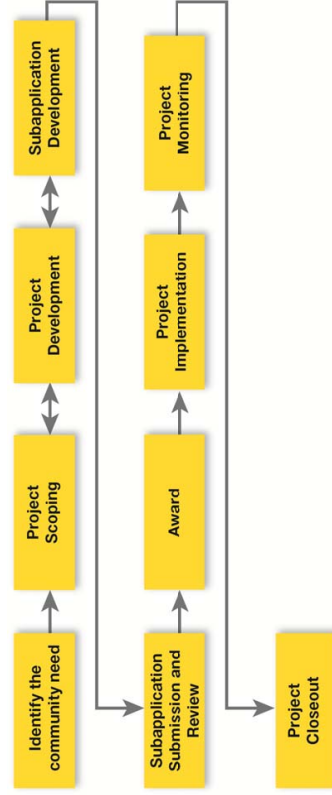
## PART II. FRONTLOADING HMA PROGRAM ELIGIBILITY REQUIREMENTS

Part II provides general information on the importance of “frontloading” HMA Program eligibility requirements in the project scoping and the overall decision-making process. Project scoping and project development are two of the earliest steps in the overall project lifecycle (see [Figure 1](#)) and can have a significant impact on the course an application or subapplication takes through the HMA grant process.

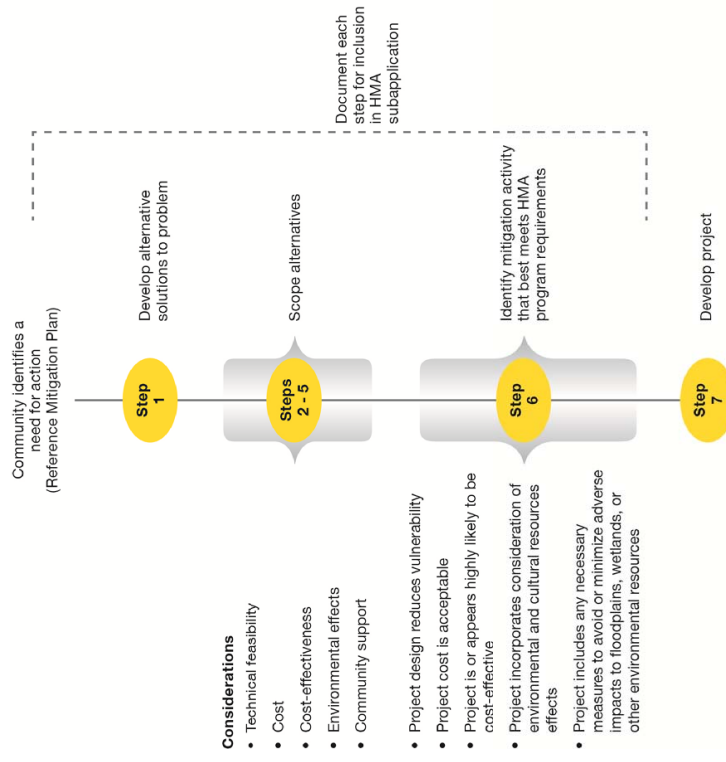
Project scoping (as shown in [Figure 2](#)) is the process by which subapplicants develop effective mitigation alternatives based on a defined set of requirements that meet the stated purpose and need of the proposed project. Applicants are encouraged to include representatives of the whole community in planning and scoping the project to gain broad community participation and support.

The scoping process includes the identification and evaluation of technical feasibility, cost review, cost-effectiveness, and environmental and cultural resource considerations. Based on potential impacts to environmental and cultural resources, there may be a legal requirement to alter the project. The process results in the development of a preferred project alternative that is then documented through the preparation of the application or subapplication. Applicants and subapplicants should consider the whole range of program requirements at the beginning stages of project development. The incorporation of these considerations into the scoping process can increase the efficiency of program review and ensure that all HMA program requirements are addressed.

**Figure 1: Overall Project Lifecycle**



**Figure 2: General Steps in Project Scoping Process**



Addressing the following HMA program requirements at the earliest stage possible in the decision-making process is important because it can lead to enhanced project scoping as well as development and prevent delays later:

- ◆ Mitigation Planning;
- ◆ Technical Feasibility and Effectiveness;
- ◆ Floodplain Management and Protection of Wetlands;
- ◆ Environmental Planning and Historic Preservation Review and Compliance;
- ◆ Cost-Effectiveness; and
- ◆ Cost Review.

“Frontloading” of these requirements at the earliest point in the decision-making process increases the efficacy of the overall HMA Program. It also reduces the need for RFIs, which may result in quicker selections of projects for further review or approval. Additionally, early consideration of Advance Assistance, SFM, project monitoring, and project closeout in the decision-making process can facilitate the scoping and development of viable projects.

### A. Mitigation Planning

Reviewing and incorporating information from the State, Indian Tribal, or local mitigation plan can help an Applicant or subapplicant facilitate the development of mitigation project alternatives. Linking the existing mitigation plan to project scoping can support the Applicant and the subapplicant in selecting the most appropriate mitigation activity that best addresses the identified hazard(s) while taking into account community priorities. In particular, the mitigation strategy section of the plan identifies a range of specific mitigation activities that can reduce vulnerability and includes information on the process that was used to identify, prioritize, and implement the range of mitigation actions considered. Another resource that may be useful in developing mitigation alternatives is the “Mitigation Ideas” guide available from the FEMA Library (see <http://www.fema.gov/library/viewRecord.do?id=6938>). It is important to reference the mitigation plan as potential project alternatives may have been considered during the planning process. If these alternatives were not considered during the mitigation planning process, please include this information in the next mitigation plan update. For more information on hazard mitigation planning, see [Part IV, D.1.2](#) (eligible activities), [Part V.H.2](#) (scope of work), [Part V.H.5.2](#) (cost estimate), or [Part X.C](#) (additional resources).

### B. Technical Feasibility and Effectiveness

Mitigation projects submitted for the HMA grants must be both feasible and effective at mitigating the risks of the hazard for which the project was designed. The feasibility of the project is demonstrated through conformance with accepted engineering practices, established codes, standards, modeling techniques, or best practices. Effective mitigation measures funded under HMA should provide a long-term or permanent solution. Consideration of technical feasibility and effectiveness during the project scoping process facilitates project development. For more information on technical feasibility and effectiveness, see [Part VI.A.3](#) (application review criteria), [Part IV.D.4](#) (eligibility program requirements), or [Part V.J](#) (documentation).

### C. Floodplain Management and Protection of Wetlands

HMA programs and grants must conform to 44 CFR Part 9, which incorporates the requirements of Executive Order (EO) 11988 (*Floodplain Management*) and EO 11990 (*Protection of Wetlands*). All proposed actions should be reviewed to determine if they are in the floodplain or a wetland. Any actions located in the 100-year floodplain (500-year for critical actions), or adversely increasing the base flood or adversely affecting a wetland, trigger the requirement to

complete the 8-step decision-making process outlined in 44 CFR Section 9.6, see [Part X, Appendix J](#). As part of that process, FEMA must consider alternative locations to determine whether the floodplain or wetland is the only practicable location for that action. If the floodplain or wetland is the only practicable location, FEMA must avoid or must minimize adverse impacts to the floodplain or wetland. For more information on floodplain management and the protection of wetlands, see [Part IV.D.6.1](#) (general program requirements) and [Part X, Appendix J](#) (8-Step Decision Making Process for Floodplain Management Considerations).

### D. Environmental Planning and Historic Preservation Review and Compliance

HMA programs and grants must comply with all environmental and historic preservation (EHP) laws and with 44 CFR Part 10, which may include identifying alternate locations and, as necessary, modifying the project. See the EHP Checklist in [Part X, Appendix J](#). Completion of this list is not a substitute for environmental compliance. The front-loading of EHP into the decision-making process allows for development of mitigation measures that reduce or eliminate the proposed project’s impact to the human environment; see [Figure 3](#) for an overview of frontloading the EHP and National Environmental Policy Act (NEPA) process. Moreover, compliance with all environmental laws and regulations is a condition of the grant. Two key considerations are whether the proposed project is located in an area that has endangered or threatened species or critical habitat and whether the proposed project might impact historic or cultural resources. If the project could result in adverse impacts to those resources, it might be necessary to change the scope of the project to avoid those impacts or incorporate mitigation measures to minimize the impacts to those resources. To determine whether any EHP issues may be associated with the proposed project, Applicants should review FEMA’s HMA EHP Resources At-a-Glance Guide, located at <http://www.fema.gov/library/viewRecord.do?id=6976>. For more information on EHP, see [Part IV.D.6](#) (general program requirements), [Part V.K](#) (documentation), and [Part VI.A.4](#) (application review).

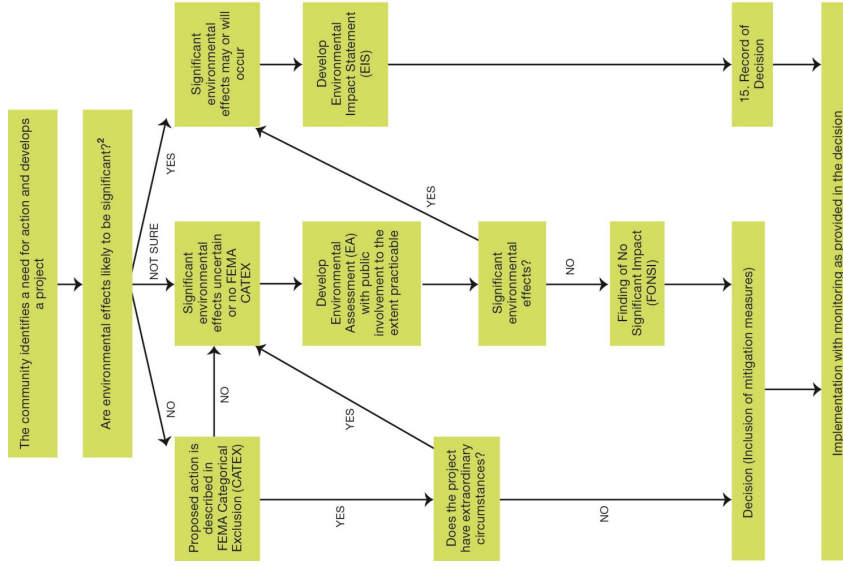
### E. Cost-effectiveness

Mitigation activities are required by statute and regulation to be cost-effective or be in the interest of the NFI. Consideration of the cost-effectiveness requirement at the earliest possible stage of the decision-making process can facilitate project scoping and improve project design. For more information on cost-effectiveness, see [Part IV.D.3](#) (general program requirements) and [Part V.I](#) (documentation).

### F. Cost Review

All costs included in the subapplication should be reviewed to ensure that they are necessary, reasonable, and allocable consistent with the provisions of Office of Management and Budget (OMB) Circular A-87 and 2 CFR Part 225, Cost Principles for State, Local, and Indian Tribal

**Figure 3: Frontloading EHP Considerations and the NEPA Process**



Note: 1. Significant new circumstances or information relevant to environmental concerns or substantial changes in the proposed action that are relevant to environmental concerns may necessitate preparation of a supplemental EIS following either the draft or final EIS or the Record of Decision (CEQ NEPA Regulations, 40 C.F.R. § 1502.9(c)).

2. Are other environmental and historical preservation laws/EQs triggered by this action? (e.g., ESA, MTBA, EO 11888, EO 1990, CAA, RCRA, CBRP, etc.) If so, coordinate with appropriate agencies as necessary.

3. Figure adapted from "A Citizen's Guide to the NEPA" by the Council on Environmental Quality

Governments. Conducting this cost review at the earliest possible stage allows for improved project scoping and facilitates project development, which facilitates FEEMA project review.

**G. Project Development**

Project scoping is not a separate, stand-alone process from project development. It can be considered the initial stage of project development, during which the details of mitigation activities are evaluated and developed. State, Local, and Indian Tribal governments that actively participate in and document their project scoping process put themselves in a greater position for success during project development. The information gathered in the scoping process serves as the basis for the development of a more detailed and robust technical design, cost, and environmental compliance components of the mitigation activity.

During the project development process, the subapplicant may encounter project considerations such as technical feasibility, cost-effectiveness, and EHP that necessitate the refinement or adjustment of the mitigation activity. When these situations are encountered, the reason for the refinement or re-scoping should be fully documented and included with the subapplication.

**H. Advance Assistance**

Section 1104 of the SRIA authorizes the use of Advance Assistance to accelerate the implementation of the HMGP. Applicants may use Advance Assistance to develop mitigation strategies and obtain data to prioritize, select, and develop complete HMGP applications in a timely manner. Using Advance Assistance can help Applicants develop eligible and complete applications that include a feasible project budget and an appropriate project milestone. See [Part IX.A.9](#) for additional information on Advance Assistance.

**ADVANCE ASSISTANCE**  
 Advance Assistance can be used to develop mitigation strategies and obtain data to prioritize, select, and develop complete HMGP applications. Consideration of Advance Assistance early in the decision-making process can help facilitate the development of a viable project, as well as project administration.

**I. Strategic Funds Management**

FEMA has implemented SFM. SFM, or incremental funding, is the concept of fiscal program management designed to provide funds as they are needed to implement approved HMGP activities. Through SFM, Applicant recovery and preparedness, communication and partnership, and the overall fiscal accuracy are expected to be improved. Considering SFM early in the decision-making process can help facilitate the development of a feasible project budget and

**STRATEGIC FUNDS MANAGEMENT**  
 SFM is a fiscal management approach designed to provide funds to the Grantee as needed to implement approved HMGP activities.

appropriate project milestones. At the beginning of an SFM project, FEMA and the State will work together to develop a work schedule.

See [Part VII, B.5.1](#) for additional information on SFM.

#### **J. Project Monitoring**

After a grant or subgrant is awarded, the Grantee and subgrantee are required to monitor and evaluate the progress of the mitigation activity in accordance with the:

- ◆ Approved original scope of work (SOW) and budget;
- ◆ Administrative requirements of 44 CFR Part 13; and
- ◆ Any applicable State requirements.

Sound project monitoring improves the efficiency of the project implementation process and the obligation of funds process. The satisfactory use of quarterly reporting facilitates project management and allows the Grantee, subgrantee, and FEMA to monitor obligations and any unliquidated funds. For additional information on project monitoring (reporting requirements) see [Part VII, C](#).

#### **K. Closeout**

Upon project completion, the Grantee and subgrantee are required to closeout the subgrant or grant in accordance 44 CFR Section 13.50 (Closeout). The project file should document that the:

- ◆ Approved SOW was fully implemented;
- ◆ All obligated funds were liquidated and in a manner consistent with the approved SOW;
- ◆ All environmental compliance measures or mitigations were implemented;
- ◆ The project was implemented in a manner consistent with the grant or subgrant agreement;
- ◆ Grantees submitted the required quarterly financial and performance reports; and
- ◆ The grant and subgrant were closed out in accordance with the provisions outlined in [Part VII, C](#) and [D](#) (subgrant and grant closeout).

For more information on closeout, see [Part VII, D](#).

## **PART III. AWARD INFORMATION**

Funding under HMA programs is subject to the availability of appropriations (as well as any directive or restriction made with respect to such funds in the law) and, for HMGP, to the amount of FEMA disaster recovery assistance under the Presidential major disaster declaration.

For additional information about available funding for HMGP, see [Part IX, A.3](#); for the PDM Program, see [Part IX, B.1](#); and for FMA, see [Part IX, C](#).



## PART IV. ELIGIBILITY INFORMATION

Part IV identifies common eligibility requirements for all HMA programs, such as eligible Applicants and subapplicants, cost-sharing requirements, restrictions on the use of HMA funds, activities that are eligible for HMA funding, and other program requirements. Additional program-specific requirements are found in [Part IX](#) of this guidance. Additional project-specific requirements can be found in the Addendum to this guidance. To be eligible for funding, Applicants and subapplicants must apply for funds as described in this guidance.

### A. Eligible Applicants

Entities eligible to apply for HMA grants include the emergency management agency or a similar office of the 50 States (e.g., the office that has primary emergency management or floodplain management responsibility), the District of Columbia, American Samoa, Guam, the U.S. Virgin Islands, Puerto Rico, the Northern Mariana Islands, and Indian Tribal governments. Each State, Territory, Commonwealth, or Indian Tribal government shall designate one agency to serve as the Applicant for each HMA program. For the definition of the term Indian Tribal government refer to 44 CFR Section 206.431.

An Indian Tribal government may have the option to apply for HMA grants through the State as a subapplicant or directly to FEMA as an Applicant. The option for an Indian Tribal government to apply directly to FEMA reflects FEMA recognition that Indian Tribal governments are sovereign nations and share a government-to-government relationship with the United States. This choice is independent of a designation under other FEMA grants and programs, but is not available on a project-by-project basis within a single grant program. If an Indian Tribal government chooses to apply directly to FEMA and is awarded the grant, it bears the full responsibility of a Grantee for the purposes of administering the grant. For plan requirements relevant to the options to apply as a subapplicant or an Applicant, see [Part IV, D.5.1](#).

### A.1 Eligible Subapplicants

All interested subapplicants must apply to the Applicant. [Table 1](#) identifies, in general, eligible subapplicants. For specific details regarding eligible subapplicants, refer to 44 CFR Section 206.434(a) for HMGP and 44 CFR Section 79.6(a) for FMA. For HMGP and the PDM Program, see 44 CFR Section 206.2(a)(16) for a definition of local governments.

Individuals and businesses are not eligible to apply for HMA funds; however, an eligible Applicant or subapplicant may apply for funding on behalf of individuals and businesses. For additional information about the eligibility of PNPs for HMGP, see [Part IX, A.5](#).

Table 1: Eligible Subapplicants

Entity	HMGP	PDM	FMA
State agencies	✓	✓	✓
Indian Tribal governments	✓	✓	✓
Local governments/communities	✓	✓	✓
Private non-profit organizations (PNPs)	✓		

### B. Cost Sharing

Under the HMA programs, the total cost to implement approved mitigation activities is generally funded by a combination of Federal and non-Federal sources. Both the Federal and the non-Federal cost shares must be for eligible costs used in direct support of the approved activities under this guidance and the grant award. Contributions of cash, third-party in-kind services, materials, or any combination thereof, may be accepted as part of the non-Federal cost share.

FEMA administers cost-sharing requirements consistent with 44 CFR Section 13.24 and 2 CFR Section 215.23. To meet cost-sharing requirements, the non-Federal contributions must be reasonable, allowable, allocable, and necessary under the grant program and must comply with all Federal requirements and regulations.

In general, HMA funds may be used to pay up to 75 percent of the eligible activity costs. The remaining 25 percent of eligible activity costs are derived from non-Federal sources. Exceptions to the 75 percent Federal and 25 percent non-Federal share (see [Table 2](#)) are as follows:

- ◆ **PDM Program** – Small impoverished communities may be eligible for up to a 90 percent Federal cost share. For information about small impoverished communities, see [Part IX, B.2](#).
- ◆ **FMA**
  - FEMA may contribute up to 100 percent Federal cost share for severe repetitive loss properties or the expected savings to the NFIF for acquisition or relocation activities (the GSTF value for property acquisition may be offered to the property owner if the project is not cost-effective using pre-event or current market value);
  - FEMA may contribute up to 90 percent Federal cost share for repetitive loss properties; and
  - FEMA may contribute up to 75 percent Federal cost share for NFIP-insured properties.
- ◆ **Insular areas, including American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands** – FEMA automatically waives the non-Federal cost share when the non-Federal cost share for the entire grant is under \$200,000, not an individual subgrant. If the non-Federal cost share for the entire grant is \$200,000 or

greater, FEMA may waive all or part of the cost share, such as a waiver is usually consistent with that provided for Public Assistance under the disaster declaration. If FEMA does not waive the cost share, the insular area must pay the entire cost-share amount, not only the amount over \$200,000.

Cost-share requirements also extend to management costs with the following exceptions:

- ◆ For **HMGP**, available HMGP management costs are calculated as a percentage of the Federal funds provided. There is no additional cost-share requirement for management costs.
- ◆ Under the **PDM Program**, only Indian Tribal Grantees meeting the definition of a small impoverished community are eligible for a non-Federal cost share of 10 percent for management costs.

See [Part IX.A.7](#) for further information about HMGP cost-share requirements and [Part V.E.4](#) for further information on funding restrictions for management costs.

HMA Federal funds, or funds used to meet HMA cost-share requirements, may not be used as a cost share for other Federal funds, for lobbying, or intervention in Federal regulatory or adjudicatory proceedings.

**Table 2: Cost-Share Requirements**

Programs	Mitigation Activity	Grantee	Subgrantee
	(Percent of Federal / Non-Federal Share)	Management Costs (Percent of Federal / Non-Federal Share)	Management Costs (Percent of Federal / Non-Federal Share)
HMGP	75/25	100/0	–/( <sup>1</sup> )
PDM	75/25	75/25	75/25
PDM – subgrantee is small impoverished community	90/10	75/25	90/10
PDM – Tribal Grantee is small impoverished community	90/10	90/10	90/10
FMA – insured properties and planning grants	75/25	75/25	75/25
FMA – repetitive loss property <sup>(2)</sup>	90/10	90/10	90/10
FMA – severe repetitive loss property <sup>(2)</sup>	100/0	100/0	100/0

(1) Subapplicants should consult their State Hazard Mitigation Officer (SHMO) for the amount or percentage of HMGP subgrantee management cost funding their State has determined to be passed through to subgrantees.

(2) To be eligible for an increased Federal cost share a FEMA-approved State or Tribal (Standard or Enhanced) Mitigation Plan that addresses repetitive loss properties must be in effect at the time of grant award, and the property that is being submitted for consideration must be a repetitive loss property.

## B.1 Federal Funds Allowed to Be Used as Non-Federal Cost Share

In general, the non-Federal cost-share requirement may not be met with funds from other Federal agencies; however, authorizing statutes explicitly allow some Federal funds to be used as a cost share for other Federal grants. Federal funds that are used to meet a non-Federal cost-share requirement must meet the purpose and eligibility requirements of both the Federal source program and the HMA grant program.

## B.2 Increased Cost of Compliance as Non-Federal Cost Share

The NFIP Increased Cost of Compliance (ICC) claim payment from a flood event may be used to contribute to the non-Federal cost-share requirements so long as the claim is made within the timelines allowed by the NFIP. ICC payments can only be used for costs that are eligible for ICC benefits; for example, ICC cannot pay for property acquisition, but can pay for structure demolition or relocation. In addition, Federal funds cannot be provided where ICC funds are available; if the ICC payment exceeds the required non-Federal share, the Federal funding award will be reduced to the difference between the cost of the activity and the ICC payment.

If an ICC payment is being used as a subapplicant’s non-Federal cost share, the NFIP policyholder must assign the claim to the subapplicant. However, only that part of the ICC benefit that pertains to the property can be assigned to the subapplicant. The NFIP policyholder can only assign the ICC benefit to the subapplicant, in no case can the policyholder assign the ICC benefit to another individual. Steps for the assignment of ICC coverage are available at <http://www.fema.gov/national-flood-insurance-program/steps-assignment-coverage-d-increased-cost-compliance-coverage>.

## C. Restrictions

### C.1 Non-Discrimination Compliance

In accordance with Section 308 of the Stafford Act and Title VI of the 1964 Civil Rights Act, all HMA programs are administered in an equitable and impartial manner, without discrimination on the grounds of race, color, religion, nationality, sex, age, disability, English proficiency, or economic status. In addition, Federal assistance distributed by State and local governments is to be implemented in compliance with all applicable laws.

Applicants and subapplicants must ensure that no discrimination is practiced. Applicants and subapplicants must consider fairness, equity, and equal access when prioritizing and selecting project subapplications to submit with their grant application. Subapplicants also must ensure fairness and equal access to property owners and individuals that benefit from mitigation activities.

## C.2 Conflict of Interest

Applicants and subapplicants must avoid conflicts of interest. Subapplicants must comply with the procurement guidelines at 44 CFR Section 13.36, which require subapplicants to avoid situations in which local officials with oversight authority might benefit financially from the grant disbursement. Applicants must comply with guidelines for awarding and administering subgrants as stated in 44 CFR Section 13.37.

## C.3 Duplication of Programs

FEMA will not provide assistance for activities for which it determines the primary or more specific authority lies with another Federal agency or program. Other programs and authorities should be examined before applying for HMA funding. HMA funds are not intended to be used as a substitute for other available program authorities. Available program authorities include other FEMA programs (e.g., Individual Assistance and Public Assistance) and programs under other Federal agencies, such as the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, and the Natural Resources Conservation Service. FEMA may disallow or recoup amounts that duplicate other authorities.

For additional information about Duplication of Programs for wildfire mitigation projects, see Addendum, Part B.2.

## C.4 Duplication of Benefits

HMA funds cannot duplicate funds received by or available to Applicants or subapplicants from other sources for the same purpose. Examples of other sources include insurance claims, other assistance programs (including previous project or planning grants and subgrants from HMA programs), legal awards, or other benefits associated with properties or damage that are subject of litigation.

Because the availability of other sources of mitigation grant or loan assistance is subject to available information and the means of each individual Applicant, HMA does not require that property owners seek assistance from other sources (with the exception of insurance). However, it is the responsibility of the property owner to report other benefits received, any applications for other assistance, the availability of insurance proceeds, or the potential for other compensation, such as from pending legal claims for damages, relating to the property.

### DUPLICATION OF BENEFITS

DOB is used to describe assistance that is from more than one source and that is used for the same purpose or activity. The purpose may apply to the entire project or only part of it.

DOB may apply when assistance for the same purpose:

- Has been received
- Will be received
- Is reasonably available from another source, such as insurance or legal settlements due to the property owners

Where the property owner has an insurance policy covering any loss to the property that relates to the proposed HMA project, the means are available for receiving compensation for a loss or, in the case of ICC, assistance toward a mitigation project. FEMA will generally require that the property owner file a claim prior to the receipt of HMA funds.

Information regarding other assistance received by properties in HMA projects may be shared under 5 U.S.C. 552a (b) of the Privacy Act of 1974. Uses may include sharing with custodians of property records, such as other Federal or other governmental agencies, insurance companies, or any public or private entity, for the purposes of ensuring that the property has not received money that is duplicative of any possible HMA grants received. When obtaining information from property owners about other sources of assistance, a Privacy Act statement must be distributed to each owner. For more information about the process of verifying potential duplication, access the HMA Tool for Identifying Duplication of Benefits at <http://www.fema.gov/library/viewRecord.do?tid=6815> and for a copy of the Privacy Act statement (see Appendix F of that document).

For additional information on DOB for property acquisition and structure demolition or relocation projects, see Addendum Part A.11.4.

## D. General Program Requirements

### D.1 Eligible Activities

To be eligible, activities must meet all requirements referenced in this guidance. Eligible activities for HMA fall into the following categories:

- ◆ Mitigation projects (all HMA programs);
- ◆ Hazard mitigation planning (all HMA programs); and
- ◆ Management costs (all HMA programs).

[Table 3](#) summarizes eligible activities that may be funded by the HMA programs. Detailed descriptions of these activities follow the table in [Part IV, D.1.1, D.1.2, and D.1.3](#).

The following activities are not eligible as stand-alone activities but are eligible when included as a functional component of eligible mitigation activities:

- ◆ For the **PDM Program**, generators and/or related equipment purchases (e.g., generator hook-ups), when the generator directly relates to the hazards being mitigated and is part of a larger project;
- ◆ Real property or easements purchases required for the completion of an eligible mitigation project; and
- ◆ Studies that are integral to the development and implementation of mitigation project, including hydrologic and hydraulic, engineering, or drainage studies.



**Table 3: Eligible Activities by Program**

Eligible Activities	HMGP	PDM	FMA
<b>1. Mitigation Projects</b>			
Property Acquisition and Structure Demolition	✓	✓	✓
Property Acquisition and Structure Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction			✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing of Non-residential Structures	✓	✓	✓
Minor Localized Flood Reduction Projects	✓	✓	✓
Structural Retrofitting of Existing Buildings	✓	✓	
Non-structural Retrofitting of Existing Buildings and Facilities	✓	✓	✓
Safe Room Construction	✓	✓	✓
Wind Retrofit for One- and Two-Family Residences	✓	✓	
Infrastructure Retrofit	✓	✓	✓
Soil Stabilization	✓	✓	✓
Wildfire Mitigation	✓	✓	✓
Post-Disaster Code Enforcement	✓	✓	✓
Generators	✓	✓	✓
5 Percent Initiative Projects	✓		
Advance Assistance	✓		
<b>2. Hazard Mitigation Planning</b>	✓	✓	✓
<b>3. Management Costs</b>	✓	✓	✓

Additional information regarding eligible projects for HMGP is included in [Part IX.A.8](#) and [A.9](#); and for FMA, see [Part IX.C.1](#).

Costs for eligible activities must be reasonable, allowable, allocable, and necessary as required by 2 CFR Part 225, Cost Principles for State, Local, and Indian Tribal Governments, 44 CFR Section 13.22, applicable program regulations, and this guidance.

**D.1.1 Mitigation Projects**

This section briefly describes the mitigation projects eligible under one or more of the three HMA programs. [Table 3](#) summarizes the eligibility of the following project types for each program:

- ◆ **Property Acquisition and Structure Demolition** – The voluntary acquisition of an existing at-risk structure and, typically, the underlying land, and conversion of the land to

open space through the demolition of the structure. The property must be deed-restricted in perpetuity to open space uses to restore and/or conserve the natural floodplain functions. For property acquisition and structure demolition projects, see Addendum, Part A.

- ◆ **Property Acquisition and Structure Relocation** – The voluntary physical relocation of an existing structure to an area outside of a hazard-prone area, such as the Special Flood Hazard Area (SFHA) or a regulatory erosion zone and, typically, the acquisition of the underlying land. Relocation must conform to all applicable State and local regulations. The property must be deed-restricted in perpetuity to open space uses to restore and/or conserve the natural floodplain functions. For property acquisition and structure relocation projects, see Addendum, Part A.
- ◆ **Structure Elevation** – Physically raising and/or retrofitting an existing structure to the Base Flood Elevation (BFE) or higher if required by FEMA or local ordinance. Elevation may be achieved through a variety of methods, including elevating on continuous foundation walls; elevating on open foundations, such as piles, piers, posts, or columns; and elevating on fill. Foundations must be designed to properly address all loads and be appropriately connected to the floor structure above, and utilities must be properly elevated as well. FEMA encourages Applicants and subapplicants to design all structure elevation projects in accordance with the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) 24-05, *Flood Resistant Design and Construction*. For additional information about structure elevation projects, see Addendum, Part E.
- ◆ **Mitigation Reconstruction** – The construction of an improved, elevated building on the same site where an existing building and/or foundation has been partially or completely demolished or destroyed. Mitigation reconstruction is only permitted for structures outside of the regulatory floodway or coastal high hazard area (Zone V) as identified by the existing best available flood hazard data. Activities that result in the construction of new living space at or above the BFE will only be considered when consistent with the mitigation reconstruction requirements.
- ◆ **Dry Floodproofing** – Techniques applied to keep structures dry by sealing the structure to keep floodwaters out. For all dry floodproofing activities, FEMA encourages Applicants and subapplicants to design all dry floodproofing projects in accordance with ASCE/SEI 24-05.

- **Dry Floodproofing of Historic Residential Structures** is permissible only when other techniques that would mitigate to the BFE would cause the structure to lose its status as a Historic Structure, as defined in 44 CFR Section 59.1.
- **Dry Floodproofing of Non-residential Structures** must be performed in accordance with NFIP Technical Bulletin (TB) 3-93, *Non-Residential Floodproofing*—

*Requirements and Certification*, and the requirements pertaining to dry floodproofing of non-residential structures found in 44 CFR Sections 60.3(b)(5) and (c)(4).

- ◆ **Generators** – Generators are emergency equipment that provide a secondary source of power. Generators and related equipment (e.g., hook-ups) are eligible provided that they are cost-effective, contribute to a long-term solution to the problem they are intended to address, and meet other program eligibility criteria.
- **PDM Program:** Generators and/or related equipment purchases (e.g., generator hook-ups) are eligible when the generator directly relates to the hazards being mitigated and is part of a larger project.
- **HMGp:** A permanently installed generator that is a stand-alone project can be considered under regular HMGp funding if the generator protects a critical facility. Critical facilities may include police and fire stations, hospitals, and water and sewer treatment facilities. A generator that is a component of a larger project (e.g., elevation of a lift station) can also be funded under regular HMGp funding and the use of aggregation is permitted. Portable generators are eligible provided that they meet all HMGp requirements as described in 44 CFR Section 206.434. Stand-alone generator projects that cannot be determined cost-effective via standard HMA benefit-cost methodology may be eligible under the 5 Percent Initiative. See [Part IX, A.10](#) for additional information about the 5 Percent Initiative.

**GENERATORS**

- Stand-alone generators and related equipment (e.g., generator hook-ups) are eligible under the 5 Percent Initiative.
- Stand-alone generators (including related equipment) are eligible for regular HMGp funding if the generator protects a critical facility and meets all other program eligibility criteria.
- Generators (including related equipment) that constitute a functional portion of an otherwise eligible mitigation measure are eligible for HMGp and PDM Program funding.
- Portable generators are eligible for HMGp regular funding and the 5 Percent Initiative if they meet all HMGp requirements as described in 44 CFR Section 206.434.

For additional information on generators please see the Frequently Asked Questions for Generators in [Part X, Appendix G](#). HMA funds are not available as a substitute for emergency, temporary, or partial solutions under the Stafford Act Section 403, Essential Assistance (42 U.S.C. 5170b) and/or the Stafford Act, Title VI Emergency Preparedness (42 U.S.C. 5195).

- ◆ **Minor Localized Flood Reduction Projects** – Projects to lessen the frequency or severity of flooding and decrease predicted flood damages, such as the installation or modification of culverts, and stormwater management activities, such as creating retention and detention basins. These projects must not duplicate the flood prevention activities of other Federal agencies and may not constitute a section of a larger flood control system.

- Under the FMA program, minor localized flood reduction projects should benefit NFIP-insured properties. Projects will be prioritized based on the number of NFIP insured properties included in the project. Projects that do not include NFIP-insured properties will not be considered for funding. Documentation must be provided in the subapplication to verify the NFIP insurance requirement, which includes flood insurance policy and property locator numbers as appropriate.

- ◆ **Structural Retrofitting of Existing Buildings** – Modifications to the structural elements of a building to reduce or eliminate the risk of future damage and to protect inhabitants. The structural elements of a building that are essential to protect to prevent damage include foundations, load-bearing walls, beams, columns, building envelope, structural floors and roofs, and the connections between these elements.
- ◆ **Non-structural Retrofitting of Existing Buildings and Facilities** – Modifications to the non-structural elements of a building or facility to reduce or eliminate the risk of future damage and to protect inhabitants. Non-structural retrofits may include bracing of building contents to prevent earthquake damage or the elevation of utilities.
- ◆ **Safe Room Construction** – Safe room construction projects are designed to provide immediate life-safety protection for people in public and private structures from tornado and severe wind events, including hurricanes. For HMA, the term “safe room” only applies to extreme wind (combined tornado and hurricane) residential, non-residential, and community safe rooms; tornado community safe rooms; and hurricane community safe rooms. This type of project includes retrofits of existing facilities or new safe room construction projects, and applies to both single and dual-use facilities. For additional information, see Addendum, Part C.
- ◆ **Wind retrofit projects** – Wind retrofit projects of one and two-family residential buildings must be designed in conformance with the design criteria found in the *Wind Retrofit Guide for Residential Buildings* (FEMA P-804) published December 2010. This document is available in the FEMA Library at <http://www.fema.gov/library/viewRecord.do?id=4569>.
- ◆ **Infrastructure Retrofit** – Measures to reduce risk to existing utility systems, roads, and bridges.
- ◆ **Soil Stabilization** – Projects to reduce risk to structures or infrastructure from erosion and landslides, including installing geotextiles, stabilizing sod, installing vegetative buffer strips, preserving mature vegetation, decreasing slope angles, and stabilizing with rip rap and other means of slope anchoring. These projects must not duplicate the activities of other Federal agencies.
- ◆ **Wildfire Mitigation** – Projects to mitigate at-risk structures and associated loss of life from the threat of future wildfire through:

- **Defensible Space for Wildfire** – Projects creating perimeters around homes, structures, and critical facilities through the removal or reduction of flammable vegetation. For additional information, see Addendum, Part B.3.1.
- **Application of Ignition-resistant Construction** – Projects that apply ignition-resistant techniques and/or non-combustible materials on new and existing homes, structures, and critical facilities. For additional information, see Addendum, Part B.3.2.
- **Hazardous Fuels Reduction** – Projects that remove vegetative fuels proximate to at-risk structures that, if ignited, pose significant threat to human life and property, especially critical facilities. For additional information, see Addendum, Part B.3.3.
- ◆ **Post-Disaster Code Enforcement** – Projects designed to support the post-disaster rebuilding effort by ensuring that sufficient expertise is on hand to ensure appropriate codes and standards, including NFIP local ordinance requirements, are used and enforced. For additional information, see [Part IX.A.8](#).
- ◆ **Advance Assistance** – Section 1104 of the SRIA authorizes the use of Advance Assistance to accelerate the implementation of the Hazard Mitigation Grant Program (HMGP). Applicants may use Advance Assistance to develop mitigation strategies and obtain data to prioritize, select and develop complete HMGP applications in a timely manner. See [Part IX.A.9](#) for additional information on Advance Assistance.
- ◆ **5 Percent Initiative Projects** – These projects, which are only available pursuant to an HMGP disaster, provide an opportunity to fund mitigation actions that are consistent with the goals and objectives of the State or Indian Tribal (Standard or Enhanced) and local mitigation plans and meet all HMGP program requirements, but for which it may be difficult to conduct a standard Benefit-Cost Analysis (BCA) to prove cost-effectiveness. For additional information, see [Part IX.A.10](#).

#### D.1.2 Hazard Mitigation Planning

Mitigation plans are the foundation for effective hazard mitigation. A mitigation plan is a demonstration of the commitment to reduce risks from natural hazards and serves as a strategic guide for decision-makers as they commit resources.

**MITIGATION PLANNING-RELATED ACTIVITIES**  
 Planning activities can include assessing risk and updating the mitigation strategy to reflect current disaster recovery goals.

The mitigation planning process includes hazard identification and risk assessment leading to the development of a comprehensive mitigation strategy for reducing risks to life and property. The mitigation strategy section of the plan identifies a range of specific mitigation actions and projects being considered to reduce risks to new and existing buildings and infrastructure. This section includes an action plan describing how identified mitigation activities will be prioritized, implemented, and administered.

Planning activities funded under HMA are designed to develop State, Indian Tribal, and local mitigation plans that meet the planning requirements outlined in 44 CFR Part 201. A mitigation planning subgrant award must result in a mitigation plan adopted by the jurisdiction(s) and approved by FEMA or it must result in a planning related activity approved by FEMA (e.g., incorporating new data into the Risk Assessment, or updating the Mitigation Strategy to reflect current disaster recovery goals) consistent with the requirements in 44 CFR Parts 201 and 206.

For **FMA**, funds shall only be used to support the flood hazard portion of State, Indian Tribal, or local mitigation plans to meet the criteria specified in 44 CFR Part 201. Funds are only available to support these activities in communities participating in the NFIP.

For links to mitigation planning and risk assessment resources, see [Part X.C.2](#).

#### D.1.2.1 Eligible Hazard Mitigation Planning-Related Activities

Eligible activities include but are not limited to:

- ◆ Update or enhance sections of the current FEMA-approved mitigation plan, such as:
  - Risk and vulnerability assessment based on new information, including supporting studies, such as economic analyses;
  - Mitigation strategy, specifically strengthening the linkage to mitigation action implementation, with emphasis on available HMA project grant funding, or
  - Incorporate climate adaptation, green building, or smart growth principles into the risk assessment and/or mitigation strategy.
- ◆ Integrate information from mitigation plans, specifically risk assessment or mitigation strategies, with other planning efforts, such as:
  - Disaster recovery strategy (pre- or post), preparedness, or response plans;
  - Comprehensive (e.g., land use, master) plans;
  - Capital improvement or economic development plans;
  - Resource management / conservation plans (i.e., storm water, open space); or
  - Other long-term community planning initiatives (i.e., transportation or housing).
- ◆ Building capability through delivery of technical assistance and training.
- ◆ Evaluation of adoption and/or implementation of ordinances that reduce risk and/or increase resilience.

#### D.1.2.2 Ineligible Hazard Mitigation Planning-Related Activities

The following is a list of activities considered ineligible as “stand alone” planning-related activities:

- ◆ Hazard identification or mapping and related equipment for the implementation of mitigation activities (eligible under 5 Percent Initiative);
- ◆ Geographic Information System (GIS) software, hardware, and data acquisition whose primary aim is mitigation (eligible under 5 Percent Initiative);
- ◆ Public awareness or education campaigns about mitigation (eligible under 5 Percent Initiative);
- ◆ Project scoping or development (also referred to as “project planning”), such as BCA, engineering feasibility studies, application development, construction design, or EHP data collection; and
- ◆ Activities not resulting in a clearly defined product or product(s).

### D.1.3 Management Costs

Management costs are any indirect costs and administrative expenses that are reasonably incurred by a Grantee or subgrantee in administering a grant or subgrant award.

Eligible Applicant or subapplicant management cost activities may include:

- ◆ Solicitation, review, and processing of subapplications and subgrant awards;
- ◆ Subapplication development and technical assistance to subapplicants regarding feasibility and effectiveness, BCA, and EHP documentation;
- ◆ Geocoding mitigation projects identified for further review by FEMA;
- ◆ Delivery of technical assistance (e.g., plan reviews, planning workshops, training) to support the implementation of mitigation activities;
- ◆ Managing grants (e.g., quarterly reporting, closeout);
- ◆ Technical monitoring (e.g., site visits, technical meetings);
- ◆ Purchase of equipment, per diem and travel expenses, and professional development that is directly related to the implementation of HMA programs; and
- ◆ Staff salary costs directly related to performing the activities listed above.

Management costs are only awarded in conjunction with project or planning grants and subgrants. For more information regarding management costs for HMGP, see [Part IX.A.4](#). For the **PDM Program and FEMA**, FEMA may provide up to 25 percent of the Applicant’s anticipated management costs, upon the award and final approval of the first subgrant. The remaining management costs will be obligated as additional subgrants are awarded.

### D.2 Ineligible Activities

The following list provides examples of activities that are not eligible for HMA funding:

- ◆ Projects that do not reduce the risk to people, structures, or infrastructure;
- ◆ Projects that are dependent on a contingent action in order to be effective and/or feasible (i.e., not a stand-alone mitigation project that solves a problem independently or constitutes a functional portion of a solution);
- ◆ Projects with the sole purpose of open space acquisition of unimproved land;
- ◆ Projects for which actual physical work such as groundbreaking, demolition, or construction of a raised foundation has occurred prior to award or final approval. Projects for which demolition and debris removal related to structures proposed for acquisition or mitigation reconstruction has already occurred may be eligible when such activities were initiated or completed under the FEMA Public Assistance program to alleviate a health or safety hazard as a result of a disaster;
- ◆ Projects that involve land that is contaminated with hazardous waste;
- ◆ Projects for preparedness activities or temporary measures (e.g., sandbags, bladders, geotubes);
- ◆ Projects that create revolving loan funds;
- ◆ Activities required as a result of negligence or intentional actions, or those intended to remedy a code violation, or the reimbursement of legal obligations such as those imposed by a legal settlement, court order, or State law;
- ◆ FEMA may, at its discretion, choose not to fund projects subject to ongoing litigation if such litigation may affect eligibility of the project or may substantially delay implementation of the project;
- ◆ All projects located in a CBRS Unit or in OPAs, other than property acquisition and structure demolition or relocation projects for open space under HMA. For details on property acquisition and structure demolition or relocation projects for open space within a CBRS Unit or OPAs see Addendum, Part A.2;
- ◆ Activities on Federal lands or associated with facilities owned by another Federal entity;
- ◆ Major flood control projects related to the construction, demolition, or repair of dams, dikes, levees, floodwalls, seawalls, groins, jetties, breakwaters, and erosion projects related to beach nourishment or re-nourishment;
- ◆ Projects for hazardous fuels reduction in excess of 2 miles from structures;
- ◆ Projects that address unmet needs from a disaster that are not related to mitigation;



- ◆ Retrofitting facilities primarily used for religious purposes, such as places of worship (or other projects that solely benefit religious organizations). However, a place of worship may be included in a property acquisition and structure demolition or relocation project provided that the project benefits the entire community, such as when the whole neighborhood or community is being removed from the hazard area;
- ◆ Activities that only address manmade hazards;
- ◆ Projects that address, without an increase in the level of protection, operation, deferred or future maintenance, repairs, or replacement of existing structures, facilities, or infrastructure (e.g., dredging, debris removal, replacement of obsolete utility systems, bridges, and facility repair/rehabilitation);
- ◆ Projects for the purpose of:
  - Landscaping for ornamentation (e.g., trees, shrubs);
  - Site remediation of hazardous materials (with the exception eligible activities, such as the abatement of asbestos and/or lead-based paint and the removal of household hazardous wastes to an approved landfill);
  - Water quality infrastructure;
  - Projects that primarily address ecological or agricultural issues;
  - Forest management;
  - Prescribed burning or clear-cutting;
  - Creation and maintenance of fire breaks, access roads, or staging areas;
  - Irrigation systems;
- ◆ Studies not directly related to the design and implementation of a proposed mitigation project; and
- ◆ Preparedness measures and response equipment (e.g., response training, electronic evacuation road signs, interoperable communications equipment).

All projects must also comply with any additional project-specific guidance provided in the Addendum.

### D.3 Cost-effectiveness

Mitigation program authorizing statutes (Flood Mitigation Assistance at 42 U.S.C. 4104c; Pre-Disaster Hazard Mitigation at 42 U.S.C. 5133, and Hazard Mitigation at 42 U.S.C. 5170c) require that FEMA provide funding for mitigation measures that are cost-effective or are in the interest of the NFIF. FEMA has specified minimum project criteria via regulation (44 CFR Part 79 and 44 CFR Section 206.434), including that Applicants must demonstrate mitigation projects are cost-effective. The determination of cost-effectiveness is performed in a variety of ways. It

is typically demonstrated by the calculation of a BCR, dividing total annualized project benefits by total annualized project cost. Projects where benefits exceed costs are generally considered cost-effective (see [Part V.1](#) and [Part VI.A.2](#) for additional information).

### D.4 Feasibility and Effectiveness

Mitigation projects funded by HMA must be both feasible and effective at mitigating the risks of the hazard(s) for which the project was designed. A project's feasibility is demonstrated through conformance with accepted engineering practices, established codes, standards, modeling techniques, or best practices. Effective mitigation measures funded under HMA provide a long-term or permanent solution to a risk from a natural hazard.

For additional information about the feasibility and effectiveness requirement for mitigation reconstruction projects, see the Addendum, Part D.3; for additional feasibility and effectiveness resources, see [Part X.C.5](#).

### D.5 Hazard Mitigation Plan Requirement

In accordance with 44 CFR Part 201, all Applicants for the **PDM Program** and **FMA** must have a FEMA-approved State or Tribal (Standard or Enhanced) Mitigation Plan by the application deadline and at the time of obligation of the grant funds. The only exception is for a subapplication for a State or Indian Tribal (Standard or Enhanced) Mitigation Plan. In addition, all subapplicants for the **PDM Program** and **FMA** mitigation projects must have a FEMA-approved local or Indian Tribal mitigation plan by the application deadline and at the time of obligation of grant funds. There is no local or Indian Tribal mitigation plan requirement for any HMA program for a planning subgrant.

#### EXTRAORDINARY CIRCUMSTANCES EXCEPTION

- For **HMGP** project subgrants, the Regional Administrator may grant an exception to a local or Indian Tribal mitigation plan requirement in extraordinary circumstances when justification is provided.
- For the **PDM Program** and **FMA** project subgrants, the Region may apply extraordinary circumstances when justification is provided and with concurrence from FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) before granting an exception.

Applicants for **HMGP** funding must have a FEMA-approved State or Indian Tribal (Standard or Enhanced) Mitigation Plan at the time of the disaster declaration and at the time HMGP funding is obligated to the Grantee to receive an HMGP award. For **HMGP** project subgrants, the Regional Administrator may grant an exception to the local or Indian Tribal mitigation plan requirement in extraordinary circumstances, when justification is provided. If this exception is granted, a local or Indian Tribal mitigation plan must be approved by FEMA within 12 months of the award of the project subgrant to that community.

For **PDM** and **FMA** project subgrants, the Region may apply extraordinary circumstances when justification is provided and with concurrence from FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) prior to granting an exception. If this exception is granted, a local or Indian Tribal mitigation plan must be approved by FEMA within 12 months of the award of the project subgrant to that community.

For **HMGP**, the **PDM Program**, and **FMA**, extraordinary circumstances exist when a determination is made by the Applicant and FEMA that the proposed project is consistent with the priorities and strategies identified in the State or Indian Tribal (Standard or Enhanced) Mitigation Plan and that the jurisdiction meets at least one of the criteria below. If the jurisdiction does not meet at least one of the following criteria, the Region must coordinate with FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) for **HMGP** and coordinate and seek concurrence prior to granting an exception for the **PDM Program** and **FMA**:

- ◆ The jurisdiction meets the small impoverished community criteria (see [Part IX, B.2](#));
- ◆ The jurisdiction has been determined to have had insufficient capacity due to lack of available funding, staffing, or other necessary expertise to satisfy the mitigation planning requirement prior to the current disaster or application deadline;
- ◆ The jurisdiction has been determined to have been at low risk from hazards due to low frequency of occurrence or minimal damages from previous occurrences due to sparse development;
- ◆ The jurisdiction experienced significant disruption from a declared disaster or another event that impacts its ability to complete the mitigation planning process prior to award or final approval of a project grant; and
- ◆ The jurisdiction does not have a mitigation plan for reasons beyond the control of the State, Indian Tribal or local community, such as Disaster Relief Fund (DRF) restrictions that delay FEMA from awarding project grants prior to the expiration of the local or Indian Tribal mitigation plan.

For **HMGP**, the **PDM Program**, and **FMA**, the Applicant must provide written justification that identifies the specific criteria from above or circumstance, explain why there is no longer an impediment to satisfying the mitigation planning requirement, and identify the specific actions or circumstances that eliminated the deficiency.

In determining whether to grant the exception, FEMA takes into consideration factors including whether an Applicant has prioritized its authorized HMA project assistance for use in those communities with an approved local or Indian Tribal mitigation plan, whether there are additional project funds available for award to a jurisdiction that does not have an approved local or Indian Tribal mitigation plan, and whether an Applicant has placed higher priority for grant funding on communities with higher risks. In all cases, a local or Indian Tribal mitigation plan must be completed and approved by FEMA within 12 months of the award. If a local or Indian

Tribal mitigation plan is not approved by FEMA within this timeline, the project subgrant will be terminated and any costs incurred after the notice of the subgrant's termination will not be reimbursed by FEMA.

When an HMGP project subgrant is awarded under extraordinary circumstances, the Grantee shall acknowledge in writing to the Regional Administrator that a plan will be completed within 12 months of the award of the project grant. The Grantee must provide a work plan for completing the local or tribal mitigation plan, including milestones and a timetable, to ensure that the jurisdiction will complete the plan in the required time. This requirement shall be incorporated into the grant award (both the planning and project subgrant agreements, if a planning subgrant is also awarded).

#### **D.5.1 Indian Tribal Government Hazard Mitigation Plan Requirement**

Indian Tribal governments with an approved Indian Tribal mitigation plan in accordance with 44 CFR Section 201.7 may apply for assistance from FEMA as a Grantee. In addition, if an Indian Tribal government with an approved Indian Tribal mitigation plan in accordance with 44 CFR Section 201.7 coordinates the review of their Indian Tribal mitigation plan with the State or another Indian Tribal government, it has the option to apply as a subapplicant through that State or Indian Tribal government, except as prohibited by State law.

#### **D.5.2 Conformance with Hazard Mitigation Plans**

Projects submitted for consideration for HMA funding must be consistent with the goals and objectives identified in the current, FEMA-approved State or Indian Tribal (Standard or Enhanced) Mitigation Plan and local or Indian Tribal mitigation plan for the jurisdiction in which the activity is located.

### **D.6 Environmental Planning and Historic Preservation Requirement**

HMA programs, and grants awarded pursuant to these programs, must conform to 44 CFR Parts 9 and 10, and with all applicable EHP laws, implementing regulations, and EOs, such as the NEPA, the National Historic Preservation Act (NHPA), the Endangered Species Act (ESA), EO 11988 (*Floodplain Management*), EO 11990 (*Protection of Wetlands*), and EO 12898 (*Environmental Justice*). EHP requirements ensure appropriate consideration of reasonable alternatives, taking the project's impacts to the human environment into account in the decision-making process. The project, when completed, must comply with all applicable environmental laws and regulations as a condition of grant eligibility.

FEMA reviews the completeness of the responses to the questions in the EHP review section of the project subapplication and supporting documentation. For HMA project subapplications that do not include the required information for each property identified in the subapplication, there

may be a delay in identifying outstanding EHP compliance measures. Lack of the required information by the application deadline may prohibit FEMA from awarding a grant or subgrant. FEMA has developed guidance to assist in completing the EHP information section of a project subapplication, including an eLearning Tool, online training, and information about historic preservation. For links to these EHP resources, see [Part X.C.5](#).

#### **D.6.1 Floodplain Management and Protection of Wetlands**

As noted in [Part IV.D.6](#), all activities funded by HMA programs must conform to 44 CFR Part 9. Activities involving development will only be eligible for a grant if the Applicant demonstrates that there is no practicable alternative to such development in accordance with 44 CFR Section 9.9. In addition, **HMGP** funds cannot be used to fund new construction or Substantial Improvement in a floodway or new construction in a coastal high hazard zone. However, the costs to elevate or floodproof a damaged structure or facility are not included in determining whether the Substantial Improvement threshold is triggered.

For additional information see 44 CFR Section 9.11(d).

### **D.7 National Flood Insurance Program Eligibility Requirements**

HMA eligibility is related to the NFIP as follows:

- ◆ **Subapplicant eligibility:** All subapplicants for **FMA** must currently be participating in the NFIP, and not withdrawn or suspended, to be eligible to apply for grant funds. Certain non-participating political subdivisions (i.e., regional flood control districts or county governments) may apply and act as subgrantees on behalf of the NFIP-participating community in areas where the political subdivision provides zoning and building code enforcement or planning and community development professional services for that community;
- ◆ **Project eligibility: HMGP and PDM** mitigation project subapplications for projects sited within an SFHA are eligible only if the jurisdiction in which the project is located is participating in the NFIP. There is no NFIP participation requirement for HMGP and PDM project subapplications for projects located outside of the SFHA;
- ◆ **Hazard mitigation planning eligibility:** There are no NFIP participation requirements for **HMGP** and **PDM** hazard mitigation planning subapplications; and
- ◆ **Property eligibility:** Properties included in a project subapplication for **FMA** funding must be NFIP insured at the time of the application submittal. Flood insurance must be maintained for the life of the structure.

#### **D.7.1 Special Flood Hazard Area Requirements**

For structures that remain in the SFHA after the implementation of the mitigation project, flood insurance must be maintained for the life of the structure to an amount at least equal to the project cost or to the maximum limit of coverage made available with respect to the particular property, whichever is less. The maximum limit of coverage made available is defined as the replacement cost value of the structure up to \$250,000 for residential and \$500,000 for non-residential. Insurance coverage on the property must be maintained during the life of the property regardless of transfer of ownership of such property.

The subgrantee (or property owner) must legally record, with the county or appropriate jurisdiction's land records, a notice that includes the name of the current property owner (including book/page reference to record of current title, if readily available), a legal description of the property, and the following notice of flood insurance requirements:

This property has received Federal hazard mitigation assistance. Federal law requires that flood insurance coverage on this property must be maintained during the life of the property regardless of transfer of ownership of such property. Pursuant to 42 U.S.C. 5154a, failure to maintain flood insurance on this property may prohibit the owner from receiving Federal disaster assistance with respect to this property in the event of a flood disaster. The Property Owner is also required to maintain this property in accordance with the floodplain management criteria of 44 CFR Part 60.3 and City/County Ordinance.

Applicants/subapplicants receiving assistance for projects sited in an SFHA must ensure that these requirements are met by requesting that the participating property owner(s) sign an *Acknowledgement of Conditions for Mitigation of Property in an SFHA with FEMA Grant Funds* form and providing the form to FEMA prior to award or final approval. This form is available on the FEMA Web site at <http://www.fema.gov/library/viewRecord.do?id=3592>, or from the appropriate FEMA Regional Office (for Regional Office information, see [Part VIII](#)). Properties that do not meet these requirements will not be eligible to receive assistance under the HMA programs.

If an approved HMA project affects the accuracy of the applicable Flood Insurance Rate Map (FIRM), the subgrantee is responsible for ensuring that appropriate map amendments or revisions are made. Costs associated with map amendments may be identified in the cost estimate section of a subgrant application.

### **D.8 Statutory, Regulatory, and Other Requirements**

Mitigation activities must adhere to all relevant statutes, regulations, and requirements, including:

- ◆ Sections 203 (PDM Program) and 404 (HMGP) of the Stafford Act;

- ◆ Section 1366 (FMA) of the NFIA;
- ◆ Section 322 of the Stafford Act (Mitigation Planning);
- ◆ Section 324 of the Stafford Act (Management Costs);
- ◆ NHPA;
- ◆ NEPA;
- ◆ Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970;
- ◆ Floodplain Management and Protection of Wetlands (44 CFR Part 9);
- ◆ Environmental Considerations (44 CFR Part 10, NEPA, and ESA);
- ◆ Coastal Barriers Resources Act (CBRA; 44 CFR Part 206, Subpart J);
- ◆ Uniform Administrative Requirements for Grants and Cooperative Agreements to States and Local Governments (44 CFR Part 13);
- ◆ Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and other Non-Profit Organizations (2 CFR Part 215);
- ◆ Floodplain Management (44 CFR Part 60);
- ◆ Flood Mitigation Grants (44 CFR Part 79);
- ◆ Property Acquisition and Relocation for Open Space (44 CFR Part 80);
- ◆ Hazard Mitigation Planning (44 CFR Part 201);
- ◆ Hazard Mitigation Grant Program (44 CFR Part 206, Subpart N);
- ◆ Management Costs (44 CFR Part 207);
- ◆ Cost Principles for Educational Institutions (2 CFR Part 220, OMB Circular A-21); Cost Principles for State, Local, and Indian Tribal Governments (2 CFR Part 225, OMB Circular A-87); Cost Principles for Nonprofit Organizations (2 CFR Part 230, OMB Circular A-122);
- ◆ OMB Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*;
- ◆ OMB Circular A-133, *Audits of States, Local Governments, and Non-Profit Organizations*;
- ◆ Federal Acquisition Regulations (FAR) Subpart 31.2, Contracts with Commercial Organizations; and
- ◆ Other applicable Federal, State, Indian Tribal, and local laws, implementing regulations, and EOs (e.g., EO 11988, EO 11990).

## PART V. APPLICATION AND SUBMISSION INFORMATION

Part V provides guidance on developing HMA applications or subapplications, and on related funding restrictions.

### A. Address to Request Application Package

Applications for **HMGP** are processed through the National Emergency Management Information System (NEMIS). Applicants may use the Application Development Module of NEMIS to create project applications and submit them to the appropriate FEMA Region in digital format for the relevant disaster. For NEMIS Helpdesk resources, see [Part X.C.6](#).

Applications for the **PDM Program** and **FMA** are processed through the eGrants system. The eGrants system encompasses the entire grant application process and provides the means to electronically create, review, and submit a grant application to FEMA via the Internet. Applicants and subapplicants can access eGrants at <https://portal.fema.gov/fams/VuWeb/home>.

The FEMA Technical Service desk phone number is 1 (877) 611-4700. For additional eGrants resources, see [Part X.C.6](#).

For more information about using NEMIS or eGrants, contact the appropriate FEMA Regional Office (see [Part VIII](#)).

### B. Content and Form of Application

For **HMGP**, subapplication packages are available from eligible Applicants following Presidential major disaster declarations. The Applicant selects and prioritizes subapplications and submits them to FEMA. Applicants must submit an SF-424, Application for Federal Assistance, before HMGP funding can be obligated. The Applicant submits the subapplications both in digital format via NEMIS and in hard copy format.

Applications and subapplications for the **PDM Program** and **FMA** are submitted via the eGrants system. If a subapplicant does not use the eGrants system, the Applicant must enter the paper subapplication(s) into the eGrants system on the subapplicant's behalf. Blank applications that conform to the eGrants format are available for printing from the eGrants system and the FEMA Web site. Supporting documentation that cannot be electronically attached to the eGrants application (e.g., engineering drawings, photographs, and maps) must be submitted to the appropriate FEMA Regional Office. The entire application, including all paper documentation, must be received by the appropriate FEMA Regional Office no later than the application deadline.



## C. Submission Dates and Times

HMGP submittal deadlines for applications are established based on the disaster declaration date. For submission of an application for HMGP, see [Part IX.A.1](#) and [A.6](#).

Completed applications for the **PDM Program** and **FMA** must be submitted to FEMA through eGrants. Application submission due dates and times are posted to the HMA Web site at <https://www.fema.gov/hazard-mitigation-assistance>. Subapplicants should consult the official designated point of contact (POC) for their Applicant for more information regarding the application process. For more information on FEMA and Applicant contacts, see [Part VIII](#). For additional information on HMA application cycles either contact FEMA or go to <http://www.grants.gov/>.

## D. Intergovernmental Review

It may be necessary to allow sufficient time for an intergovernmental review of an application as established by EOs 12372 and 12416 (*Intergovernmental Review of Federal Programs*). If an Applicant has chosen not to participate in the intergovernmental review process, the application may be sent directly to FEMA. Guidance on the intergovernmental review process, including the names and addresses of the single POCs as listed by OMB, is available at [http://www.whitehouse.gov/omb/grants\\_spoc](http://www.whitehouse.gov/omb/grants_spoc).

## E. Funding Restrictions

HMA programs allow the funding of eligible costs for mitigation activities as outlined in [Part IX.D.1](#). Subapplications that propose a Federal expenditure in excess of the Federal funding limit will not be considered for an award. For each program, additional funding restrictions apply as described below.

### E.1 HMGP Funding Restrictions

- ◆ Up to 7 percent of the Grantee's HMGP ceiling may be used for mitigation planning activities in compliance with 44 CFR Section 201.3(c)(4).
- ◆ Up to 5 percent of the Grantee's HMGP ceiling may be used for mitigation measures that are difficult to evaluate against traditional program cost-effectiveness criteria (i.e., the 5 Percent Initiative).
- ◆ For Presidential major disaster declarations for tornadoes and high winds, an additional 5 percent of the Grantee's HMGP ceiling may be used to fund hazard mitigation measures (e.g., warning systems) to address the unique hazards posed by tornadoes.

For more information on the 5 Percent Initiative and the additional 5 percent for tornadoes, see [Part IX.A.10](#).

## E.2 PDM Program Funding Restrictions

- ◆ Up to \$800,000 Federal share may be requested in a subapplication for a planning grant to develop a new hazard mitigation plan.
- ◆ Up to \$300,000 Federal share may be requested in a subapplication for a planning grant to update a hazard mitigation plan.
- ◆ Up to \$3 million Federal share may be requested in a subapplication to implement a mitigation project.
- ◆ The cumulative Federal award for subapplications awarded during a single application cycle to any one Applicant shall not exceed 15 percent of the total appropriated PDM Program funds for that application cycle.

## E.3 FMA Funding Restrictions

- ◆ Individual planning grants using FMA funds shall not exceed \$50,000 to any Applicant or \$25,000 to any subapplicant. FMA funds can only be used for the flood hazard component of a hazard mitigation plan that meets the planning criteria outlined in 44 CFR Part 201.

## E.4 Management Costs Funding Restrictions

For all HMA programs, indirect costs may be included as a part of the management cost estimate shown in the application or subapplication.

For **HMGP** only: The Grantee may request a flat percentage rate (4.89 percent) of the projected eligible program costs for management costs. The Grantee is responsible for determining the amount, if any, of funds that will be passed through to the subgrantee(s) for their management costs. For further information on HMGP management costs, see [Part IX.A.2.5](#) and [A.4](#).

Applicants for the **PDM Program** and **FMA** may apply for a maximum of 10 percent of the total funds requested in their grant application budget (Federal and non-Federal shares) for management costs to support the project and planning subapplications included as part of their grant application. Applicants requesting Applicant management costs must submit a separate Management Costs subapplication in eGrants. This subapplication must be included in the overall grant application or the request will not be considered. Applicants who are not awarded grants funds for project or planning activities will not receive reimbursement for the corresponding costs incurred in developing and submitting applications.

### MAXIMUM AMOUNTS OF MITIGATION PLANNING GRANTS

Under the **PDM Program**, the maximum mitigation planning grant is \$800,000 for a new plan and \$300,000 for an update.

Under **FMA**, the maximum individual planning grant is \$50,000 for any Applicant and \$25,000 for any subapplicant.

Subapplicants for the **PDM Program** and **FMA** may apply for a maximum of 5 percent of the total funds requested in a subapplication for management costs. Subapplicants requesting management costs must include them in the project or planning subapplication for consideration as separate activities in the Mitigation Activity section of eGrants. Subapplicants who are not awarded subgrants for project or planning activities will not receive reimbursement for the corresponding costs incurred in developing and submitting subapplications.

## F. Other Submission Requirements

### F.1 Application Consideration under Multiple HMA Programs

FEMA will only consider applications and subapplications submitted to a specific HMA program. If an applicant would like to have a subapplication considered under multiple HMA programs, the applicant must submit that subapplication to each HMA program separately.

### F.2 Pre-Award Costs

Costs incurred after the HMA application period has opened, but prior to the date of the grant award or final approval, are identified as pre-award costs. For **HMGP**, the opening of the application period is the date when HMGP is authorized, which is generally the date of declaration. The opening of the application period for the **PDM Program** and **FMA** is established annually by FEMA.

Pre-award costs directly related to developing the application or subapplication may be funded through HMA as funds are available. Such costs may have been incurred, for example, to develop a BCA, to gather EHP data, for preparing design specifications, or for workshops or meetings related to development and submission of HMA applications and subapplications. Costs associated with implementation of the activity but incurred prior to grant award or final approval are not eligible (projects initiated or completed prior to grant award or full approval of the project are not eligible). To be eligible for HMA funding, pre-award costs must be identified as separate line items in the cost estimate of the subapplication. Applicants and subapplicants may identify such pre-award costs as their non-Federal cost share. Applicants and subapplicants who are not awarded grants or subgrants will not receive reimbursement for the corresponding pre-award costs.

## G. Applicant Guidance

### G.1 General Applicant Guidance

FEMA will not direct the Applicant on how to submit its applications. The Applicant may submit a single application representing all subapplications or they may submit multiple applications. When submitting multiple subapplications, they should be ranked in priority order.

Before forwarding subapplications to FEMA, Applicants also should review subapplications to document that:

- ◆ The subapplicant has documented its capacity to manage the subgrant funds;
- ◆ The subapplicant has documented its capacity to complete the mitigation activity in the time specified;
- ◆ Non-Federal cost-share funds are or will be available for the project;
- ◆ The maintenance requirements have been sufficiently identified, and the subapplicant or another authorized entity has accepted the maintenance responsibility;
- ◆ The underlying cost-effectiveness data are accurate and complete; and
- ◆ All program- and project-specific requirements have been met and are documented as appropriate.

If the subapplication is considered to be deficient, the Applicant may revise or augment the subapplication in consultation with the subapplicant. Applicants must certify that they have evaluated the activities included in each subapplication and that activities will be implemented in accordance with 44 CFR Part 13 and other applicable program or activity type requirements.

## G.2 Minimum Eligibility and Completeness Criteria

FEMA will no longer accept incomplete and placeholder project applications. Incomplete applications or subapplications delay project approval because they do not contain sufficient information for FEMA to make program eligibility determinations. Applications and subapplications submitted to FEMA must meet the minimal eligibility and completeness criteria as there is no method to determine eligibility without these data. These minimal eligibility criteria are required for all submittals including over-submittals and placeholder applications. Additional information may be requested during FEMA review. The following list is not all inclusive. For a more detailed checklist please see [Part X-Appendix E](#) for projects and [Part X-Appendix H](#) for plans.

**MINIMUM ELIGIBILITY AND COMPLETENESS REQUIREMENTS**  
Applications and subapplications submitted to FEMA must meet the minimal eligibility and completeness criteria, as there is no method to determine eligibility without these data. For a detailed Eligibility and Completeness checklist please see [Part X-Appendix E](#) for projects and [Part X-Appendix H](#) for plans.

These minimal eligibility criteria are required for all submittals including over-submittals and placeholder applications. Additional information may be requested during FEMA review. The following list is not all inclusive. For a more detailed checklist please see [Part X-Appendix E](#) for projects and [Part X-Appendix H](#) for plans.

**Unless otherwise noted, the following criteria apply to plans, management costs, and project subapplications and applications:**

- ◆ Eligible Applicant;
- ◆ Meets all plan requirements per 44 CFR Parts 201 and 206;
- ◆ Provides a detailed SOW as described in [Part V.H](#);

- ◆ Provides a work schedule of 3 years or less;
- ◆ If project is suitable for phased or incremental funding, the schedule reflects activities and timelines for each funding increment (**projects**);
- ◆ Budget/Match Source;
  - A detailed cost estimate/budget is provided that supports the SOW;
- ◆ Cost-effectiveness and Feasibility (**projects**);
  - Project includes a FEMA-approved BCA or FEMA-approved alternate cost-effectiveness documentation (see [Part V.I](#) for additional information);
  - The proposed activity is feasible and effective as demonstrated through conformance with accepted engineering practices, established codes, standards, modeling techniques, or best practices (see [Part V.J](#) for additional information);
- ◆ EHP;
  - Project includes information and documentation to demonstrate conformance with all applicable laws and regulations (e.g., NEPA and State Historic Preservation Act);
  - Project demonstrates that it minimizes harm to the environment and is the best alternative from a range of options considered (see [Part V.K](#) for additional information); and
- ◆ Assurances.

## H. Scope of Work

The SOW identifies the eligible mitigation activity, as described in [Part IV.D.I](#); describes what will be accomplished; and explains how the mitigation activity will be implemented. The mitigation activity must be described in sufficient detail to verify the cost estimate. All activities for which funding is requested must be identified in the SOW prior to the close of the application period.

### H.1 Project Scope of Work

The project subapplication SOW provides detailed information about the project, as well as applicable references and supporting documentation. The SOW includes:

- ◆ **Purpose of the project** – The intended outcome or objectives of the project;
- ◆ **Clear, concise description of the proposed project** – Proposed conceptual design, means of implementation of the project, and responsible party for implementation;
- ◆ **Identification of properties to be mitigated** – All properties to be mitigated must be identified, including additional, alternate properties that may be substituted should one or

more of the other properties be withdrawn for eligibility or other reasons. In order for alternate properties to be properly considered in the event of a substitution, the same level of information for the alternate properties is required as is provided for the proposed properties;

- ◆ **Outcomes** – Proposed project accomplishments, problem(s) that the project will solve, parties that will directly or indirectly benefit from the project, and ways that the risks of damage or harm will be reduced;
- ◆ **Special project components** – New technologies that will be used during project implementation and how they are expected to provide the necessary results, and necessary laboratory tests or field-testing;
- ◆ **Other projects** – Other projects that are currently being implemented or expected to be implemented that will affect the proposed project;
- ◆ **Extraordinary Circumstances** – If this exception is used, a plan must be completed within 12 months of the award of the project grant, per [Part IV.D.5](#) (Hazard Mitigation Plan Requirement); and
- ◆ **Latitude/Longitude and site photographs** – Subapplicants must identify the proposed project location on a map and provide the latitude/longitude and any relevant photographs including, but not limited to sides of the building, foundation, roof, both sides of the culvert, and the surrounding project area.

The required documentation depends upon the nature of the proposed project and may include: proposed schematics, drawings or sketches, photographs, maps, sections of hazard maps, a Flood Insurance Study, or a FIRM. Whenever possible, data used to document existing conditions must be obtained from recognized sources, such as Federal agencies, State agencies, and academic organizations. The references and/or supporting documentation from qualified and credible sources such as Professional Engineers or local government records should be included when using locally developed data. Deviations from standard procedures, methods, techniques, technical provisions of the applicable codes, or best practices must be thoroughly explained and documented. Subapplicants must identify the proposed project location on a map and provide any relevant photographs including, but not limited to, sides of the building, foundation, and roof (as appropriate).

### H.2 Hazard Mitigation Planning Scope of Work

The hazard mitigation planning subapplication SOW must describe the development of a hazard mitigation plan or planning-related activity that is consistent with the requirements identified in 44 CFR Part 201.

For a hazard mitigation plan, the SOW must:

- ◆ Describe the proposed planning activity, including whether it will:

- Result in a new or updated hazard mitigation plan that complies with the requirements identified in 44 CFR Part 201; or
  - Enhance an existing mitigation plan through a planning related activity that is consistent with 44 CFR Part 201.
  - ◆ Identify the jurisdiction(s) or tribe(s) that will participate in developing the plan or the planning-related activity and describe the jurisdictions;
  - ◆ Provide a statement on how the overall planning effort will be coordinated;
  - ◆ Describe the process for plan development or the planning-related activity, clearly demonstrating what applicable regulatory requirements will be met. Document in detail the activities the jurisdiction(s) will complete to develop the plan or the planning related activity, including public involvement, identification of hazards, development of a comprehensive risk/vulnerability assessment, identification of mitigation goals and strategies, and plan implementation, and describe how these activities relate to the cost estimate; and
  - ◆ For new or updated hazard mitigation plans, describe the plan adoption process for the jurisdiction(s) or tribe(s) to ensure sufficient time to complete the plan, as well as time for State and FEMA review and, if necessary, time to complete any required revisions and to formally adopt the plan.
- Additionally, for an update to a hazard mitigation plan, the SOW must include the reasons for the update and describe the process for plan update, clearly demonstrating that applicable regulatory requirements will be met. Also, provide a statement on how the overall planning effort will be coordinated.
- If available, the subapplication also should include a copy of the plan review document (i.e., review tool or crosswalk) from the FEMA approval of the previous plan.

For planning related activities, the SOW should describe the:

- ◆ Final product(s);
  - ◆ Process and level of effort to develop the final product(s), including key milestones (such as meetings; data research, collection, and analysis; drafts; and outreach); and
  - ◆ Process to incorporate the product(s) or results into the update of the next mitigation plan.
- Applicants/subapplicants are advised to make use of already developed materials and to seek available resources when developing a new mitigation plan or updating a mitigation plan. For links to mitigation planning and risk assessment resources, see [Part X.C.2](#).

### H.3 Management Costs Scope of Work

For the Applicant management cost subapplication, the SOW must describe the activities and specific tasks related to developing subapplications, and implementing as well as closing subgrants. The SOW should state whether the work will be conducted by the Applicant's staff or by contractor staff.

### H.4 Schedule

Subapplications should include a work schedule for all project tasks identified in the SOW, such as data collection, site survey, permitting and inspections, site preparation, and construction. The schedule should identify timelines for accomplishing significant milestones, including anticipated quarterly usage of Federal funds. Proposed schedules for individual subapplications should not exceed 36 months (see [Part VII.B.4](#)).

For planning subapplications, the work schedule must allow sufficient time for State and FEMA reviews; preparation of required revisions, if needed; formal adoption by the jurisdiction(s); and FEMA approval.

### H.5 Cost Estimate

The cost estimate describes all of the subapplicant's anticipated costs associated with the SOW for the proposed mitigation activity. Cost estimates must include detailed estimates of various cost item categories, such as labor, materials, equipment, and subcontractor costs. No lump-sum estimates will be accepted. The cost estimate must identify the cost categories and value for which anticipated cash and third-party in-kind contributions will be used to meet the non-Federal cost share.

**COST ESTIMATES**  
FEMA will accept cost estimates used to support budgets and BCAs if the Applicant or subapplicant certifies that the estimates are based on nationally published or local cost-estimating guides.

FEMA will accept cost estimates that the Applicant or subapplicant certifies were established using nationally published or local cost estimating guides to support the budget and BCA. The Applicant or subapplicant must include appropriate documentation in the application or subapplication that demonstrates a national published standard or local cost estimating guide was used. If a cost estimate is based on a contractor's bid or historic costs from another activity, detailed documentation must be provided. The applicant must document actual costs for eligible activities at closeout. Separate cost line items in a subapplication are required to ensure that cost thresholds are not exceeded. As applicable, the following line items must be listed separately in the budget:

- ◆ Pre-award costs;
- ◆ Subapplicant management costs for the PDM Program and FMA, and HMGP if the Grantee has agreed to pass through funds to the subgrantee; and



- ◆ Information dissemination costs (for the PDM Program).

Additionally, the cost estimate should indicate items for which the cost may change, such as a price quoted by a contractor that is only valid for 1 year. Neither contingency nor escalation costs are permitted as individual line items in the cost estimate.

#### **H.5.1 Project Cost Estimate**

In addition to the items described in [Part V, H.5](#), the project cost estimate must include a line-item breakdown of all anticipated costs including, as applicable:

- ◆ Costs for anticipated environmental resource impact treatment or historic property treatment measures;
- ◆ Costs for engineering designs/specifications, including hydrologic and hydraulic studies/analyses required as an integral part of designing the project;
- ◆ Construction/demolition/relocation costs, such as survey, permitting, site preparation, and material/debris disposal costs; and
- ◆ All other costs required to implement the mitigation project, including any applicable project-type specific costs identified in the Addendum of this guidance.

For additional information about cost estimates for property acquisition and structure demolition or relocation projects, see Addendum, Parts A.5 and A.6; for wildfire mitigation projects, see Addendum, Part B.3; for safe room construction projects, see Addendum, Part C.3.4; for mitigation reconstruction see projects Addendum, Parts D.2 and D.5; and for structure elevation projects, see Addendum, Part E.3.

#### **H.5.2 Hazard Mitigation Planning Cost Estimate**

In addition to the items described in [Part V, H.5](#), the hazard mitigation planning cost estimate must include a line-item breakdown of costs associated with all elements described in the SOW, such as:

- ◆ Meetings and public outreach, including the costs associated with what is necessary and reasonable;
- ◆ Data research and collection, including eligible mapping activities or risk assessment;
- ◆ Plan drafting, review, and final production;
- ◆ Information dissemination activities, including printing and advertising; and
- ◆ Professional development training, tuition, and travel for the purpose of carrying out the planning SOW.

#### **H.5.3 Management Cost Estimate**

Applicants and subapplicants requesting management costs should provide supporting documentation and include these costs as separate line items in the cost estimate portion of the application or subapplication.

A narrative must accompany a request for management costs. The narrative should describe the activities, personnel requirements, and other costs for which the Grantee and/or subgrantee will use management cost funding. It should provide information on how the funds will be expended and monitored and show that sufficient funds will be available for closeout.

For more information on HMGP management costs, see [Part IX, A.4](#).

### **I. Cost-effectiveness**

FEMA will only consider applications that use a FEMA-approved methodology to demonstrate cost-effectiveness. This is typically demonstrated by the calculation of a BCR. Projects for which benefits exceed costs are generally considered cost-effective. Benefits may include avoided damages, loss of function, and displacement.

FEMA provides BCA software that allows Applicants to calculate a project BCR. Written materials and training are also available. The FEMA BCA software utilizes the OMB Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*. FEMA requires using approved BCA software (version 4.5.5 or greater) to help ensure that calculations are consistent with OMB Circular A-94. The current software is available at the FEMA Regional Office or from the BCA Technical Assistance Helpline.

If FEMA standard values are used, then no additional documentation is required. If non-standard values are used, then documentation is required. Documentation must be accurate and sufficiently detailed for the analysis to be validated. FEMA recommends that supporting documentation be obtained from credible sources, such as a Flood Insurance Study.

Data associated with the various methodologies for analyzing cost-effectiveness are available from the appropriate FEMA Regional Office (see [Part VIII](#)) or the BCA Technical Assistance Helpline.

#### **I.1 Substantial Damage Waiver**

An expedited cost-effectiveness methodology is available for property acquisition projects when certain conditions are met. Structures that are declared Substantially Damaged as a result of flooding and located in a riverine SFHA on a

#### **SUBSTANTIAL DAMAGE WAIVER EXTENDED TO ALL HMA PROGRAMS**

An expedited cost-effectiveness analysis methodology is available for property acquisition projects when certain conditions are met.

preliminary or effective FIRM are considered cost-effective for acquisition projects. If this methodology is used, the project application should include a certification that the structures meet these conditions.

## I.2 Aggregation

An evaluation of the cost-effectiveness of a project should include all activities included within the SOW. This may include activities in multiple jurisdictions. It may also include combining benefits from multiple activities and multiple hazards, such as wind and flood, if it is a part of the same project.

### AGGREGATION

It is appropriate to aggregate benefits from multiple activities and multiple jurisdictions if part of the same project.

## I.3 5 Percent Initiative

For 5 Percent Initiative subapplications for HMGF funding, a narrative description of the project's cost-effectiveness must be provided. For more information on the 5 Percent Initiative, see [Part IX.A.10](#).

## I.4 Pre-calculated Benefits (Safe rooms)

For **Safe Room Construction** projects, an expedited cost-effectiveness methodology is available that identifies the benefits associated with certain types of safe rooms (see Appendix F). If this methodology is used, the submitted project application should include a copy of the data relevant to the project location.

## I.5 Greatest Savings to the Fund

FEMA also allows for the use of the GSTF data and methodology to demonstrate cost-effectiveness for properties included in mitigation projects under HMA. Subapplicants are not required to use this methodology when submitting projects for funding and may utilize the current applicable BCA version (4.5.5 or greater) methodology.

### GREATEST SAVINGS TO THE FUND METHODOLOGY

GSTF can be used to demonstrate cost-effectiveness of a project under all HMA programs.

## I.6 Environmental Benefits

FEMA has identified and quantified environmental benefits for mitigation activities. Incorporating environmental benefits into the overall quantification of benefits for acquisition-related activities supports

### INCLUSION OF ENVIRONMENTAL BENEFITS INTO THE BCA TOOLKIT

Green open space and riparian benefits have been identified and quantified for acquisition projects. The BCR for an acquisition project must be 0.75 before the environmental benefit can be incorporated.

FIMA's mission of risk reduction, environmental compliance, and preservation of the natural and beneficial functions of the floodplain.

Specifically, FEMA developed economic values for green open space and riparian areas. FEMA will be incorporating the environmental benefits for green open space and riparian areas into the BCA toolkit for acquisition projects.

The economic value for green open space is \$7,853 per acre per year. For riparian areas, the economic value is \$37,493 per acre per year. When incorporating these values into FEMA's BCA, the yearly benefits accrue over the 100-year project useful life and are discounted at 7 percent per year to meet OMB requirements. [Table 4](#) provides the green open space and riparian benefits per acre per year and per square foot.

**Table 4: Green Open Space and Riparian Benefits**

Land Use	Total Estimated Benefits (per acre per year)	Total Estimated Benefits <sup>(1)</sup> (per square foot)
Green Open Space	\$7,853	\$2.57
Riparian	\$37,493	\$12.29

<sup>(1)</sup> Projected for 100 years with 7 percent discount rate

For an acquisition project, the BCR for a project must be 0.75 before incorporating the environmental benefit. This ensures projects funded by HMA are primarily associated with risk reduction activities. Once a project's BCR reaches 0.75, the appropriate environmental benefit can be included for the individual properties.

## I.7 Benefit-Cost Analysis Resources

Other methods to demonstrate cost-effectiveness may be used when they address a non-correctable flaw in the FEMA-approved methodologies or propose a new approach that is unavailable using current tools. New methodologies may be used only if FEMA approves the methodology before application submission. For more information on resources, see [Part X.C.3](#).

### BCA Helpline

Telephone: (855) 540-6744

Email: [bchelp@fema.dhs.gov](mailto:bchelp@fema.dhs.gov)

### BCA Policies, Overview, and Software

<http://www.fema.gov/benefit-cost-analysis>

## J. Feasibility and Effectiveness Documentation

FEMA will use the information provided in the subapplication, including the SOW, the cost estimate, and supporting documentation to determine the feasibility and effectiveness of the

proposed mitigation activity. FEMA accepts the engineering design for a project if a registered Professional Engineer (or other design professional) certifies that the design meets the appropriate code or industry design and construction standards. FEMA will accept the certified engineering design in lieu of a comprehensive technical feasibility review. If accepted codes/standards are used, no additional documentation is required. See [Part X, Appendix D](#) (Referenced Regulations, Statutes, Directives, and Guidance) for examples of codes and standards used for various projects types.

If an alternative design is proposed the application/subapplication should contain:

- ◆ Applicable building code/edition or engineering standard used;
- ◆ Level of protection provided by the proposed project and description of how the proposed activity will mitigate future losses;
- ◆ For the retrofit of existing buildings or infrastructure protection projects, an assessment of the vulnerabilities of the existing building;
- ◆ Any remaining risk to the structure after project implementation; and
- ◆ Proposed schematic drawings or designs (as applicable).

Project subapplications that do not include appropriate documentation to support the determination of feasibility and effectiveness may be removed from consideration. Upon request, FEMA will provide technical assistance regarding engineering documentation.

For structure elevation and dry floodproofing activities, a statement certifying that the project will be designed in conformance with ASCE/SEI 24-05 will assist in satisfying the feasibility and effectiveness requirement.

## K. Environmental Planning and Historic Preservation Documentation

The Applicant and subapplicant should ensure that the project SOW takes into account all potential EHP compliance issues. When completing the subapplication, the Applicant/subapplicant must answer a series of EHP review questions and provide information about potential impacts on environmental resources and cultural resources (if applicable) in the project area. For additional information, see [Part X, Appendix I](#) (EHP Checklist) and [Part X, Appendix J](#) (8-Step Decision Making Process for Floodplain Considerations), and [Part X, Appendix K](#) (Section 106 Process under the National Historic Preservation Act).

If potential impacts are identified through the responses to these EHP review questions, the Applicant/subapplicant must provide additional information, (as applicable), such as:

- ◆ The property address, original date of construction, and two color photographs for any buildings, structures, objects, or manmade sites/landscapes features that are 50 years or

more in age. At least one of the two photographs provided of a building should be the front or primary façade showing the elevation;

- ◆ Any identified federally listed threatened or endangered species and/or designated critical habitat in the project area;
- ◆ Vegetation, including amount (area), type, and extent to be removed or affected;
- ◆ Identification of all surface waters in the project area regardless of drainage area, size, or perceived hazard level. Information about surface waters should include dimensions, proximity of the project activity to the water, and the expected and possible impacts of the project upon surface waters, if any; and
- ◆ A description of any adverse effects on low income or minority populations in the project area.

Applicants seeking to determine whether there are any EHP issues associated with the proposed project should consult the HMA EHP Resources At-a-Glance Guide, located at <http://www.fema.gov/library/viewRecord.do?id=6976> and the HMA EHP at a Glance at <http://www.fema.gov/library/viewRecord.do?id=5904>. This Guide also provides key contacts, Web sites, and search engines to assist in early identification of EHP issues and to facilitate coordination with the appropriate State and Federal agencies.

If EHP issues are identified, the Applicant/subapplicant should initiate coordination with the relevant State and Federal agencies as early in the project planning stages as possible to address any potential EHP compliance issues associated with proposed projects. This coordination does not substitute, and shall not be interpreted to mean, that formal consultation has occurred between FEMA and the applicable resource agency.

Additional EHP compliance review activities may be necessary to facilitate project approval, such as environmental impact statements, environmental assessments, Phase I environmental site assessments, biological assessments, archeological or standing structures surveys and documentation, wetlands delineations, and air quality conformity analysis or determinations.

If FEMA or the Applicant/subapplicant identifies any potential impacts through the EHP review process described above, the following requirements must be completed before a grant award may be made:

- ◆ Evaluate any potential effects to environmental and historic resources and provide the required information and documentation to identify the impact on these resources;
- ◆ Complete an evaluation of alternatives to the proposed action that will avoid or minimize these impacts, including consideration of the environmental impact of taking no action;
- ◆ Complete any required consultation and/or coordination with the appropriate parties (e.g., the State Historic Preservation Officer, the U.S. Fish and Wildlife Service, the National

Marine Fisheries Service) to evaluate potential effects of the proposed project and to identify any measures necessary to avoid or minimize these effects;

- ◆ Demonstrate that the project will comply with all environmental laws and regulations; and
- ◆ Make certain that the costs of any measures to treat adverse effects are realistically reflected in the project budget estimate.

Applicants/Grantees may incur costs for significant EHP compliance review activities and/or EHP mitigation measures. FEMA will consider the following factors to determine whether to reimburse costs:

- ◆ Nature of the analysis or study required (e.g., environmental impact statement);
- ◆ Costs of EHP activities compared to project costs;
- ◆ Complexity of the proposed project; and
- ◆ Nature and extent of potential adverse impacts to environmental and/or historic resources.

Applicants should consider potential EHP costs during application development and submission and should seek to avoid activities that may negatively impact EHP resources.

FEMA may remove projects from consideration for full approval and/or funding when EHP compliance review activities are not progressing and the Applicant/Grantee has not dedicated resources and/or provided required documentation in a timely manner.

For additional information on required EHP documentation, see [Part X, C.5](#).

## PART VI. APPLICATION REVIEW INFORMATION

Part VI provides information about the review process so that Applicants and subapplicants can prepare applications that meet FEMA review criteria. During an application review, FEMA may request additional information or documentation from Applicants.

### A. Review Criteria

While review processes vary somewhat among HMA programs, FEMA reviews all applications for:

- ◆ Application eligibility;
- ◆ Cost-effectiveness;
- ◆ Feasibility and effectiveness; and
- ◆ EHP compliance.

#### A.1 Application Review

FEMA will review all applications and subapplications for eligibility and completeness. Applications and subapplications that do not satisfy the eligibility and completeness requirements will not be funded. The eligibility and completeness requirements are outlined in [Parts IV](#) and [V](#).

#### A.2 Cost-effectiveness Review

FEMA will review the documentation provided in support of the subapplication cost-effectiveness to validate the accuracy and credibility of data and ensure the appropriate use of the cost-effectiveness methodologies. Only subapplications meeting HMA cost-effectiveness requirements will be considered eligible.

#### A.3 Feasibility and Effectiveness Review

FEMA will use the information provided in the subapplication, including the SOW and project cost estimate sections, as well as any supporting documentation to determine the feasibility and effectiveness of the mitigation activity.

For project subapplications, FEMA will consider the following criteria in reviewing feasibility and effectiveness:

- ◆ Conformance to accepted engineering practices, established codes, standards, modeling techniques, or best practices, as well as work schedule;



- ◆ Effectiveness in mitigating the risks of the hazard(s); and
- ◆ Reasonableness of the cost estimate.

#### A.4 Environmental Planning and Historic Preservation Review

Applicants and subapplicants are required to provide information to support the FEMA EHP compliance review. FEMA, in consultation with appropriate Federal and State resource agencies, will use the information provided in the application/subapplication, including the SOW, project cost estimate, as well as any supporting documentation, to ensure compliance with EHP requirements.

As part of the EHP review process, FEMA will assess compliance with applicable requirements including NEPA, NHPA, ESA, CBRA, EO 11988 (*Floodplain Management*), EO 11990 (*Protection of Wetlands*), and EO 12898 (*Environmental Justice*). Funds will not be awarded, and the Applicant/subapplicant may not initiate the project, other than planning or preparatory work not involving construction or alteration of the land, until FEMA has completed this review and it is demonstrated that the project, when completed, will comply with all environmental laws and regulations.

#### A.5 HMA Efficiencies

FEMA accepts the engineering design for a project if a registered Professional Engineer (or other design professional) certifies that the design meets the appropriate code, or industry design and construction standards. FEMA will accept the certified engineering design in lieu of the FEMA comprehensive technical feasibility review. For example, if a registered Professional Engineer certifies that design of a community safe room project meets or exceeds FEMA P-361 standards for design and construction, FEMA will not perform a detailed design review to ensure compliance with the standard.

**HMA EFFICIENCIES**

FEMA provides opportunities to streamline application requirements by allowing Applicants to use:

- FEMA technical publications
- National standards and codes
- Design criteria such as ASCE criteria
- Pre-calculated benefits

Additionally, in the development of applications and subapplications, the following resources and approaches should be considered as they will promote efficiencies in FEMA review and approval.

#### A.5.1 Safe Room Projects

Applicants must document that the proposed safe room project is consistent with the requirements of FEMA P-320 or FEMA P-361. Applicants must use the expedited HMGP application for

**PRE-CALCULATED BENEFITS FOR SAFE ROOMS UNDER HMGP**

If the Applicant submits a residential safe room project with costs that are less than the pre-calculated benefit, then FEMA will consider the project to be cost effective.

Residential Safe Rooms to apply pre-calculated benefits under HMGP (see [Part X, Appendix F](#)). This pre-calculated benefit provides standardized benefits associated with residential safe rooms so that individual BCAs are not required as long as the project costs do not exceed the benefits.

#### A.5.2 Wind Retrofit Projects

FEMA P-804 provides design guidance for wind-retrofit projects on existing one- and two-family dwellings in coastal areas. Mitigation projects funded under HMGP and the PDM Program are required to be implemented in conformance with FEMA-804. If a subapplication complies with FEMA P-804, no additional technical information is required in the subapplication.

#### A.5.3 Certain Flood Mitigation Projects

FEMA recommends HMA flood mitigation projects be designed and constructed in conformance with the design criteria of ASCE/SEI 24-05 as a minimum standard. FEMA will consider a project application utilizing ASCE/SEI 24-05 as being consistent with HMA engineering feasibility and effectiveness requirements. Project applications that do not use ASCE/SEI 24-05 must submit documentation to demonstrate the project meets the engineering feasibility and effectiveness requirement.

### B. Review and Selection Process

#### B.1 Technical Review

FEMA will conduct a technical review for all project subapplications that are forwarded from the initial FEMA review, for the following:

- ◆ Cost-effectiveness;
- ◆ Feasibility and effectiveness; and
- ◆ EHP compliance.

#### B.2 Requests for Information

FEMA may request additional information or documentation from Applicants to resolve outstanding administrative or procedural requirements. RFIs can take various forms, including email requests, documented telephone calls, or formal letters. Failure to provide requested information by the deadline identified in the request may result in denial, because eligibility cannot be determined. Technical assistance is available, if requested.

Comments may be provided by FEMA on subapplications determined ineligible so that subapplicants can modify their subapplication for resubmission in future grant cycles.

### B.2.1 Request for Information Timelines

Table 5 provides timelines for stepwise information requests and assistance offers. Figure 4 outlines the RFI process and assigned responsible party. The RFI process involves an eligibility review to determine if the subapplication and subapplicant are eligible, then a completeness review is conducted to determine if a complete subapplication was submitted. If the subapplication is determined to be incomplete, there are three steps FEMA will take to request further information from the subapplicant. At each step throughout the RFI process, FEMA will work with the Applicant and subapplicant to determine available options to develop a viable project. Some options include technical assistance from FEMA or implementing a phased project. If the requested information is not received by the Regional Administrator before the deadline, the project will be denied as FEMA will have no basis to make an eligibility determination. Upon receipt of the requested information and confirmation it adequately addresses the RFI, FEMA will proceed with making a determination of project eligibility.

#### REQUEST FOR INFORMATION

If a subapplication does not meet the administrative or procedural information requirements, FEMA may request additional information in the form of an RFI. If the Regional Administrator does not receive the requested information by the final deadline, the project will be denied.

Figure 4: RFI Flowchart

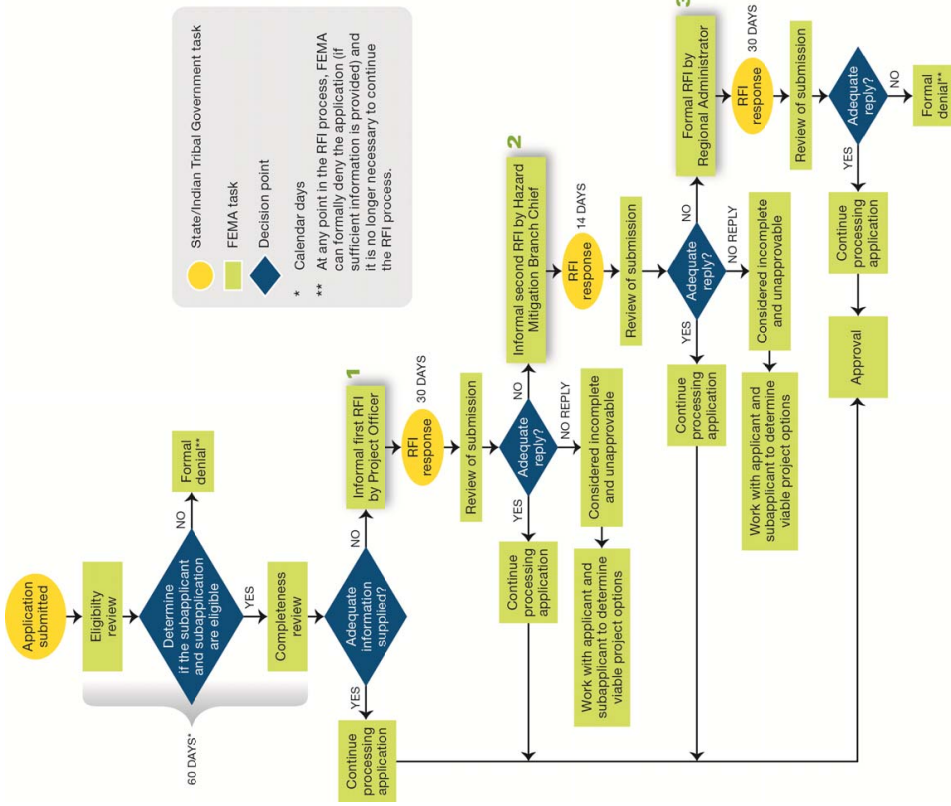


Table 5: RFI Timelines

Request Format	Timeline
<b>Informal – First Request</b>	The Project Officer requests additional information. If the requested information is not received within 30 calendar days from the date of the request, FEMA will consider the application to be incomplete and not approvable. FEMA may provide technical assistance if requested, unless the HMA program is competitive. The Applicant may consider phrasing the project if it is feasible to do so.
<b>Informal – Second Request</b>	The Hazard Mitigation Branch Chief requests additional information. If the requested information is not received within 14 calendar days from the date of the request, FEMA will consider the application to be incomplete and not approvable. FEMA may provide technical assistance if requested, unless the HMA program is competitive. FEMA, Grantee, and Applicant staff should meet to resolve any open items within the allotted timeframe, if necessary.
<b>Formal</b>	The Regional Administrator requests additional information and will document previous requests. If the requested information is not received within 30 calendar days from the date of the request, FEMA will consider the application to be incomplete and not approvable.
<b>Formal</b>	If the Regional Administrator does not receive the requested information within 30 calendar days, he or she will determine the requested project application be ineligible for funding under HMGP. The second formal letter is a denial.

The Regional Administrator may choose to allow more time, with justification. FEMA encourages Applicants to coordinate early with the State or eligible Indian Tribal government to identify potential technical assistance. If technical data is not readily available, the subapplicant should coordinate with Grantee to determine whether the project should be phased in order to develop required data. States or Indian Tribal governments with Grantee status could contact the FEMA regional office to request technical assistance, relevant training or other needed support.

### **B.3 Selection**

FEMA selects eligible subapplications based on priorities set by the Applicant or program priorities, if applicable. For more information for the PDM Program, see [Part IX, B.5](#), for FMA, see [Part IX, C.4](#).

### **B.4 Notification**

For the **PDM Program** and **FMA**, during the review and selection process FEMA will notify Applicants as to whether subapplications have been identified for further review, determined eligible but will not be funded, or determined ineligible for funding. A determination of “identified for further review” is not notification or guarantee of an award.

FEMA will work with Applicants on subapplications identified for further review. Applicants will be notified of activities required, such as an EHP review; verification of subapplicant commitments; verification of hazard mitigation plan status; and of the date by which all required activities must be completed.

Comments may be provided by FEMA on subapplications determined ineligible so that subapplicants can modify their subapplication for resubmission in future grant cycles.

The PDM Program and FMA have specific ranking criteria in addition to those described in this part. For information about ranking criteria and on the review and selection process for the PDM Program, see [Part IX, B.4](#); and FMA, see [Part IX, C.4](#).

### **B.5 Reconsideration Process**

For the FMA and PDM programs, FEMA will reconsider its determination of a subapplication evaluated on a competitive basis only when there is an indication of a substantive technical or procedural error by FEMA. Only information provided in the submitted subapplication is considered supporting documentation for the request for reconsideration. The amount of funding available for Applicant management costs will not be reconsidered.

FEMA may evaluate subapplications on a competitive basis when:

- ◆ Submitted subapplications exceed available funds;
- ◆ Law or regulation requires the administration of a competitive program; or

- ◆ Circumstances merit the administration of funds in a competitive manner.

Applicants must send requests for reconsideration based upon technical or procedural error to FEMA within the time specified in the notification letter to the Applicant. A FEMA decision to uphold or overturn a decision regarding a subapplication evaluated on a competitive basis is final.

### **B.5.1 Consideration of Additional Information**

FEMA may, at its discretion, notify Applicants that it will consider additional information in support of a subapplication.

FEMA will accept supplemental or corrected data in support of a subapplication when:

- ◆ Submitted subapplications do not exhaust available program funds;
- ◆ Law or regulation do not require the administration of a competitive program; or
- ◆ When determined appropriate by the program office.

Instructions for submitting supplemental data will be provided within the FEMA notification letter, if applicable.

For information on appeal and administration of HMGP subapplications, see [Part IX, A.11](#).

## PART VII. AWARD ADMINISTRATION INFORMATION

Part VII describes how successful Applicants will receive award information. Additionally, this part describes administrative requirements from the time an award is made through closeout and the maintenance actions that must occur after an activity is complete.

### A. Notice of Award

FEMA will provide an award package to the Applicant for successful subapplications. Subapplicants will receive notice of award from the Applicant.

Award packages for the **PDM Program** and **FMA** include an award letter, FEMA Form 76-10A, *Obligating Document for Awards/Amendments*, and Articles of Agreement, EHP, and/or other conditions that must be signed by the Applicant in eGrants and returned to FEMA for approval before funds can be obligated.

For **HMGP**, award packages for subgrants include an approval letter, an obligation document, and EHP and/or other conditions.

When the Applicant or subapplicant accepts an award, they are denoted as Grantee and subgrantee, respectively. The Grantee and subgrantee agree to abide by the grant award terms and conditions as set forth in the Articles of Agreement or the FEMA-State Agreement.

### B. Administrative and National Policy Requirements

#### B.1 Cost-Share Documentation

Requirements for cash and third-party in-kind contributions can be found in 44 CFR Section 13.24. Third-party in-kind and cash contributions are only allowable for eligible program costs. The following documentation is required for cash and third-party in-kind contributions:

- ◆ Record of donor;
- ◆ Dates of donation;
- ◆ Rates for staffing, equipment or usage, supplies, etc.;
- ◆ Amounts of donation or value of donation; and
- ◆ Deposit slips for cash contributions.

Such documentation must be kept on file by the Grantee and subgrantee.

#### B.2 Scope of Work Changes

In accordance with 44 CFR Section 13.30, Grantees must obtain FEMA's prior approval whenever there is a proposed SOW change. Requests for changes to the SOW after award are permissible as long as they are consistent with the intent of the program. Requests must be made in writing and demonstrate the need for the scope change. The request also should include a revised scope, schedule, and budget. Any SOW changes are subject to all programmatic requirements. All approvals will be at FEMA's discretion.

##### SCOPE CHANGE

Grantees and subgrantees must request FEMA's approval for a change in scope after the grant has been awarded. The change must be consistent with the intent of the program. Requests must be made in writing and demonstrate the need for a change.

#### B.3 Budget Changes

Grantees and subgrantees are permitted to rebudget within the approved direct cost budget to meet unanticipated requirements and may make limited program changes to the approved budget. For more information on direct cost categories, please see OMB Circular A-87 and 2 CFR Part 225, *Cost Principles for State, Local, and Indian Tribal Governments*. Unless expressly waived by FEMA, the following types of post-award changes to budgets will require the prior written approval of FEMA:

##### BUDGET CHANGE

In limited cases, Grantees and subgrantees are permitted to make adjustments within the approved direct cost category to meet unanticipated requirements.

#### B.3.1 Non-construction Projects

- ◆ Non-construction subgrant adjustments of more than 10 percent in any direct cost categories; and
- ◆ Any changes that would result in additional funding to the grant.

#### B.3.2 Construction Projects

- ◆ All construction cost adjustments that lead to the need for additional funds.

When budget changes are made, all programmatic requirements continue to apply. Additional information regarding budget adjustments and revisions can be found in 44 CFR Section 13.30.

#### B.3.3 Cost Overruns and Underruns

A cost overrun or underrun can result from a scope, schedule, or budget change.



Grantees must notify FEMA prior to redirecting funds from an underrun to other approved subgrants for which an overrun has been requested. The subgrant must continue to meet programmatic eligibility requirements including cost share.

#### **B.4 Program Period of Performance**

The POP is the period during which the Grantee is expected to complete all grant activities and to incur costs. The POP for the Program begins with the opening of the application period and ends no later than 36 months from the close of the application period.

FEMA will not establish activity completion timelines for individual subgrants. Grantees are responsible for ensuring that all approved activities are completed by the end of the grant POP.

##### **B.4.1 Extensions**

Requests for extensions to a grant POP will be evaluated by FEMA but will not be approved automatically. The Regional Administrator can extend the POP for up to 12 months with justification. All requests to extend the grant POP beyond 12 months from the original grant POP end date must be approved by FEMA Headquarters.

All extension requests must be submitted to FEMA at least 60 days prior to the expiration of the grant POP and justifications must be submitted in writing. The justification must include:

- ◆ Verification that progress has been made as described in quarterly reports;
- ◆ Reason(s) for delay;
- ◆ Current status of the activity/activities;
- ◆ Current POP termination date and new projected completion date;
- ◆ Remaining available funds, both Federal and non-Federal;
- ◆ Budget outlining how remaining Federal and non-Federal funds will be expended; and
- ◆ Plan for completion, including updated schedule.

#### **B.5 Requests for Advances and Reimbursements**

The Grantee's responsibility of an HMA grant is to process requests for advances and reimbursements of funds. The Grantee should establish accounting procedures to disburse money to subgrantees in a timely manner and should provide to subgrantees a POC for information on requesting and receiving the funds, records that must be maintained, forms to be used, and timelines for requesting the funds.

For the **PDM Program** and **FMA**, Payment and Reporting System (PARS) is used to transfer funds between FEMA and Grantees. Grantees shall submit to FEMA a copy of the Standard Form (SF-425).

For **HMGP**, the Department of Health and Human Services, Division of Payment Management, Payment Management System, SMARTLINK, is used to transfer funds between FEMA and Grantees. Grantees shall submit to FEMA a copy of the SF-425.

#### **B.5.1 Strategic Funds Management**

In accordance with the needs of the Disaster Relief Fund as well as Grantee priorities and ability to execute the project in a timely manner, FEMA may elect to provide funding for certain projects in incremental amounts, including advance payments (Strategic Funds Management or SFM). SFM allows FEMA to schedule obligations to be available when the State is ready to execute an HMGP subgrant or components of the subgrant. SFM also allows for incremental obligations as needed within the 3-year POP requirements to support project activities as described in the project work schedule.

SFM does not allow funds to be advanced for an HMGP project that is not approved and eligible.

#### **B.6 Program Income**

FEMA encourages Grantees and subgrantees to generate program income to help defray program costs. Program income is gross income received by the Grantee or subgrantee directly generated by a grant-supported activity or earned only as a result of the grant during the grant POP.

Program income may be derived from use or rental of real or personal property acquired with grant funds, and sale of commodities or items fabricated under the grant award. Subgrantees deduct this income from total project costs as specified in 44 CFR Section 13.25(g)(1). This income may not count towards the non-Federal cost share.

#### **B.7 Federal Income Tax on Mitigation Project Funds**

FEMA mitigation payments that benefit property owners through the mitigation of their structures are not subject to Federal income taxation. FEMA mitigation payments to acquire a property will be treated as an involuntary conversion for tax purposes. These tax relief measures

##### **PERIOD OF PERFORMANCE**

With the publication of this HMA Unified Guidance, the POP for the Program begins with opening of the application period and ends no later than 36 months from the close of the application period.

##### **DIFFERENCE BETWEEN STRATEGIC FUNDS MANAGEMENT, PHASED PROJECTS, PRE-AWARD COSTS, AND ADVANCE ASSISTANCE**

**SFM** is designed to provide incremental funding for eligible activities when the funds are required.

**Phased projects** are those that receive funding for only certain complex activities that are approved to allow the Applicant to develop a full work scope/data package to support the full project description.

**Pre-award costs** are eligible costs incurred by the Applicant in advance of receiving funds. These activities are reimbursed when the project is approved and funded.

**Advance Assistance** provides States and Indian Tribal governments with resources to develop mitigation strategies and obtain data to prioritize, select, and develop complete HMGP applications in a timely manner.

are effective for such payments made in all prior years. For more information, property owners should consult the Internal Revenue Service (IRS) office or a tax advisor.

### **B.8 Noncompliance**

If a Grantee or subgrantee materially fails to comply with any term of an award, whether stated in a Federal statute or regulation, an assurance, a State Administrative Plan or application, a notice of award, or elsewhere, including in this guidance, FEMA may take one or more of the following actions, as appropriate:

- ◆ Temporarily withhold cash payments pending correction of the deficiency by the Grantee or subgrantee;
- ◆ Disallow (that is, deny both use of funds and matching credit for) all or part of the cost of the activity or action not in compliance;
- ◆ Wholly or partly suspend or terminate the current award for the Grantee's or subgrantee's HMA grant program(s);
- ◆ Withhold further awards for HMA grant program(s); or
- ◆ Take other remedies that may be legally available.

Additional details can be found in 44 CFR Section 13.43.

### **C. Reporting Requirements**

Grantees and subgrantees must maintain records of work and expenditures. Grantees submit quarterly financial and performance reports to FEMA on January 30, April 30, July 30, and October 30. The first quarterly reports are due within 30 days of the end of the first Federal quarter following the initial grant award. FEMA may waive the initial reports. The Grantee shall submit quarterly financial status and performance reports thereafter until the grant ends. Failure to submit financial and performance reports to FEMA in a timely manner may result in an inability to access grant funds until proper reports are received by FEMA. Grantees are encouraged to contact FEMA should this occur.

The **PDM Program** and **FMA** quarterly reports can be submitted via **eGrants**. For **HMGP**, quarterly performance reports can be submitted via NEMIS or a hard copy to the Region. PDM Program and FMA quarterly financial reports must be submitted via PARS.

### **C.1 Federal Financial Reports**

Grantees shall submit a quarterly Federal Financial Report (FFR). Obligations and expenditures must be reported on a quarterly basis through the FFR (SF-425), which is due to FEMA within 30 days of the end of each calendar quarter (e.g., for the quarter ending March 31, the FFR is due no later than April 30). A report must be submitted for every quarter of the POP, including

partial calendar quarters, as well as for periods where no grant activity occurs. Future awards and fund drawdowns may be withheld if these reports are delinquent. The final FFR is due 90 days after the end date of the POP.

OMB has directed that the FFR (SF-425) replace the use of the SF-269, SF-269A, SF-272, and SF-272A. The SF-425 consolidates the Federal Status Report and the Federal Cash Transaction Report into a single report. The SF-425 is intended to provide Federal agencies and grant recipients with a standard format and consistent reporting requirements.

Reporting periods and due dates:

- ◆ October 1 – December 31; Due January 30
- ◆ January 1 – March 31; Due April 30
- ◆ April 1 – June 30; Due July 30
- ◆ July 1 – September 30; Due October 30

FEMA may suspend drawdowns from SMARTLINK or PARS if quarterly financial reports are not submitted on time.

### **C.2 Performance Reports**

The Grantee shall submit a quarterly performance report for each grant award. Performance reports should include:

- ◆ Reporting period, date of report, and Grantee POC name and contact information;
- ◆ Project identification information, including FEMA project number (including disaster number and declaration date for the HMGP), subgrantee, and project type using standard eGrants/NEMIS project type codes;
- ◆ Significant activities and developments that have occurred or have shown progress during the quarter, including a comparison of actual accomplishments to the work schedule objectives established in the subgrant;
- ◆ Percent completion and whether completion of work is on schedule; a discussion of any problems, delays, or adverse conditions that will impair the ability to meet the timelines stated in the subgrant; and anticipated completion date;
- ◆ Status of costs, including whether the costs are: (1) unchanged, (2) overrun, or (3) underrun. If there is a change in cost status, the report should include a narrative describing the change. Also, include amount dispersed to subgrantee by activity;
- ◆ A statement of whether a request to extend the grant POP is anticipated;
- ◆ Incremental funding amounts (SFM) and progress completed;

- ◆ For acquisition projects, the Grantee must notify FEMA on the current status of each property for which settlement was completed in that quarter; and
  - ◆ FEMA may require additional information as needed to assess the progress of a grant.
- FEMA may suspend drawdowns from SMARTLINK or PARS if quarterly performance reports are not submitted on time.

### **C.3 Final Reports**

The Grantee shall submit a Final SF-425 and Performance Report no later than 90 days after the end date of the POP, per 44 CFR Section 13.50.

## **D. Closeout**

### **D.1 Subgrant Closeout**

Upon subgrant completion, the Grantee must ensure that:

- ◆ Each subgrant has been completed in compliance with the approved SOW. The Grantee must conduct a site visit or collect photographs for a project subgrant to ensure the approved SOW was completed;
- ◆ Each subgrant has been completed in compliance with all environmental mitigation conditions attached to it;
- ◆ Actual expenditures have been documented and are consistent with the SF-424A or SF-424C;
- ◆ All program income has been deducted from total project costs as specified in 44 CFR Section 13.25(g)(1);
- ◆ All project work was performed in accordance with all required permits and applicable building codes as modified or protected by the approved project;
- ◆ For projects involving an insurable facility, the required hazard insurance (e.g., NFIP) has been secured;
- ◆ Geospatial coordinates, in the form of latitude and longitude with an accuracy of +/- 20 meters (64 feet), have been provided for the project. For minor localized flood reduction, hazardous fuels reduction, and soil stabilization projects, an accurate recording of the official acreage, using open file formats geospatial files (i.e., shapefiles), has been submitted;
- ◆ For new or updated hazard mitigation plans, a final copy of the FEMA-approved and community-adopted plan has been submitted; and
- ◆ For planning related activities, the activity is consistent with 44 CFR Parts 201 or 206 (HMGP).

For project-specific requirements, see the Appendices and the Addendum to this HMA Unified Guidance. Grantees should close out subgrants as activities are completed. In addition, as cost underruns are identified, the Grantee should submit de-obligation requests to FEMA.

The subgrantee is required to keep records for at least 3 years from the date when the Grantee submits to FEMA the single or final expenditure report for the subgrantee in accordance with 42 U.S.C. 705 and 44 CFR Section 13.42.

For additional information about closeout for property acquisition and structure demolition or relocation projects, see Addendum, Parts A.13 and A.15. For additional information about closeout for mitigation reconstruction projects, see Addendum, Part D.9.

### **D.2 Grant Closeout**

The Grantee has up to 90 days following the expiration of the grant POP to liquidate valid expenditures incurred during the POP. Cost underruns remaining after the post-POP liquidation period date must be reported to FEMA for de-obligation. The closeout process for the Grantee involves the following steps:

- ◆ The Grantee ensures all subgrants have been closed out as identified in [Part VII.D.1](#);
  - ◆ The Grantee reconciles/adjusts subgrant costs, ensures that non-Federal share costs are documented, and ensures that all costs submitted are eligible according to the FEMA-approved SOW;
  - ◆ The Grantee receives and processes cost adjustments or returns unobligated funds to FEMA via SMARTLINK or PARS. Final payment is made to the Grantee;
  - ◆ The Grantee submits a closeout letter to FEMA with supporting documentation, including:
    - Statement that SOW(s) has been completed as approved and all EHP requirements have been satisfied;
    - SF-425 (for PARS, the final SF-425 is also submitted via PARS);
    - SF-270, *Request for Advance or Reimbursement*, if applicable, or request for de-obligation of unused funds, if applicable;
    - FEMA Form 20-18, *Report on Government Property*, if applicable; and
  - ◆ The Grantee notifies FEMA that the grant is ready for final closeout.
- The Grantee must maintain the complete grant closeout records file for at least 3 years from the submission date of its single or last expenditure report in accordance with 44 CFR Section 13.42.

For **HMGP**, FEMA can track closeouts using the Project Closeout module in NEMIS.

### D.2.1 Update of Repetitive Loss Database

Grantees with projects that mitigate a repetitive loss property, as identified by the NFIP, must update the NFIP Repetitive Loss Database as project activities are completed.

- ◆ For acquisition and demolition or relocation projects, Grantees must provide this update when there is no longer an insurable structure on the property; and
- ◆ For elevation, reconstruction, floodproofing, and minor flood control projects, Grantees must provide this update when the approved activity is complete or otherwise effective.

The NFIP defines a repetitive loss property as any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period since 1978. At least two of the claims must be more than 10 days apart but within 10 years of each other. A repetitive loss property may or may not be currently insured by the NFIP.

Please note this definition of repetitive loss property is different from the FMA definition of repetitive loss property located in [Part IX, C.1.](#)

To gain access to sensitive NFIP data, government officials are required to obtain a User Name and Password for access to Data Exchange, the Repetitive Loss Database that is managed by the NFIP Legacy Systems Contractor. Currently, only two access accounts are permitted per State and are reserved for the State Hazard Mitigation Officer (SHMO) and the State NFIP Coordinator or their designee. To obtain a User Name and Password for access to Data Exchange, send an email with your name, title, contact information, and the reason that access to Data Exchange is needed to FEMA. Once FEMA authorizes you for NFIP Legacy Systems access to Data Exchange, you will be notified via email.

To maintain accurate, up-to-date records for all repetitive loss properties mitigated as a result of HMA grant funds, FEMA requires that the Grantee submit FEMA Form AW-501, *NFIP Repetitive Loss Update Worksheet* (OMB 1660-0022). Form AW-501 must be submitted along with documentation supporting the change in the mitigated status of a structure (e.g., elevation certificate). This form must be submitted for each property mitigated with HMA grant funds prior to closeout. The AW-501 form and instructions for completing and submitting it can be found on the FEMA Web site: <http://www.fema.gov/library/viewRecord.do?id=3244>. Detailed AW-501 forms for individual repetitive loss properties can be obtained by accessing Data Exchange and selecting the link to AW-501 data after selecting to look up property by property locator or repetitive loss number.

States accessing NFIP data via the electronic systems (Data Exchange) are advised of, and must acknowledge, the sensitive nature of the information and the need to prevent the release of the data to unauthorized users. When the data is released to a local government by either the State or the appropriate FEMA Regional Office, the local government must be notified in writing that the records relating to individuals and individual properties are:

being made available through the FEMA routine use policy for the specific purposes of mitigation planning, research, analysis, and feasibility studies consistent with the NFIP and for uses that further the floodplain management and hazard mitigation goals of the States and FEMA.



## PART VIII. FEMA CONTACTS

Part VIII identifies resources that may help Applicants and subapplicants request HMA funds. If requested, FEMA will provide technical assistance to both Applicants and subapplicants regarding:

- ◆ General questions about the HMA programs;
- ◆ Specific questions about subapplications after the application period opens;
- ◆ Feasibility and effectiveness, cost-effectiveness, and EHP compliance during the application period; and
- ◆ The eGrants application processes.

For additional technical assistance resources, including HMA application and award resources, see [Part X.C.7](#).

FEMA encourages Applicants and subapplicants to seek technical assistance early in the application period by contacting their appropriate FEMA Regional Office. [Table 6](#) shows which States are served by each FEMA Region.

Contact information for FEMA Regional Offices is provided at <http://www.fema.gov/regional-operations>.

Contact information for each SHMO is provided at <http://www.fema.gov/state-hazard-mitigation-officers>.

**Table 6: FEMA Regions**

FEMA Region	Serving
I	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
II	New Jersey, New York, Puerto Rico, U.S. Virgin Islands
III	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia
IV	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee
V	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin
VI	Arkansas, Louisiana, New Mexico, Oklahoma, Texas
VII	Iowa, Kansas, Missouri, Nebraska
VIII	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
IX	Arizona, California, Hawaii, Nevada, American Samoa, Guam, the Northern Mariana Islands
X	Alaska, Idaho, Oregon, Washington

## PART IX. ADDITIONAL PROGRAM GUIDANCE

Part IX provides additional information applicable to assistance available under each particular HMA grant program. This section supplements the information provided in Parts I through VIII, and the unique project type guidance included in the Addendum. Part IX does not provide all of the information necessary to apply for funding through an HMA program and must be read in conjunction with other relevant sections of this guidance.

### A. Hazard Mitigation Grant Program

Most of the information that an Applicant or subapplicant needs to apply for an HMGP award or that a Grantee or subgrantee needs to manage a HMGP award is provided in Parts I through VIII, and Part X. This section contains supplemental guidance specific to HMGP.

#### A.1 Grantee Request for HMGP Funds

HMGP is authorized through a Presidential major disaster declaration for activities that provide a beneficial impact to the disaster area. A Governor may request that HMGP funding be available throughout the State or only in specific jurisdictions. For information regarding the declaration process and authorization of HMGP, see 44 CFR Part 206, Subpart B, and seek assistance from the appropriate FEMA Regional Office.

The Governor's Authorized Representative (GAR) serves as the grant administrator for all funds provided under HMGP 44 CFR Section 206.438 (d). The GAR responsibilities include providing technical advice and assistance to eligible subapplicants and/or subgrantees and ensuring that all potential subapplicants are aware of available assistance for the submission of all documents necessary for grant award.

#### A.2 State Administrative Plan

The State Administrative Plan is a procedural guide that details how the Grantee will administer HMGP. Grantees must have a current Administrative Plan approved by FEMA before receiving HMGP funds. The State Administrative Plan may become an annex or chapter of the State's overall emergency response and operations plan or comprehensive mitigation program strategy. At a minimum, the State Administrative Plan must:

- ◆ Designate the State agency that will act as Grantee;
- ◆ Identify the SHMO;
- ◆ Identify staffing requirements and resources, including a procedure for expanding staff temporarily following a disaster, if necessary;

- ◆ Establish procedures to guide implementation activities, including Grantee management costs and distribution of subgrantee management costs; and
- ◆ Comply with 44 CFR Section 206.437.

### A.2.1 Designation of Grantee and SHMO

Typically, the agency designated to act as Grantee manages the State responsibilities for Federal and State disaster assistance and is responsible for meeting the mitigation planning requirement. Although a single agency may administer the funding, the Governor may establish an interagency mitigation team to manage the State mitigation program.

The SHMO is typically responsible for managing the State's mitigation program, coordinating the mitigation team, and developing as well as implementing the hazard mitigation plan. States often rely on staff from the emergency management agency or other State agencies to augment the staff of the SHMO following a disaster.

### A.2.2 Staffing Requirements and the Mitigation Team

The State Administrative Plan should identify the positions and minimum number of personnel needed to implement HMGP. Key positions may include clerical, administrative, and financial management staff; program specialists to support mitigation planning and the implementation of mitigation activities and to conduct BCAs; and environmental planners. However, the organizational structure of the staff should remain flexible as it may be augmented as needed with emergency management agency staff, staff from other State agencies, or temporary staff or contractors hired to administer HMGP effectively. The State Administrative Plan should include a procedure for expanding staff resources and using HMGP management costs.

The mitigation team may include representatives of agencies involved with emergency management, natural resources, floodplain management, environmental issues and historic and archeological preservation, soil conservation, transportation, planning and zoning, housing and economic development, building regulations, infrastructure regulations or construction, public information, insurance, regional and local government, academia, business, and non-profit organizations. With the varied backgrounds and specialized expertise of members, the team creates interagency, interdisciplinary insight regarding risks and potential solutions. The interagency aspect of the team can diffuse political pressure on the Grantee agency and increase the availability of resources. The mitigation team may support the Grantee agency by:

- ◆ Developing a comprehensive mitigation strategy;
- ◆ Supporting development and implementation of the State Mitigation Plan;
- ◆ Communicating with local governments regarding State mitigation priorities;
- ◆ Building public and business/industry support for mitigation initiatives;

- ◆ Reviewing, assigning priority, and recommending mitigation actions for implementation; and
- ◆ Seeking funding for implementation of mitigation measures.

### A.2.3 Procedures to Guide Implementation Activities

The State Administrative Plan must establish procedures to:

- ◆ Identify and notify potential subapplicants of the availability of HMGP funding;
- ◆ Provide potential subapplicants information on the application process, program eligibility, and deadlines;
- ◆ Determine subapplicant eligibility;
- ◆ Provide information for environmental and floodplain management reviews in conformance with 44 CFR Parts 9 and 10;
- ◆ Process requests for advances of funds and reimbursements;
- ◆ Monitor and evaluate the progress and completion of funded mitigation activities;
- ◆ Review and approve cost overruns;
- ◆ Process appeals;
- ◆ Provide technical assistance as required to subgrantees;
- ◆ Comply with the administrative requirements of 44 CFR Parts 13 and 206;
- ◆ Comply with audit requirements of 44 CFR Section 13.26 and OMB Circular A-133; and
- ◆ Provide quarterly progress reports to FEMA on funded mitigation activities.

### A.2.4 Sliding Scale

The maximum amount of HMGP funding available is calculated using a "sliding scale" formula based on a percentage of the estimated total Federal assistance under the Stafford Act, excluding administrative costs for each Presidential major disaster declaration. Applicants with a FEMA-approved State or Tribal Standard Mitigation Plan may receive:

- ◆ Up to 15 percent of the first \$2 billion of the estimated aggregate amount of disaster assistance;
- ◆ Up to 10 percent for the next portion of the estimated aggregate amount more than \$2 billion and up to \$10 billion; and
- ◆ Up to 7.5 percent for the next portion of the estimated aggregate amount more than \$10 billion and up to \$35.333 billion.

Applicants with a FEMA-approved State or Indian Tribal Enhanced Mitigation Plan are eligible for HMGP funding not to exceed 20 percent of the estimated total Federal assistance under the Stafford Act, up to \$35.333 billion of such assistance, excluding administrative costs authorized for the disaster.

### A.2.5 Management Costs

The Grantee must amend its State Administrative Plan to include procedures for determining the reasonable amount or percentage of management costs that it will pass through to the subgrantee, as well as closeout and audit procedures before FEMA will obligate any management costs (see 44 CFR Sections 207.4(c) and 207.7(b)). The State will determine the amount, if any, of management costs it will pass through to the subgrantee. FEMA has not established any minimum for what constitutes a reasonable amount.

### A.2.6 Submission and Approval Deadlines

A State may forward a new or updated State Administrative Plan to FEMA for approval at any time. A State should review and update their plan annually and must review and update it following a Presidential major disaster declaration if required to meet current policy guidance or changes to the administration of the program. If a review indicates that there will be no changes to the current State Administrative Plan, the Grantee should notify FEMA of this within 90 days of the disaster declaration.

### A.3 HMGP Funding

FEMA will determine the funding it will make available for the HMGP by a lock-in, which will act as a ceiling for funds available to a Grantee, including its subgrantees. The level of HMGP funding available for a given disaster is based on a percentage of the estimated total Federal assistance under the Stafford Act, excluding administrative costs for each Presidential major disaster declaration, as described in 44 CFR Section 206.432(b) and [Part III.A](#) of this guidance. An initial estimate will be provided within 35 days of the disaster declaration or soon thereafter, in conjunction with calculation of the preliminary lock-in amount(s) for management costs.

The 6-month estimate is no longer the floor or a guaranteed minimum funding for HMGP. The 12-month lock-in is the maximum amount available. Prior to 12 months, total obligations are

limited to not more than **75 percent** of any current estimate, without the concurrence of the Regional Administrator or Federal Coordinating Officer (FCO) with Disaster Recovery Manager authority and the Office of the Chief Financial Officer (OCFO).

FEMA will establish the HMGP funding ceiling for each disaster at 12 months after the disaster declaration. This amount, also known as the “lock-in” value for HMGP, is the maximum that FEMA can obligate for eligible HMGP activities. The OCFO will continue to provide HMGP estimates prior to 12 months; however, these estimates will not represent a minimum or floor amount.

In rare circumstances, when a catastrophic disaster has resulted in major fluctuations of projected disaster costs, FEMA may, at the request of the Grantee, conduct an additional review 18 months after the disaster declaration. If the resulting review shows that the amount of funds available for HMGP is different than previously calculated, the final lock-in amount will be adjusted accordingly.

The Grantee must justify in writing to the Regional Administrator any requests to change the amount of the lock-in or perform subsequent reviews. The Regional Administrator will recommend to the Chief Financial Officer whether to approve the change. Changes to the lock-in will not be made without the approval of the Chief Financial Officer. The Chief Financial Officer may change the amount of the lock-in if it is determined that the projections used to determine the lock-in were inaccurate to such a degree that the change to the lock-in would be material, or for other reasons in his or her discretion that may reasonably warrant such changes. The Chief Financial Officer will not make such changes without consultation with the Grantee and the Regional Administrator.

### A.4 HMGP Management Costs

The amounts, allowable uses, and procedures for HMGP management costs are established in 44 CFR Part 207. Examples of allowable management costs are listed in [Part IV.D.1.3](#). HMGP management costs will be provided at a rate of 4.89 percent of the HMGP ceiling. The Grantee, in its State Administrative Plan, will determine the amount, if any, of management costs it will pass through to the subgrantee (see [Part IX.A.2.5](#)). Management costs are provided outside of and separate from the HMGP ceiling amount. There is no additional cost-share requirement for HMGP management costs.

FEMA will establish the amount of funds that it will make available for management costs by a lock-in, which will act as a ceiling for management cost funds available to a Grantee, including its subgrantees. FEMA will determine, and provide to the Grantee, management cost lock-ins at 30 days (or soon thereafter), at 6 months, and at 12 months from the date of declaration, or upon the calculation of the final HMGP lock-in ceiling, whichever is later.

#### THE HMGP FINAL LOCK-IN

Because lock-in estimates are subject to change, FEMA will not obligate more than 75 percent of any estimate before the final lock-in is calculated.

Total State Management Cost (SMC)  
(4.89% of Total Available HMGP):

➔ Prior to 12 Months:

FEMA obligates up to 75 percent of total HMGP funding separate from SMC

➔ At 12 Months:

FEMA establishes the full HMGP ceiling amount

➔ At 18 Months:

For a catastrophic disaster, the final lock-in amount is adjusted upon

Upon receipt of the initial 30-day lock-in, Grantees may request that FEMA obligate 25 percent of the estimated lock-in amount(s) to the Grantee. No later than 120 days after the date of declaration, the Grantee must submit documentation to support costs and activities for which the projected lock-in for management cost funding will be used. In extraordinary circumstances, FEMA may approve a request by a Grantee to submit supporting documentation after 120 days. FEMA will work with the Grantee to approve or reject the documentation submitted within 30 days of receipt. If the documentation is rejected, the Grantee will have 30 days to resubmit it for reconsideration and approval. FEMA will not obligate any additional management costs unless the Grantee's documentation is approved.

The documentation for management costs must include:

- ◆ A description of activities, personnel requirements, and other costs for which the Grantee will use the management cost funding provided under this part;
- ◆ The Grantee's plan for expending and monitoring the funds provided under this part and ensuring sufficient funds are budgeted for grant closeout; and
- ◆ An estimate of the percentage or amount of pass-through funds for management costs provided under this part that the Grantee will make available to subgrantees, and the basis, criteria, or formula for determining the subgrantee percentage or amount (e.g., number of projects, complexity of projects, etc.).

Upon receipt of the 6-month management costs lock-in, and if the Grantee can justify a bona fide need for additional management costs, the Grantee may submit a request to the Regional Administrator for an interim obligation. Any interim obligation must be approved by the Chief Financial Officer and will not exceed an amount equal to 10 percent of the 6-month lock-in amount, except in extraordinary circumstances.

The Grantee must justify in writing to the Regional Administrator any requests to change the amount of the lock-in or the cap, extend the time period before lock-in, or request an interim obligation of funding at the time of the 6-month lock-in adjustment. The Regional Administrator will recommend to the Chief Financial Officer whether to approve the extension, change, or interim obligation. Extensions, changes to the lock-in, or interim obligations will not be made without the approval of the Chief Financial Officer.

For additional information on HMGP management costs see 44 CFR Part 207.

### **A.5 Eligible Subapplicants**

In addition to the eligible subapplicants described in [Part IV.A.1](#), PNP organizations may act as the subapplicant for HMGP. PNP organizations or institutions that own or operate a PNP facility are defined in 44 CFR Section 206.221(e). Each subapplication from a PNP must include either:

- ◆ An effective ruling letter from the IRS granting tax exemption under Section 501(c), (d), or (e) of the Internal Revenue Code of 1954, as amended; or
- ◆ State certification, under State law, of non-profit status.

A qualified conservation organization, as defined at 44 CFR Section 80.3(h), is the only PNP organization eligible to apply for property acquisition and demolition or relocation projects.

### **A.6 Submission of HMGP Subapplications**

The Grantee must submit all HMGP subapplications to FEMA within 12 months of the date of the disaster declaration. Upon written request and justification from the Grantee, FEMA may extend the application submission timeline in 30- to 90-day increments not to exceed a total extension of 180 days, in the event of extraordinary conditions. For additional information see 44 CFR Section 206.436. Additional time may be available based on meeting the criteria of the Stafford Act, Section 301. To qualify, the requestor must justify how the event for which the additional time is needed created the situation in which the Grantee cannot meet the regulatory administrative deadline.

Extensions beyond regulatory time limits will be considered on a case-by-case basis. Stafford Act Section 301 provides relief for the rare circumstance when the magnitude of the event for which the extension is requested prevents the Grantee from meeting program administrative requirements. The Grantee must make the request to the Flood Insurance and Mitigation Administration Associate Administrator by submitting through the Regional Administrator, or if there is a Joint Field Office submit through the FCO. The Regional Administrator or FCO will provide his or her comments or concurrence and forward the request. The maximum time available is 90 days. The request must describe the conditions that preclude the Grantee from meeting the administrative requirements and must include a summary of current status, planned actions to meet the extension, and any resources that may be required. FEMA will consider the request and will provide a decision within 30 days.

### **A.7 Grant Cost-share Requirements**

HMGP grants are required to have at least a 25 percent non-Federal cost share.

The Grantee may choose to meet the cost-share requirement by ensuring a minimum 25 percent non-Federal share for the overall HMGP grant award, rather than on an individual activity basis. Grantees choosing this option should develop a cost-share strategy as part of their Administrative Plan for review and approval by FEMA.

If an Applicant chooses to fund individual projects with non-Federal cost shares below 25 percent, the Applicant must notify FEMA. If an Applicant intends to implement this approach, the State Administrative Plan must explain how the Applicant will:

- ◆ Apply this approach in a fair and impartial manner to all subapplications;



- ◆ Monitor the cost share for the overall grant throughout the POP; and
- ◆ Address any cost-share shortfalls that may occur during the POP and at closeout.

If, at closeout, the non-Federal cost share of the grant is less than 25 percent of the total amount, FEMA will recoup the amount of Federal funds needed to bring the cost share into compliance.

### A.8 Post-Disaster Code Enforcement Projects

HMGP will fund extraordinary post-disaster code enforcement costs. Extraordinary needs associated with enforcing local building codes during post-disaster reconstruction may include the performance of building department functions, such as building inspections, and the performance of Substantial Damage determinations under the NFIP.

A post-disaster code enforcement project may be funded through HMGP if:

- ◆ The Grantee assesses existing building code and/or zoning and land use management regulations and determines that they adequately address the identified natural hazard risks. The Grantee determines that the local community has adopted a building code consistent with a recent edition of the International Code Series, conforms to State-model or State-mandated building codes, and, if the local community participates in the NFIP, has local floodplain management measures in place that meet the minimum requirements for participation in the NFIP;
- ◆ The Grantee evaluates the building department and determines that its organization, funding, and enforcement and inspection processes are sufficient to ensure proper enforcement of all applicable laws and ordinances during normal operations; and
- ◆ The Grantee evaluates the building department and identifies deficiencies, and the local community agrees to address any deficiencies identified in this evaluation as a condition of receiving the subgrant. This agreement can be a simple statement attached to the evaluation and should include an implementation schedule that is mutually satisfactory to the Grantee, the subgrantee, and FEMA. The agreement should include an acknowledgment by the subgrantee that failure to meet the agreed upon implementation schedule can result in the loss of all current and/or future building department assistance used to support post-disaster operations.

The State's assessment can be accomplished through various mechanisms. Any assessment should include a discussion of the community's compliance with the NFIP. Suggested approaches include (but are not limited to):

- ◆ Employing a mutual-aid agreement among communities to use other local building officials;
- ◆ Entering into a contractual agreement with a State or regional government entity that is well versed in building codes and proper administration of a building department;

- ◆ Entering into a contractual agreement with one of the model building code organizations;
- ◆ Employing building code experts temporarily;
- ◆ Deploying FEMA mitigation staff knowledgeable of building codes and proper building department administration. Former local building officials can often provide the requisite knowledge; or
- ◆ Requesting the Hazard Mitigation Technical Assistance Program.

HMGP funds only extraordinary post-disaster code enforcement costs. Extraordinary post-disaster code enforcement costs are the costs to ensure disaster-resistant codes are implemented during disaster reconstruction after normal costs of the building department are deducted. Costs might include staffing, equipment purchases, office rental, transportation, supplies, and similar expenses. Extraordinary costs equal disaster costs minus normal costs and cost of fees or fee waivers.

- ◆ Disaster costs can be determined by the payroll and office expenses during the period of assistance. If the subapplicant must purchase new equipment, only the equivalent rental cost of this equipment for the period of assistance is considered a disaster cost. The revenues generated by fees for inspections or permits, whether collected or not, must be deducted;
- ◆ Normal costs can be determined from a monthly average of payroll and office expenses during the most recent 12-month period that does not include Federal, State, or local disaster declarations; and
- ◆ If a community has already received Federal assistance for meeting emergency building inspection needs (such as determining habitability), these costs must be deducted in determining extraordinary costs.

### A.9 Advance Assistance

Advance Assistance is authorized by the SRIA, which allows advancing up to 25 percent of the HMGP ceiling or \$10 million to Applicants, whichever is less. The purpose of Advance Assistance is to provide States and Tribes resources to develop mitigation strategies and obtain data to prioritize, select, and develop complete HMGP applications in a timely manner. FEMA expects States and Tribes that receive Advance Assistance to submit complete project applications up to or over the HMGP ceiling by the application deadline.

#### ADVANCE ASSISTANCE

FEMA may provide up to 25 percent (with a limit of \$10 million) of the amount of estimated HMGP costs to States and Indian Tribal governments in advance of incurring eligible costs.

FEMA expects States that receive Advance Assistance to submit complete project applications up to or over the available HMGP ceiling by the final HMGP project application deadline.

FEMA will continue to implement Advance Assistance on a pilot basis for any State or Indian Tribal government having a declaration with an open application period. Advance Assistance is not automatic. States and Tribes may request Advance Assistance by submitting an HMGP application form to the Regional Mitigation Division Director. The application must identify the proposed use of the funds, including costs in sufficient detail for each proposed activity and milestones for submitting completed HMGP applications to FEMA. Advance Assistance is subject to the HMGP cost-share requirements and SFM (i.e., FEMA will not obligate funds until the State has an immediate need for the funds). Advance Assistance is part of the HMGP ceiling amount.

- States may use Advance Assistance for the following activities:
- ◆ Obtain staff or resources to develop a cost-share strategy and identify potential match funding;
  - ◆ Evaluate facilities or areas to determine appropriate mitigation actions;
  - ◆ Incorporate environmental considerations early into program decisions;
  - ◆ Collect data for BCAs, environmental compliance and other program requirements;
  - ◆ Scope and prioritize hazard mitigation projects (including State coordination of local projects) to incorporate sustainability, resilience, and renewable building concepts;
  - ◆ Develop hazard mitigation projects, including engineering design and feasibility actions;
  - ◆ Incorporate SFM principles into mitigation project work schedules and budgets that will facilitate compliance with the legislative requirement to expend obligated funds within 24 months;
  - ◆ Conduct meetings, outreach, and coordination with potential subapplicants and community residents to identify potential participants for property acquisition and demolition or relocation projects;
  - ◆ Conduct engineering design and feasibility studies for larger or complex community drainage projects or critical facility retrofits (such as for phased projects);
  - ◆ Conduct hydrologic and hydraulic studies for unmapped flood zones or Approximate A Zone areas where communities propose to submit hazard mitigation projects;
  - ◆ Perform professional cost estimation services to aid consistency in project budgeting across subapplications;
  - ◆ Rectify data consistency needs for other project application categories, such as EHP, cost sharing mechanisms, and work schedules; and
  - ◆ Complete necessary documents for deed restricting properties such as acknowledgement of voluntary participation, or Model Acknowledgement of Conditions for Mitigation of Property in a Special Flood Hazard Area with FEMA Grant Funds for property acquisition projects.

Requirements and Deliverables Associated with Advance Assistance and Resulting HMGP Applications may include:

- ◆ Documentation of Advance Assistance Accomplishments: Applicants must submit documentation to FEMA to support that they accomplished all activities listed in their Advance Assistance application.
- ◆ Submission of Projects up to the HMGP Ceiling: FEMA expects States that receive Advance Assistance to submit complete project applications up to or over the available HMGP ceiling by the final HMGP project application deadline.
- ◆ Accounting for Use of Advance Assistance Funds: For accounting and audit purposes, the State must submit sufficient financial detail to demonstrate that no costs claimed under Advance Assistance are duplicated in subsequent HMGP project applications or in State Management Cost budgets.
- ◆ Documentation of Environmental Considerations: The Applicant must document that effects to environmental and historic resources were considered early in the planning and project scoping processes. This requirement is in addition to ensuring environmental compliance.

For additional information on Advance Assistance, please see [Appendix L](#), Advance Assistance Optional Application.

### A.10 Phased Projects

In general, sufficient technical information is provided by the Applicant or subapplicant to allow FEMA to make an eligibility determination on a subapplication. The costs to obtain this information are generally eligible as pre-award costs (See [Part V.E.2](#) for more information). However, in rare circumstances it is beyond the subapplicant's technical and financial resources to provide the complete technical information required for a full eligibility or environmental review of a complex project. The Applicant and FEMA may provide technical assistance to the subapplicant to develop this complete body of technical data by approving a subapplication to complete a Phase I design, engineering, environmental, or feasibility study. The Phase I study provides FEMA with a technical body of information mutually concurred on by the subapplicant, the Applicant, and FEMA to determine project eligibility. If the results of the Phase I review indicate that the project meets HMGP requirements, the project would then be eligible for funding for construction under a Phase II approval. Phase I study funding is part of the project's total estimated cost, and is subject to HMGP cost-share requirements.

The use of a Phase I study should be limited to complex projects that require technical or environmental data beyond the scope of that generally required for a typical HMGP project. The following provides guidelines and outlines the process for selecting projects for Phase I/Phase II project approval.

### A.10.1 Pre-Screening Process

The project must meet the following pre-screening criteria for a conditional Phase I approval in the following sequence:

- ◆ State or Indian Tribal (Standard or Enhanced) Mitigation Plan – The proposed project must be in conformance with the State or Tribal (Standard or Enhanced) Mitigation Plan;
- ◆ Justification for Selection of the Proposed Project – Justification must be provided for the selection of the proposed solution after consideration of a range of options;
- ◆ Potential Cost-effectiveness – The project demonstrates potential cost-effectiveness based on a preliminary assessment of anticipated project benefits and cost. The subapplicant must be aware that this preliminary assessment is solely for the purpose of the Phase I pre-screening process and is not the final cost-effectiveness determination;
- ◆ EHP Review – Initial environmental review to identify major EHP compliance issues. The Phase I study is categorically excluded from NEPA review; and
- ◆ Hydrologic and Hydraulic or Other Relevant Technical Data – The subapplicant provides available hydrologic and hydraulic data based on existing models and other relevant technical data, as appropriate.

### A.10.2 Phase I Conditional Approval

The Applicant and FEMA may approve projects meeting the above pre-screening requirements for technical assistance under a Phase I conditional approval. FEMA and the Applicant will coordinate closely to ensure mutual concurrence on all data and technical information as the Phase I technical review process proceeds. The sequence for the process is as follows:

- ◆ Hydrologic and Hydraulic or Other Relevant Technical Data – If appropriate, the Applicant and FEMA will review the hydrologic and hydraulic or other technical data provided by the subapplicant;
- ◆ Preliminary Engineering Design – Based upon the technical data, the subapplicant develops a preliminary engineering design and layout and cost estimates with ad-hoc technical assistance from the Applicant and FEMA;
- ◆ EO 11988 – If applicable, based upon the technical data and revised engineering design, the project must demonstrate compliance with floodplain management requirements under this EO. If a FIRM amendment or revision will be necessary, the Applicant and FEMA will provide the subapplicant with technical assistance to meet this requirement;
- ◆ Refinement of the Cost-Effectiveness Assessment – Based upon the revised design and cost estimates, the Applicant and FEMA will refine the preliminary assessment of cost-effectiveness conducted in the Phase I pre-screening process. This will result in a final

BCR to evaluate the project's cost-effectiveness, which will include all the project costs including Phase I, and

- ◆ EHP Review – The Applicant and FEMA will conduct a review of the revised project design to ensure EHP compliance. The project will meet EHP requirements before Phase II approval.

### A.10.3 Phase II Approval-Construction Process

If the project is determined to be eligible, technically feasible, cost-effective, and compliant with EHP requirements under the Phase I technical review, the project may then be approved for construction under Phase II.

### A.11 The 5 Percent Initiative

Some mitigation activities are difficult to evaluate using FEMA-approved cost-effectiveness methodologies. Up to 5 percent of the total HMGP funds may be set aside by the Grantee to pay for such activities. These funds are not eligible to be used in situations where the mitigation activities can be evaluated under FEMA-approved cost-effectiveness methodologies but do not meet the required BCA threshold.

To be eligible for the 5 Percent Initiative, activities must:

- ◆ Be difficult to evaluate against traditional program cost-effectiveness criteria;
- ◆ Comply with all applicable HMGP eligibility criteria as well as with Federal, State, and local laws and ordinances;
- ◆ Be consistent with the goals and objectives of the State or Indian Tribal (Standard or Enhanced) and local or Tribal mitigation plans; and
- ◆ Be submitted for review with a narrative that indicates that there is a reasonable expectation that future damage or loss of life or injury will be reduced or prevented by the activity.

Activities that might be funded under the 5 Percent Initiative include:

- ◆ The use, evaluation, and application of new, unproven mitigation techniques, technologies, methods, procedures, or products;
- ◆ Equipment and systems for the purpose of warning citizens of impending hazards;
- ◆ Purchase of generators or related equipment, such as generator hook-ups;
- ◆ Hazard identification or mapping and related equipment for the implementation of mitigation activities;
- ◆ GIS software, hardware, and data acquisition whose primary aim is mitigation;

- ◆ Public awareness or education campaigns about mitigation; and
- ◆ Evaluation of model building codes in support of future adoption and/or implementation.

#### **A.11.1 Availability of Additional Funds for Tornado Mitigation**

FEMA allows increasing the 5 Percent Initiative amount up to 10 percent for a Presidential major disaster declaration for tornadoes and high winds at the discretion of the Grantee. The increased initiative funding can be used for activities that address the unique hazards posed by tornadoes. To qualify for this funding, the Grantee must, in its State or Indian Tribal (Standard or Enhanced) Mitigation Plan, or other comprehensive plan, address warning of citizens (ensuring 90 percent coverage), further the safe room concept in construction or rehabilitation of residences or commercial structures, and address sheltering in mobile home parks. The plan, also, must explain how the Grantee will implement an ongoing public education program so that citizens are aware of warning systems and their meaning and the availability of in-home shelter designs. Similar information should be included in the subgrantee's local or Indian Tribal mitigation plan.

#### **A.12 Appeal Process**

An eligible subapplicant, subgrantee, or Grantee may appeal any FEMA determination regarding subapplications or applications submitted for funding under HMGP. FEMA will only consider appeals in writing that contain documentation that justifies the request for reconsideration. The appeal should specify the monetary figure in dispute and the provisions in Federal law, regulation, or policy with which the appellant believes the initial action was inconsistent.

Whether the appeal is originated by the Grantee or by a subapplicant/subgrantee, the appeal must be submitted in writing to the Regional Administrator by the Grantee. The Regional Administrator is the decision-maker on first appeals. If there is an appeal of the Regional Administrator's decision on any first appeal, the Assistant Administrator for Mitigation is the decision-maker for the second appeal. In some cases the appeal may involve highly technical issues. In these cases, FEMA may consult independent scientific or technical experts on the subject under appeal.

Appellants must make appeals within 60 days after receipt of a notice of the action that is being appealed. The Grantee must forward any appeal from a subapplicant/subgrantee with a written recommendation to the Regional Administrator within 60 days of receipt. Within 90 days following the receipt of an appeal, FEMA will notify the Grantee in writing of the disposition of the appeal or of the need for additional information.

If additional information is needed, FEMA will determine a date by which the information must be provided. Within 90 days following the receipt of the requested additional information (or 90 days after the information was due), FEMA will notify the Grantee in writing of the disposition of the appeal.

FEMA will provide its decision to the Grantee in writing. If the decision is to grant the appeal, the Regional Administrator will take the appropriate action.

Additional information regarding appeals can be found at 44 CFR Section 206.440.



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## B. Pre-Disaster Mitigation Program

Most of the information that an Applicant or subapplicant needs to apply for a PDM award or that a Grantee or subgrantee needs to manage a PDM award is provided in Parts I through VIII, and Part X. This section contains supplemental guidance specific to the PDM Program.

### B.1 Allocation

FEMA will allocate funds for eligible projects to States and Territories consistent with applicable, statutory base and/or maximum allocations in the authorizing and appropriation laws. FEMA will administer the program as directed by Congress.

### B.2 Small Impoverished Communities

Grants awarded to small impoverished communities may receive a Federal cost share of up to 90 percent of the total amount approved under the grant award to implement eligible approved activities in accordance with the Stafford Act. A small impoverished community must:

- ◆ Be a community of 3,000 or fewer individuals identified by the State as a rural community that is not a remote area within the corporate boundaries of a larger city;
- ◆ Be economically disadvantaged, with residents having an average per capita annual income not exceeding 80 percent of the national per capita income, based on best available data. For the most current information, go to <http://www.bea.gov>;
- ◆ Have a local unemployment rate that exceeds by 1 percentage point or more the most recently reported, average yearly national unemployment rate. For the most current information, go to <http://www.bls.gov/cgi/cag/us.htm>; and
- ◆ Meet other criteria required by the Applicant in which the community is located.

Applicants must certify and provide documentation of the community status with the appropriate subapplication to justify the 90 percent cost share. If documentation is not submitted with the subapplication, FEMA will provide no more than the standard 75 percent of the total eligible costs.

### B.3 Information Dissemination

Under the PDM Program, subapplicants may include eligible information dissemination activities in their project or planning subapplication. Eligible information dissemination activities include public awareness and education (brochures, workshops, videos, etc.) that directly relate to the eligible mitigation activity proposed in the subapplication. Information dissemination activities are limited to a maximum of 10 percent of the total cost of a subapplication.

## B.4 Applicant Ranking of Subapplications

Applicants must rank each subapplication included in their grant application in order of their priority for funding. Each subapplication must be assigned a unique rank in eGrants. Applicants must provide an explanation for the rank given to each subapplication and demonstrate how it is consistent with their State or Tribal (Standard or Enhanced) Mitigation Plan.

## B.5 Selection

FEMA will identify subapplications for further review based on Applicant rank. FEMA may identify a subapplication for further review out of rank order based on considerations such as program priorities, available funds, and policy factors.

FEMA will notify Applicants whose subapplications are identified for further review; however, this notification and conducting FEMA-requested pre-award activities are not considered notification or guarantee of a grant award.

## C. Flood Mitigation Assistance Program

Most of the information that an Applicant or subapplicant needs to apply for an FMA award or that a Grantee or subgrantee needs to manage an FMA award is provided in Parts I through VII, and Part IX. This section contains supplemental guidance specific to FMA.

### C.1 Eligible Properties

Properties included in a project subapplication for FMA funding must be NFIP-insured at the time of the application submittal. Flood insurance must be maintained through completion of the mitigation activity and for the life of the structure.

Residential or non-residential properties currently insured with the NFIP are eligible to receive FMA funds. In order to receive an increased Federal cost share, properties must meet one of the definitions below (consistent with the legislative changes made in the Biggert-Waters Flood Insurance Reform Act of 2012):

- ◆ **A severe repetitive loss property** is a structure that:
  - (a) Is covered under a contract for flood insurance made available under the NFIP; and
  - (b) Has incurred flood related damage –
    - (i) For which 4 or more separate claims payments have been made under flood insurance coverage with the amount of each such claim exceeding \$5,000, and with the cumulative amount of such claims payments exceeding \$20,000; or
    - (ii) For which at least 2 separate claims payments have been made under such coverage, with the cumulative amount of such claims exceeding the market value of the insured structure.
- ◆ **A repetitive loss property** is a structure covered by a contract for flood insurance made available under the NFIP that:
  - (a) Has incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and
  - (b) At the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

### C.2 Repetitive Loss Strategy

To be eligible for an increased Federal cost share, a FEMA-approved State or Tribal (Standard or Enhanced) Mitigation Plan that addresses repetitive loss properties must be in effect at the time of grant award and the property that is being submitted for consideration must be a repetitive loss property. Guidance on addressing repetitive loss properties can be found in the *State Multi-Hazard Mitigation Planning Guidance* and in 44 CFR Section 201.4(c)(3)(v). The Repetitive

Loss Strategy must identify the specific actions the State has taken to reduce the number of repetitive loss properties, which must include severe repetitive loss properties, and specify how the State intends to reduce the number of such repetitive loss properties. In addition, the hazard mitigation plan must describe the State's strategy to ensure that local jurisdictions with severe repetitive loss properties take actions to reduce the number of these properties, including the development of local or Tribal mitigation plans. For information about the Repetitive Loss Database, see [Part VII, D.2.1](#).

### C.3 Cost Sharing

Consistent with the legislative changes made in the Biggert-Waters Flood Insurance Reform Act of 2012, cost-share availability under the FMA program depends on the type of properties included in the grant. For example, severe repetitive loss properties may receive up to 100 percent Federal funding and repetitive loss properties may receive up to 90 percent.

- ◆ In the case of mitigation activities to severe repetitive loss structures:
  - FEMA may contribute up to 100 percent Federal funding of all eligible costs, if the activities are technically feasible and cost-effective; or
  - The expected savings to the NFIF from expected avoided damages through acquisition or relocation activities, if the activities will eliminate future payments from the NFIF for severe repetitive loss structures through an acquisition or relocation activity.
- ◆ In the case of mitigation activities to repetitive loss structures, FEMA may contribute up to 90 percent Federal funding of all eligible costs.
- ◆ In the case of all other mitigation activities, FEMA may contribute up to 75 percent Federal funding of all eligible costs.

Structures with varying cost-share requirements can be submitted in one application. Applicants must provide documentation in the project application showing how the final cost share was derived. The final cost share will be entered into the eGrants system and documentation showing how the final cost share was derived must be attached to the application.

### C.4 Applicant Ranking of Subapplications

Applicants must rank each subapplication included in their grant application in order of priority for funding. Each subapplication must be assigned a unique rank in eGrants. Applicants must provide an explanation for the rank given to each subapplication and demonstrate how it is consistent with their State or Tribal (Standard or Enhanced) Mitigation Plan.

### C.5 Selection

FEMA will identify subapplications for further review based on a number of criteria, including but not limited to: savings to the NFIF, applicant rank, and property status (e.g., repetitive loss

property, severe repetitive loss property). FEMA also may identify a subapplication for further review out of rank order based on considerations such as program priorities, available funds, and other factors.

FEMA will notify Applicants whose subapplications are identified for further review; however, this notification and conducting FEMA-requested pre-award activities are not considered notification or guarantee of a grant award.

## PART X. APPENDICES

### A. Acronyms

ABFE	Advisory Base Flood Elevation
ADA	Americans with Disabilities Act
ADR	Alternative Dispute Resolution
ASCE	American Society of Civil Engineers
BCA	Benefit-Cost Analysis
BCR	Benefit-Cost Ratio
BFE	Base Flood Elevation
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
CBRA	Coastal Barrier Resource Act
CBRS	Coastal Barrier Resource System
CDBG	Community Development Block Grant
CFDA	Catalog of Federal Domestic Assistance
CFR	Code of Federal Regulations
CRS	Community Rating System
DHS	Department of Homeland Security
DOB	Duplication of Benefits
DOI	Department of the Interior
DOP	Duplication of Programs
DOT	Department of Transportation
eGrants	Electronic Grants
EHP	Environmental Planning and Historic Preservation
EO	Executive Order
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FCC	Federal Coordinating Officer
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration

FIMA	Flood Insurance and Mitigation Administration		
FIRM	Flood Insurance Rate Map	PDM	Pre-Disaster Mitigation
FIS	Flood Insurance Study	PNP	Private Non-profit
FMA	Flood Mitigation Assistance	POC	Point of Contact
FY	Fiscal Year	POP	Period of Performance
GAR	Governor's Authorized Representative	SBA	Small Business Administration
GIS	Geographic Information System	SEI	Structural Engineering Institute
GSTF	Greatest Savings to the Fund	SF	Standard Form
Hazus	Hazards United States	SFHA	Special Flood Hazard Area
HMA	Hazard Mitigation Assistance	SFM	Strategic Funds Management
HMGP	Hazard Mitigation Grant Program	SHMO	State Hazard Mitigation Officer
HUD	U.S. Department of Housing and Urban Development	SOW	Scope of Work
HVAC	Heating, Ventilation, and Air Conditioning	SRIA	Sandy Recovery Improvement Act of 2013
IBC	International Building Code	Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
ICC	Increased Cost of Compliance	TB	Technical Bulletin
IRS	Internal Revenue Service	URA	Uniform Relocation Assistance and Real Property Acquisition Act of 1970
ITP	Independent Third Party	USACE	U.S. Army Corps of Engineers
NAP	Non-Insured Crop Disaster Assistance Program	U.S.C.	United States Code
NEMIS	National Emergency Management Information System	USDA	U.S. Department of Agriculture
NEPA	National Environmental Policy Act	USFA	U.S. Fire Administration
NEIA	National Flood Insurance Act	USFS	U.S. Forest Service
NFIF	National Flood Insurance Fund	USFWS	U.S. Fish and Wildlife Service
NFIP	National Flood Insurance Program	USGS	U.S. Geological Survey
NFPA	National Fire Protection Association	WUI	Wildland-Urban Interface Area
NHPA	National Historic Preservation Act		
NOAA	National Oceanic and Atmospheric Administration		
NPS	National Park Service		
NRCS	Natural Resources Conservation Service		
O&M	Operations and Maintenance		
OMB	Office of Management and Budget		
OPA	Otherwise Protected Area		
PARS	Payment and Reporting System		

FIMA	Flood Insurance and Mitigation Administration		
FIRM	Flood Insurance Rate Map		
FIS	Flood Insurance Study		
FMA	Flood Mitigation Assistance		
FY	Fiscal Year		
GAR	Governor's Authorized Representative		
GIS	Geographic Information System		
GSTF	Greatest Savings to the Fund		
Hazus	Hazards United States		
HMA	Hazard Mitigation Assistance		
HMGP	Hazard Mitigation Grant Program		
HUD	U.S. Department of Housing and Urban Development		
HVAC	Heating, Ventilation, and Air Conditioning		
IBC	International Building Code		
ICC	Increased Cost of Compliance		
IRS	Internal Revenue Service		
ITP	Independent Third Party		
NAP	Non-Insured Crop Disaster Assistance Program		
NEMIS	National Emergency Management Information System		
NEPA	National Environmental Policy Act		
NEIA	National Flood Insurance Act		
NFIF	National Flood Insurance Fund		
NFIP	National Flood Insurance Program		
NFPA	National Fire Protection Association		
NHPA	National Historic Preservation Act		
NOAA	National Oceanic and Atmospheric Administration		
NPS	National Park Service		
NRCS	Natural Resources Conservation Service		
O&M	Operations and Maintenance		
OMB	Office of Management and Budget		
OPA	Otherwise Protected Area		
PARS	Payment and Reporting System		

## B. Glossary

**Applicant:** The entity, such as a State, Territory, or Indian Tribal government, applying to FEMA for a grant that will be accountable for the use of the funds. Once grant funds are awarded, the Applicant becomes the “Grantee.”

**Base Flood:** A flood having a 1 percent chance of being equaled or exceeded in any given year.

**Base Flood Elevation (BFE):** The elevation shown on the Flood Insurance Rate Map (FIRM) for Zones AE, AH, A1-A30, AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO, VI-V30, and VE that indicates the water surface elevation resulting from a flood that has a 1 percent chance of equaling or exceeding that level in any given year.

**Benefit-Cost Analysis (BCA):** A quantitative procedure that assesses the cost-effectiveness of a hazard mitigation measure by taking a long-term view of avoided future damages as compared to the cost of a project.

**Benefit-Cost Ratio (BCR):** A numerical expression of the cost-effectiveness of a project calculated as the net present value of total project benefits divided by the net present value of total project costs.

**Biomass:** Biological material derived from living, or recently living organisms.

**Building:** A structure with two or more outside rigid walls and a fully secured roof that is affixed to a permanent site; a manufactured home or a mobile home without wheels, built on a chassis and affixed to a permanent foundation, that is regulated under the community’s floodplain management and building ordinances or laws. “Building” does not mean a gas or liquid storage tank or a recreational vehicle, park trailer, or other similar vehicle.

**Clean-site certification:** A letter from the appropriate local, State, Indian Tribal, or Federal entity determining that no further remedial action is required to protect human health or the environment.

**Coastal Barrier Resource System (CBRS):** A geographic unit designated to serve as a protective barrier against forces of wind and tidal action caused by coastal storms and serving as habitat for aquatic species. Congress restricted Federal spending and assistance for development-related activities within CBRS units to protect them from further development. Federal flood insurance is unavailable in these areas. CBRS units are identified on FEMA FIRMs.

**Coastal High Hazard Area:** An area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources.

**Combustible material:** Any material that, in the form in which it is used and under the conditions anticipated, will ignite and burn or will add appreciable heat to an ambient fire.

**Community Rating System (CRS):** A program developed by FEMA to provide incentives for those communities in the NFIP that have gone beyond the minimum floodplain management requirements to develop extra measures to provide protection from flooding.

**Cost-effectiveness:** Determined by a systematic quantitative method for comparing the costs of alternative means of achieving the same stream of benefits for a given objective. The benefits in the context of hazard mitigation are avoided future damages and losses. Cost-effectiveness is determined by performing a BCA.

**Cost share:** The portion of the costs of a federally assisted project or program not borne by the Federal Government.

**Defensible space:** An area that is either natural or manmade, where material capable of allowing a fire to spread unchecked has been treated, cleared, or modified to slow the rate and intensity of an advancing wildfire and to create an area for fire-suppression operations to occur.

**Dwelling:** A building designed for use as a residence for no more than four families or a single-family unit in a building under a condominium form of ownership.

**Elevated Building:** A building that has no basement and a lowest floor that is elevated to or above the BFE by foundation walls, shear walls, posts, piers, pilings, or columns. Solid perimeter foundations walls are not an acceptable means of elevating buildings in Zones V and VE.

**Environmental Benefits:** Environmental benefits are direct or indirect contributions that ecosystems make to the environment and human populations. For FEMA BCA, certain types of environmental benefits may be realized when homes are removed and land is returned to open space uses. Benefits may include flood hazard reduction, an increase in recreation and tourism; enhanced aesthetic value; and improved erosion control, air quality, and water filtration.

**Equipment:** Tangible, nonexpendable, personal property having a useful life of more than 1 year and an acquisition cost of \$5,000 or more per unit. A Grantee may use its own definition of equipment provided such definition would at least include all equipment defined above.

**Federal Agency:** Any department, independent establishment, Government corporation, or other agency of the executive branch of the Federal Government, including the U.S. Postal Service, but not the American National Red Cross.

**Federal Cognizant Agency:** The Federal agency responsible for reviewing, negotiating, and approving cost allocation plans or indirect cost proposals developed on behalf of all Federal agencies. The OMB publishes a list of Federal Cognizant Agencies.

**Firebreak:** a strip of cleared land that provides a gap in vegetation or other combustible material that is expected to slow or stop the progress of a wildfire.

**Fire-proofing:** Removal or treatment of fuels to reduce the danger of fires igniting or spreading. (e.g., fire-proofing roadsides, campsites, structural timber).

**Fire-resistant material:** Material that has a property that prevents or retards the passage of excessive heat, hot gases, or flames under conditions of use.

**Fire retardant:** A chemical applied to lumber or other wood products to slow combustion and flame spread.

**Fire Severity Zone:** Three concentric zones around a building used to determine the most effective design for defensible space.

**Flammability:** The relative ease with which fuels ignite and burn regardless of the quantity of the fuels.

**Flood Insurance Rate Map (FIRM):** Official map of a community on which FEMA has delineated both the special hazard areas and the risk premium zones applicable to the community.

**Floodplain:** Any land area that FEMA has determined has at least a 1 percent chance in any given year of being inundated by floodwaters from any source.

**Floodplain Management:** The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to, emergency preparedness plans, flood control works, and floodplain management regulations.

**Floodway:** The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities regulate development in these floodways to ensure that there are no increases in upstream flood elevations.

**Freeboard:** Freeboard is a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. "Freeboard" tends to compensate for the many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

**Fuel break:** A natural or manmade change in fuel characteristics that affects fire behavior so that fires burning into them can be more readily controlled.

**Fuel condition:** Relative flammability of fuel as determined by fuel type and environmental conditions.

**Governor's Authorized Representative (GAR):** The individual, designated by the Governor, who serves as the grant administrator for all funds provided under HMGP; the person empowered by the Governor to execute, on behalf of the State, all necessary documents for disaster assistance.

**Grant:** An award of financial assistance for a specified purpose by the Federal government to an eligible Grantee.

**Grantee:** The entity, such as a State, Territory, or Indian Tribal government to which a grant is awarded and that is accountable for the use of the funds provided. The Grantee is the entire legal entity even if only a particular component of the entity is designated in the grant award document.

**Green Open Space:** Green open space is land that does not directly touch a natural body of water, such as a river, lake, stream, creek, or coastal body of water.

**Hazardous fuels reduction:** An area strategically located in relation to predicted fire hazard and occurrence where the vegetation has been permanently modified or replaced so that fires burning into it can be more easily controlled (e.g., vegetation management activities).

**Hazard mitigation planning:** A process used by governments to identify risks, assess vulnerabilities, and develop long-term strategies for protecting people and property from the effects of future natural hazard events.

**HMGP Lock-In Ceiling:** The level of HMGP funding available to a Grantee for a particular Presidential major disaster declaration.

**Identified for Further Review:** Subapplications identified for further review contain sufficient information for a preliminary determination of cost-effectiveness and feasibility. In certain instances, FEMA may work with Applicants to confirm cost-effectiveness and feasibility. Identification for further review is not a notification of award.

**Ignition-resistant construction:** Construction standards based on use of fire-resistant materials, non-combustible materials, and 1-hour fire-rated assemblies.

**Increased Cost of Compliance:** Coverage for expenses a property owner must incur, above and beyond the cost to repair the physical damage the structure actually sustained from a flooding event, to comply with mitigation requirements of State or local floodplain management ordinances or laws; acceptable mitigation measures are structure elevation, dry floodproofing, structure relocation, structure demolition, or any combination thereof.

**Indian Tribal Government:** A federally recognized governing body of an Indian or Alaska Native Tribe, band, nation, pueblo, village, or community that the Secretary of the Interior acknowledges to exist as an Indian Tribe under the Federally Recognized Tribe List Act of 1994, 25 U.S.C. 479a. This does not include Alaska Native corporations, the ownership of which is vested in private individuals.

**Indirect cost:** Cost that is incurred by a Grantee for a common or joint purpose benefiting more than one cost objective that is not readily assignable to the cost objectives specifically benefited.

**Indirect cost rate:** Percentage established by a Federal department or agency for a Grantee to use in computing the dollar amount it charges to the grant to reimburse itself for indirect costs incurred in doing the work of the grant activity.

**Management costs:** Any indirect costs, administrative expenses, and any other expenses not directly chargeable to a specific project that are reasonably incurred by a Grantee or subgrantee in administering and managing a grant or subgrant award. For HMGFP, management cost funding is provided outside of Federal assistance limits defined at 44 CFR Section 206.432(b).

**Manufactured (Mobile) home:** A structure, transportable in one or more sections that is built on a permanent chassis and designed for use with or without a permanent foundation when attached to the required utilities.

**Mitigation:** Any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event.

**Mitigation activity:** A mitigation measure, project, plan, or action proposed to reduce risk of future damage, hardship, loss, or suffering from disasters. The term “measure” is used interchangeably with the term “project” in this program.

**National Flood Insurance Program (NFIP):** Provides the availability of flood insurance in exchange for the adoption of a minimum local floodplain management ordinance that regulates new and Substantially Improved development in identified flood hazard areas.

**Non-combustible material:** Material of which no part will ignite and burn when subjected to fire, such as any material conforming to ASTM E 136.

**Nonflammable:** Material unlikely to burn when exposed to flame under most conditions.

**Non-Federal funds:** Financial resources provided by sources other than the Federal Government. The term does not include funds provided to a State or local government through a Federal grant unless the authorizing statute for that grant explicitly allows the funds to be used as cost share for other Federal grants.

**Non-Residential structure:** Includes, but is not limited to small business concerns, places of worship, schools, farm buildings (including grain bins and silos), pool houses, clubhouses, recreational buildings, mercantile structures, agricultural and industrial structures, warehouses, hotels and motels with normal room rentals for less than 6 months’ duration, and nursing homes.

**Office of Environmental Planning and Historic Preservation:** Integrates the protection and enhancement of environmental, historic, and cultural resources into the FEMA mission and FEMA programs and activities; ensures that FEMA activities and programs related to disaster response and recovery, hazard mitigation, and emergency preparedness comply with Federal environmental and historic preservation (EHP) laws and Executive orders; and provides EHP technical assistance to FEMA staff, local, State, and Federal partners, and Grantees and subgrantees.

**Otherwise Protected Areas (OPAs):** Designation created by the Coastal Barrier Improvement Act. Flood insurance is restricted in OPAs even though they are not in the CBRS and may receive other forms of Federal assistance. OPAs are identified on FEMA FIRMs.

**Period of Performance (POP):** The period of time during which the Grantee is expected to complete the grant activities and to incur and expend approved funds.

**Pile burning:** Piling removed vegetation into manageable piles and burning the individual piles during safe and approved burning conditions.

**Post-FIRM Building:** A building for which construction or Substantial Improvement occurred after December 31, 1974, or on or after the effective date of an initial FIRM, whichever is later.

**Practicable:** An action that is capable of being done within existing constraints. The test of what is practicable depends upon the situation and includes consideration of all pertinent factors, such as environment, cost, and technology.

**Pre-FIRM Building:** A building for which construction or Substantial Improvement occurred on or before December 31, 1974, or before the effective date of an initial FIRM.

**Prescribed burning:** The deliberate and managed use of fire ignited by management actions to meet specific fuels management objectives.

**Presidential Major Disaster:** Any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought) or, regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under the Stafford Act to supplement the efforts and available resources of States, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby.

**Private non-profit (PNP):** Any non-governmental agency or entity that currently has: (i) an effective ruling letter from the Internal Revenue Service granting tax exemption under section 501(c), (d), or (e) of the Internal Revenue Code of 1954; or (ii) satisfactory evidence from the State that the organization or entity is a non-profit one organized or doing business under State law.

**Project:** Any mitigation measure or action proposed to reduce risk of future damage, hardship, loss, or suffering from disasters.

**Public Assistance:** Supplementary Federal assistance provided under the Stafford Act to State and local governments or certain PNP organizations other than assistance for the direct benefit of individuals and families. For further information, see 44 CFR Part 206, Subparts G and H. Fire Management Assistance Grants under section 420 of the Stafford Act are also considered Public Assistance.

**Replacement cost value:** The cost to replace property with materials of like kind and quality, without any deduction for depreciation.

**Riparian Area:** The land that directly abuts a natural body of water, such as a river, lake, stream, creek, or coastal body of water.

**Slash:** The accumulation of vegetative materials such as tops, limbs, branches, brush, and miscellaneous residue results from forest management activities such as thinning, pruning, timber harvesting, and wildfire hazard mitigation.

**Special Flood Hazard Area (SFHA):** The land in the floodplain within a community subject to a 1 percent or greater chance of flooding in any given year. An area having special flood, mudflow, or flood-related erosion hazards, and shown on a Flood Hazard Boundary Map or a FIRM as Zone A, AO, AI-A30, AE, A99, AH, AR, AR/A, AR/AE, AR/AH, AR/AO, AR/AI-A30, V1-V30, VE, or V.

**State Hazard Mitigation Officer (SHMO):** The representative of a State government who is the primary point of contact with FEMA, other Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.

**Structural fire protection:** The protection of homes or other buildings from wildland fire.

**Subapplicant:** The entity, such as a community/local government, Tribal government, or PNP, that submits a subapplication for FEMA assistance to the Applicant. Once funding is awarded, the subapplicant becomes the “subgrantee.”

**Subgrant:** An award of financial assistance under a grant by a Grantee to an eligible subgrantee.

**Subgrantee:** The entity, such as a community/local government, Tribal government, or PNP to which a subgrant is awarded and who is accountable to the Grantee for the use of the funds provided.

**Substantial Damage:** Damage of any origin sustained by a building whereby the cost of restoring the building to its before-damaged condition would equal or exceed 50 percent of the market value of the building before the damage occurred.

**Wildfire:** An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

**Wildland-Urban Interface Area:** That geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.

All terms not listed above are used consistent with the term definitions used in 44 CFR unless otherwise specified.



## C. Additional Resources

Description	Web Link or Contact Information
<b>1. NFIP Resources</b>	
National Flood Insurance Program	<a href="http://www.floodsmart.gov">http://www.floodsmart.gov</a>
Floodplain Management	<a href="http://www.fema.gov/national-flood-insurance-program">http://www.fema.gov/national-flood-insurance-program</a>
Map Service Center	<a href="http://msc.fema.gov">http://msc.fema.gov</a>
FIRMs	Telephone: (877) FEMA-MAP (336-2627) <a href="http://www.fema.gov/national-flood-insurance-program-1/flood-insurance-rate-map-firm">http://www.fema.gov/national-flood-insurance-program-1/flood-insurance-rate-map-firm</a>
ABFEs	Mississippi: <a href="http://www.fema.gov/news-release/abfes-are-best-resources-mississippians-rebuilding-how">http://www.fema.gov/news-release/abfes-are-best-resources-mississippians-rebuilding-how</a> Louisiana: <a href="http://www.fema.gov/news-release/2006/02/06/post-katrina-policy-building-elevations">http://www.fema.gov/news-release/2006/02/06/post-katrina-policy-building-elevations</a>
Flood Insurance Studies	<a href="http://www.fema.gov/national-flood-insurance-program-2/flood-insurance-study-fis">http://www.fema.gov/national-flood-insurance-program-2/flood-insurance-study-fis</a>
FEMA Form AW-501	<a href="http://www.fema.gov/national-flood-insurance-program-1/mitigated-properties-updates">http://www.fema.gov/national-flood-insurance-program-1/mitigated-properties-updates</a>
<b>2. Mitigation Planning and Risk Assessment Resources</b>	
Hazard Mitigation Planning Overview	<a href="http://www.fema.gov/hazard-mitigation-planning-overview">http://www.fema.gov/hazard-mitigation-planning-overview</a>
Local Mitigation Planning Handbook (FR302-094-1)	<a href="http://www.fema.gov/library/viewRecord.do?Id=7209">http://www.fema.gov/library/viewRecord.do?Id=7209</a>
Local Mitigation Plan Review Guide	<a href="http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearc&amp;Id=4889">http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearc&amp;Id=4889</a>
Mitigation Planning Guidance	<a href="http://www.fema.gov/mitigation-planning-laws-regulations-guidance">http://www.fema.gov/mitigation-planning-laws-regulations-guidance</a>
Mitigation Planning Policies	<a href="http://www.fema.gov/mitigation-planning-laws-regulations-guidance">http://www.fema.gov/mitigation-planning-laws-regulations-guidance</a>
Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards	<a href="http://www.fema.gov/library/viewRecord.do?Id=6938">http://www.fema.gov/library/viewRecord.do?Id=6938</a>
Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials	<a href="http://www.fema.gov/library/viewRecord.do?Id=7130">http://www.fema.gov/library/viewRecord.do?Id=7130</a>
Mitigation Planning How-To Guides (FEMA)	<a href="http://www.fema.gov/hazard-mitigation-planning-resources">http://www.fema.gov/hazard-mitigation-planning-resources</a>
Hazard Mitigation Planning Risk Assessment	<a href="http://www.fema.gov/hazard-mitigation-planning-risk-assessment">http://www.fema.gov/hazard-mitigation-planning-risk-assessment</a>
IS-318: Mitigation Planning for Local and Tribal Communities	<a href="http://training.fema.gov/EMIVeb/IS/courseOverview.aspx?code=IS-318">http://training.fema.gov/EMIVeb/IS/courseOverview.aspx?code=IS-318</a>
IS-328: Plan Review for Local Mitigation Plans	<a href="http://training.fema.gov/EMIVeb/IS/courseOverview.aspx?code=IS-328">http://training.fema.gov/EMIVeb/IS/courseOverview.aspx?code=IS-328</a>
Hazus	<a href="http://www.fema.gov/hazus">http://www.fema.gov/hazus</a>
USGS National Map	<a href="http://nationalmap.gov/">http://nationalmap.gov/</a>
USGS Natural Hazards Gateway	<a href="http://www.usgs.gov/natural_hazards/">http://www.usgs.gov/natural_hazards/</a>

Description	Web Link or Contact Information
<b>3. Benefit-Cost Analysis Resources</b>	
BCA Software and Helpline	Telephone: (866) 222-3580 Email: <a href="mailto:bcshelp@dhhs.gov">bcshelp@dhhs.gov</a> <a href="http://www.fema.gov/benefit-cost-analysis">http://www.fema.gov/benefit-cost-analysis</a>
BCA Overview	<a href="http://www.fema.gov/benefit-cost-analysis">http://www.fema.gov/benefit-cost-analysis</a>
BCA Policies	<a href="http://www.fema.gov/benefit-cost-analysis">http://www.fema.gov/benefit-cost-analysis</a>
<b>4. Feasibility and Effectiveness Resources</b>	
Engineering Helpline	Telephone: (866) 222-3580 Email: <a href="mailto:enchepline@dhhs.gov">enchepline@dhhs.gov</a>
Engineering Case Studies	<a href="http://www.fema.gov/grant-applicant-resources">http://www.fema.gov/grant-applicant-resources</a>
Property Acquisition Projects	<a href="http://www.fema.gov/library/viewRecord.do?Id=1861">http://www.fema.gov/library/viewRecord.do?Id=1861</a>
Structure Elevation Projects	<a href="http://www.fema.gov/library/viewRecord.do?Id=1862">http://www.fema.gov/library/viewRecord.do?Id=1862</a>
Minor/Localized Flood Reduction Projects	<a href="http://www.fema.gov/library/viewRecord.do?Id=1863">http://www.fema.gov/library/viewRecord.do?Id=1863</a>
Non-Structural Seismic Retrofit	<a href="http://www.fema.gov/library/viewRecord.do?Id=1865">http://www.fema.gov/library/viewRecord.do?Id=1865</a>
Structural Seismic Retrofit	<a href="http://www.fema.gov/library/viewRecord.do?Id=1866">http://www.fema.gov/library/viewRecord.do?Id=1866</a>
Wind Shutters	<a href="http://www.fema.gov/library/viewRecord.do?Id=1864">http://www.fema.gov/library/viewRecord.do?Id=1864</a>
<b>5. EHP Resources</b>	
EHP Program	<a href="http://www.fema.gov/environmental-planning-and-historic-preservation-program">http://www.fema.gov/environmental-planning-and-historic-preservation-program</a>
EHP Helpline	Telephone: (866) 222-3580 Email: <a href="mailto:ehphelp@dhhs.gov">ehphelp@dhhs.gov</a>
EHP Guidance	<a href="http://www.fema.gov/environmental-planning-and-historic-preservation-program/environmental-historic-preservation-1">http://www.fema.gov/environmental-planning-and-historic-preservation-program/environmental-historic-preservation-1</a>
EHP eLearning Tool	<a href="http://www.fema.gov/environmental-planning-and-historic-preservation-program/elearning-tool-fema-grant-applicants-45">http://www.fema.gov/environmental-planning-and-historic-preservation-program/elearning-tool-fema-grant-applicants-45</a>
EHP Policies	<a href="http://www.fema.gov/hazard-mitigation-assistance-policy">http://www.fema.gov/hazard-mitigation-assistance-policy</a>
EHP Training	<a href="http://training.fema.gov/EMIVeb/IS/IS253a.asp">http://training.fema.gov/EMIVeb/IS/IS253a.asp</a>
National Register of Historic Places	<a href="http://www.nps.gov/history/nr/">http://www.nps.gov/history/nr/</a>
<b>6. eGrants and NEMIS (HMGP) Resources</b>	
FEMA Enterprise Service Desk – for HMGP (NEMIS-MT) issues	Telephone: (888) HLP-FEMA (1-888-457-3362) Email: <a href="mailto:fema-enterprise-service-desk@fema.dhhs.gov">fema-enterprise-service-desk@fema.dhhs.gov</a>
FEMA Enterprise Service Desk – eGrants Issues	Telephone: (877) 611-4700
eGrants Resources Web site	<a href="http://www.fema.gov/mitigation-egrants-system">http://www.fema.gov/mitigation-egrants-system</a>
eGrants Applicant Quick Reference Guide	<a href="http://www.fema.gov/library/viewRecord.do?Id=3266">http://www.fema.gov/library/viewRecord.do?Id=3266</a>
eGrants Subapplicant Quick Reference Guide	<a href="http://www.fema.gov/library/viewRecord.do?Id=3267">http://www.fema.gov/library/viewRecord.do?Id=3267</a>
eGrants System for Grant Applicants online course (IS-31)	<a href="http://training.fema.gov/EMIVeb/IS/IS31a.asp">http://training.fema.gov/EMIVeb/IS/IS31a.asp</a>
eGrants System for Subgrant Applicants online course (IS-30)	<a href="http://training.fema.gov/EMIVeb/IS/IS30a.asp">http://training.fema.gov/EMIVeb/IS/IS30a.asp</a>

Description	Web Link or Contact Information
eGrants Internal System online course (IS-32)	<a href="http://training.fema.gov/ELMWeb/IS/courseOverview.aspx?code=IS-32">http://training.fema.gov/ELMWeb/IS/courseOverview.aspx?code=IS-32</a>
MT eGrants Internal Quick Reference Guide	<a href="http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&amp;id=5885">http://www.fema.gov/library/viewRecord.do?fromSearch=fromsearch&amp;id=5885</a>
NEMIS-MT Frequently Asked Questions:	<a href="http://www.fema.gov/hazard-mitigation-grant-program/national-emergency-management-information-system-mitigation-module">http://www.fema.gov/hazard-mitigation-grant-program/national-emergency-management-information-system-mitigation-module</a> <a href="http://www.fema.gov/library/viewRecord.do?id=4913">http://www.fema.gov/library/viewRecord.do?id=4913</a>
NEMIS-MT User Manual	<a href="http://www.fema.gov/library/viewRecord.do?id=4909">http://www.fema.gov/library/viewRecord.do?id=4909</a>
<b>7. HMA Application and Award Resources</b>	
HMA Overview	<a href="http://www.fema.gov/hazard-mitigation-assistance">http://www.fema.gov/hazard-mitigation-assistance</a>
HMA Helpline	Telephone: (866) 222-3580 Email: <a href="mailto:hmacrantshelpline@dhs.gov">hmacrantshelpline@dhs.gov</a>
HMA Policies	<a href="http://www.fema.gov/hazard-mitigation-assistance-policy">http://www.fema.gov/hazard-mitigation-assistance-policy</a>
<b>8. Acquisition Project Resources</b>	
Model Deed Restriction	<a href="http://www.fema.gov/library/viewRecord.do?id=632Z">http://www.fema.gov/library/viewRecord.do?id=632Z</a>
Model Acknowledgement of Conditions for Mitigation in Special Flood Hazard Area	<a href="http://www.fema.gov/library/viewRecord.do?id=559Z">http://www.fema.gov/library/viewRecord.do?id=559Z</a>
Model Statement of Assurances	<a href="http://www.fema.gov/library/viewRecord.do?id=6365">http://www.fema.gov/library/viewRecord.do?id=6365</a>
Notice of Voluntary Interest	<a href="http://www.fema.gov/library/viewRecord.do?id=3595">http://www.fema.gov/library/viewRecord.do?id=3595</a>
Statement of Voluntary Participation	<a href="http://www.fema.gov/library/viewRecord.do?id=3596">http://www.fema.gov/library/viewRecord.do?id=3596</a>
<b>9. Mitigation Reconstruction References</b>	
<ul style="list-style-type: none"> <li>• ASCE/SEI 24-05, <i>Flood Resistant Design and Construction</i>, January 2006</li> <li>• ASCE/SEI 7-05, <i>Minimum Design Loads for Buildings and Other Structures</i>, 2005</li> <li>• <i>International Building Code (IBC)</i>, 2006 edition</li> <li>• International Code Council, <i>Reducing Flood Losses Through the International Codes</i>, 3rd Edition, 2008</li> <li>• FEMA P-55, <i>Coastal Construction Manual</i>, 4th Edition, August 2011</li> <li>• FEMA P-424, <i>Design Guide for Improving School Safety in Earthquakes, Floods and High Winds</i>, December 2010</li> <li>• FEMA 489, <i>Mitigation Assessment Team Report: Hurricane Ivan in Alabama and Florida</i>, August 2005</li> <li>• FEMA P-499, <i>Home Builder's Guide to Coastal Construction Technical Fact Sheet Series</i>, December 2010</li> <li>• FEMA 543, <i>Design Guide for Improving Critical Facility Safety from Flooding and High Winds</i>, January 2007</li> <li>• FEMA 549, <i>Mitigation Assessment Team Report: Hurricane Katrina in the Gulf Coast</i>, July 2006</li> <li>• FEMA 550, <i>Recommended Residential Construction for Coastal Areas: Building on Strong and Safe Foundations</i>, 2nd Edition, December 2009</li> <li>• FEMA 551, <i>Selecting Appropriate Mitigation Measures for Floodprone Structures</i>, March 2007</li> <li>• FEMA 577, <i>Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds: Providing Protection to People and Buildings</i>, June 2007</li> </ul>	

Description	Web Link or Contact Information
<b>10. Structure Elevation References</b>	
<ul style="list-style-type: none"> <li>• ASCE/SEI 24-05, <i>Flood Resistant Design and Construction</i>, January 2006</li> <li>• FEMA P-55, <i>Coastal Construction Manual</i>, 4th Edition, August 2011</li> <li>• FEMA P-259, <i>Engineering Principles and Practices of Retrofitting Floodprone Residential Structures</i>, 3rd Edition, January 2012</li> <li>• FEMA P-312, <i>Homeowners Guide to Retrofitting</i>, 2nd Edition, December 2009</li> <li>• FEMA 347, <i>Above the Flood: Elevating Your Flood Prone House</i>, May 2000</li> <li>• FEMA P-499, <i>Home Builder's Guide to Coastal Construction Technical Fact Sheet Series</i>, December 2010</li> <li>• FEMA Technical Bulletin TB-1, <i>Openings in Foundation Walls and Walls of Enclosures</i>, 2008</li> <li>• FEMA Technical Bulletin TB-5, <i>Free-of-Obstruction Requirements</i>, 2008</li> <li>• FEMA Technical Bulletin TB-9, <i>Design and Construction Guidance for Breakaway Walls</i>, 2008</li> <li>• FEMA Form 81-31, <i>NFIP Elevation Certificate</i>, February 2013</li> </ul>	

## D. Referenced Regulations, Statutes, Directives, and Guidance

Reference	Description	Web Link
<b>REGULATIONS</b>		
2 CFR Part 215, Uniform Administrative Requirements for Grants and Agreements with Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations (OMB Circular A-110)	This part contains Office of Management and Budget (OMB) guidance to Federal agencies on the administration of grants to and agreements with institutions of higher education, hospitals, and other non-profit organizations. The guidance sets forth standards for obtaining consistency and uniformity in the agencies' administration of those grants and agreements.	<a href="http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&amp;tpl=/ecfrbrowse/tit02/cfr215_main_02.pl">http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&amp;tpl=/ecfrbrowse/tit02/cfr215_main_02.pl</a>
2 CFR Part 220, Cost Principles For Educational Institutions (OMB Circular A-21)	Establishes principles for determining costs applicable to grants, contracts, and other agreements with educational institutions.	<a href="http://www.whitehouse.gov/omb/circulars_a021_2004">http://www.whitehouse.gov/omb/circulars_a021_2004</a>
2 CFR Part 225, Cost Principles for State, Local, and Indian Tribal Governments (OMB Circular A-87)	Establishes principles and standards for determining costs for Federal awards carried out through grants, cost reimbursement contracts, and other agreements with State and local governments and federally recognized Indian Tribal governments.	<a href="http://ecfr.gpoaccess.gov/cgi/tit/text?c=ecfr&amp;tpl=/ecfrbrowse/tit02/cfr225_main_02.pl">http://ecfr.gpoaccess.gov/cgi/tit/text?c=ecfr&amp;tpl=/ecfrbrowse/tit02/cfr225_main_02.pl</a>
2 CFR Part 230, Cost Principles for Non-Profit Organizations (OMB Circular A-122)	Establishes principles for determining costs of grants, contracts and other agreements with non-profit organizations.	<a href="http://www.whitehouse.gov/omb/circulars_a122_2004">http://www.whitehouse.gov/omb/circulars_a122_2004</a>
26 CFR Section 1.170A-14, Qualified Conservation Contributions	Discusses deductions allowable for charitable contributions of interests in properties.	<a href="http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&amp;tpl=/ecfrbrowse/tit04/cfr170a14_1.1.0.2.19_01&amp;n=26v3.0.1.1.0.2.19">http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&amp;tpl=/ecfrbrowse/tit04/cfr170a14_1.1.0.2.19_01&amp;n=26v3.0.1.1.0.2.19</a>
40 CFR Part 312, Innocent Landowners, Standards for Conducting All Appropriate Inquiries	Provide standards and practices for "all appropriate inquiries" for the purposes of the Comprehensive Environmental Response, Compensation, and Liability Act sections 101(35)(B)(i)(I) and 101(35)(B)(i)(ii).	<a href="http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&amp;tpl=/ecfrbrowse/tit40/cfr312_main_02.pl">http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&amp;tpl=/ecfrbrowse/tit40/cfr312_main_02.pl</a>
44 CFR Part 9, Floodplain Management and Protection of Wetlands	Sets forth policy, procedure, and responsibilities to implement and enforce Executive Order (EO) 11988, <i>Floodplain Management</i> , and EO 11990, <i>Protection of Wetlands</i> .	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part9.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part9.xml</a>
44 CFR Part 10, Environmental Considerations	FEMA procedures for implementing the National Environmental Policy Act (NEPA). Provides policy and procedures to enable FEMA officials to account for environmental considerations when authorizing/approving major actions that have a significant impact on the environment.	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part10.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part10.xml</a>
44 CFR Part 13, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments	Establishes uniform administrative rules for Federal grants and cooperative agreements and subgrants to State, local, and Indian Tribal governments.	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part13.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part13.xml</a>

Reference	Description	Web Link
44 CFR Section 59.1, General Provisions, Definitions	Defines terms used in the Emergency Management and Assistance Federal Regulations	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1/xm1/cfr-2008-title44-vol1-part59.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1/xm1/cfr-2008-title44-vol1-part59.xml</a>
44 CFR Part 60, Criteria for Land Management and Use	Contains regulations for sale of flood insurance; criteria to determine the adequacy of a community's floodplain management regulations; and the minimum standards for the adoption of floodplain management regulations in flood-prone areas.	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part60.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part60.xml</a>
44 CFR Sections 60.3(b)(5) and (c)(4), Criteria for Land Management and Use and Floodplain Management Criteria for Flood-prone Areas	Regulations regarding obtaining the elevation of residential and non-residential structures.	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part60.xml#section60.3">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part60.xml#section60.3</a>
44 CFR Part 79, Flood Mitigation Grants	Prescribes actions, procedures, and requirements for the administration the Flood Mitigation Assistance grant programs.	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1/xm1/cfr-2008-title44-vol1-part79.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1/xm1/cfr-2008-title44-vol1-part79.xml</a>
44 CFR Part 80, Property Acquisition and Relocation for Open Space	Provides actions, procedures, and requirements for the administration of FEMA mitigation assistance for projects to acquire property for open space purposes under all Hazard Mitigation Assistance programs.	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part80.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part80.xml</a>
44 CFR Part 201, Mitigation Planning	Provides information on requirements and procedures for mitigation planning as required by the Stafford Act.	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1/xm1/cfr-2008-title44-vol1-part201.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1/xm1/cfr-2008-title44-vol1-part201.xml</a>
44 CFR Part 206, Federal Disaster Assistance for Disasters Declared On or After November 23, 1988	Prescribes policies and procedures for implementing the sections of Public Law 93-288 (the Stafford Act) that are delegated to the director of FEMA, including the administration of the Hazard Mitigation Grant Program (HMGP).	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part206.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part206.xml</a>
44 CFR Part 207, Management Costs	Implements section 324, Management Costs, of the Stafford Act, providing actions, procedures, and policies for HMGP management costs.	<a href="http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part207.xml">http://www.gpo.gov/fdsys/pkg/CFR-2008-title44-vol1-part207.xml</a>
49 CFR Part 24, Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs	Promulgates rules to ensure that owners of real property displaced or acquired by Federal or federally assisted programs are treated fairly, consistently, and equitably, and that agencies who implement these regulations do so efficiently and cost effectively.	<a href="http://ecfr.gpoaccess.gov/cgi/tit/text?c=ecfr&amp;tpl=/ecfrbrowse/tit49/cfr24_1.0.1.1.13.dir0=49_01&amp;n=49v3.0.1.1.13.dir0=49_01&amp;n=49v3.0.1.1.13.dir0=49_01&amp;n=ecfr">http://ecfr.gpoaccess.gov/cgi/tit/text?c=ecfr&amp;tpl=/ecfrbrowse/tit49/cfr24_1.0.1.1.13.dir0=49_01&amp;n=49v3.0.1.1.13.dir0=49_01&amp;n=49v3.0.1.1.13.dir0=49_01&amp;n=ecfr</a>
49 CFR Part 29, Governmentwide Debarment and Suspension (Nonprocurement)	This part adopts a government-wide system of debarment and suspension for nonprocurement activities.	<a href="http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&amp;tpl=/ecfrbrowse/tit49/cfr29_main_02.pl">http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&amp;tpl=/ecfrbrowse/tit49/cfr29_main_02.pl</a>
Federal Acquisition Regulations (FAR) Subpart 31.2	The FAR codifies and publishes uniform policies and procedures for acquisition by all executive agencies. Subpart 31.2 refers to Contracts with Commercial Organizations.	<a href="http://www.acquisition.gov/far/">http://www.acquisition.gov/far/</a>
Internal Revenue Code of 1954, as amended, Sections 170(h) (3) and (4)	Provides definitions for qualified conservation organizations and conservation purpose, including specific information regarding historic structure certification.	<a href="http://www.law.cornell.edu/uscode/text/26/170">http://www.law.cornell.edu/uscode/text/26/170</a>

Reference	Description	Web Link
Internal Revenue Code of 1954, as amended, Sections 501(c), (d), and (e)	Provides criteria for tax-exempt organizations.	<a href="http://www.law.cornell.edu/uscode/e/tit26/501">http://www.law.cornell.edu/uscode/e/tit26/501</a>
National Flood Insurance Program (NFIP) Technical Bulletin 3-93, Non-Residential/Floodproofing – Requirements and Certification	Provides guidance on the NFIP regulations concerning waterfront construction and the required certification for floodproofed non-residential buildings in Zones A, AE, A1–A30, AR, AO, and AH whose lowest floors are below the Base Flood Elevation.	<a href="http://www.fema.gov/library/viewRecord.do?d=1716">http://www.fema.gov/library/viewRecord.do?d=1716</a>
<b>STATUTES</b>		
Immigration and Nationality Act	Provides a definition for the term "national of the United States."	<a href="http://www.uscis.gov/portal/site/uscis/menuitem.eb1d4c2a3e5b9a489243c6875a3f6d1a7vgmexfoj000045f368a1RCRD&amp;vgnextch=CM10000045f368a1RCRD">http://www.uscis.gov/portal/site/uscis/menuitem.eb1d4c2a3e5b9a489243c6875a3f6d1a7vgmexfoj000045f368a1RCRD&amp;vgnextch=CM10000045f368a1RCRD</a>
Appalachian Regional Commission Funds, 40 U.S.C. 14321(a)(3), Grants and other assistance	Provides information on the authority of the Appalachian Regional Commission to make grants for administrative expenses and lists what those expenses may and may not include. Also provides information on what the local development district's contributions should be.	<a href="http://www.arc.gov/about/USCodeFile40SubTitleV.asp#14321">http://www.arc.gov/about/USCodeFile40SubTitleV.asp#14321</a>
Bunning-Bereter-Blumenauer Flood Insurance Reform Act of 2004 (Public Law 108-284), Part 102	A bill to amend the National Flood Insurance Act of 1968 to reduce losses to properties for which repetitive flood insurance claim payments have been made.	<a href="http://www.gpo.gov/fdsys/pkg/PLAW-108/publ284/pdf/PLAW-108publ284.pdf">http://www.gpo.gov/fdsys/pkg/PLAW-108/publ284/pdf/PLAW-108publ284.pdf</a>
Bigger-Waters Flood Insurance Reform Act, P.L. 112-141 July 6, 2012	Flood Insurance Reform and Modernization Act that proposed changes to Mitigation Assistance Grants related to Flood Mitigation.	<a href="http://www.gpo.gov/fdsys/pkg/PLAW-112/publ141/pdf/PLAW-112publ141.pdf">http://www.gpo.gov/fdsys/pkg/PLAW-112/publ141/pdf/PLAW-112publ141.pdf</a>
Civil Rights Act of 1964, 42 U.S.C. 2000d et seq., Title VI of the Civil Rights Act	Prohibits discrimination on the basis of race, color, and national origin in programs and activities receiving Federal financial assistance.	<a href="http://www.justice.gov/crt/about/sof/coord/titlevi.php">http://www.justice.gov/crt/about/sof/coord/titlevi.php</a>
Coastal Barrier Resources Act (Public Law 97-348; 16 U.S.C. 3501 et seq.)	Designated various undeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resource System. Areas so designated were made ineligible for direct or indirect Federal financial assistance that might support development, including flood insurance, except for emergency life-saving activities.	<a href="http://uscode.house.gov/download/act/pls/16c55.txt">http://uscode.house.gov/download/act/pls/16c55.txt</a>
Endangered Species Act (Public Law 93-205; 16 U.S.C. 1531–1544)	Prohibits Federal agencies from funding actions that would jeopardize the continued existence of endangered or threatened species or adversely modify critical habitat.	<a href="http://epw.senate.gov/esa73.pdf">http://epw.senate.gov/esa73.pdf</a>
Federal Crop Insurance Act, as amended, 7 U.S.C. 1501 et seq.	Promotes the national welfare by improving the economic stability of agriculture through a sound system of crop insurance.	<a href="http://www.agriculturelaw.com/lis/crops/statute.htm">http://www.agriculturelaw.com/lis/crops/statute.htm</a>

Reference	Description	Web Link
National Environmental Policy Act (NEPA) (Public Law 91–190; 42 U.S.C. 4321 and 4331–4335)	Declares a national policy that encourages productive and enjoyable harmony between man and his environment; promotes efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; enriches the understanding of the ecological systems and natural resources important to the Nation; and establishes a Council on Environmental Quality.	<a href="http://www.nps.gov/history/local-law/FHPL_NIEEnvrnmntPolicy.pdf">http://www.nps.gov/history/local-law/FHPL_NIEEnvrnmntPolicy.pdf</a>
National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 et seq.	The National Flood Insurance Act of 1968 created the Federal Insurance Administration and made flood insurance available for the first time. The Flood Disaster Protection Act of 1973 made the purchase of flood insurance mandatory for the protection of property located in the Special Flood Hazard Area.	<a href="http://www.fema.gov/library/viewRecord.do?d=2216">http://www.fema.gov/library/viewRecord.do?d=2216</a>
National Flood Insurance Reform Act of 1994 (Public Law 103-325)	Amended the Flood Disaster Protection Act of 1973, providing tools to make the NFIP more effective in achieving its goals of reducing the risk of flood damage to properties and reducing Federal expenditures for uninsured properties that are damaged by floods.	<a href="http://www.fema.gov/library/viewRecord.do?d=2217">http://www.fema.gov/library/viewRecord.do?d=2217</a>
National Historic Preservation Act (Public Law 89-665; 16 U.S.C. 470 et seq.)	Establishes a program for the preservation of historic and prehistoric resources deemed important to our understanding of prehistory and U.S. history and created the National Register of Historic Places.	<a href="http://www.achp.gov/docs/hnpa%202008-final.pdf">http://www.achp.gov/docs/hnpa%202008-final.pdf</a>
National Register of Historic Places	The official list of the Nation's historic places worthy of preservation. It is part of a national program to support public and private efforts to identify, evaluate, and protect our historic and archeological resources.	<a href="http://www.nps.gov/history/nrl/">http://www.nps.gov/history/nrl/</a>
Non-Insured Crop Disaster Assistance Program, 7 U.S.C. 7333	Provides financial assistance to producers of non-insurable crops when low yields, loss of inventory, or prevented planting occur due to natural disasters.	<a href="http://www.fsa.usda.gov/FSA/newReleases?area=newsroom&amp;subject=land&amp;topic=disaster&amp;newsbox=ofactsheet&amp;type=detail&amp;file=nspl_20110830_dist_en_napit.html">http://www.fsa.usda.gov/FSA/newReleases?area=newsroom&amp;subject=land&amp;topic=disaster&amp;newsbox=ofactsheet&amp;type=detail&amp;file=nspl_20110830_dist_en_napit.html</a>
Privacy Act of 1974 (5 U.S.C. 552a)	Regulates the collection, maintenance, use, and dissemination of personal information by Federal executive branch agencies.	<a href="http://www.justice.gov/oc/privst/act.html">http://www.justice.gov/oc/privst/act.html</a>
Public Health and Welfare, 42 U.S.C. 5133; Pre-Disaster Hazard Mitigation	Authorizes the Pre-Disaster Mitigation program.	<a href="http://www.law.cornell.edu/uscode/usc042/usc042usc_sec_42_00005_133_000_0.html">http://www.law.cornell.edu/uscode/usc042/usc042usc_sec_42_00005_133_000_0.html</a>
Public Health and Welfare, 42 U.S.C. 5154 (a), Insurance	Contains information on compliance with certain regulations and maintaining insurance in regard to Applicants and subapplicants requesting assistance to repair, restore, or replace damaged facilities under this code.	<a href="http://www.law.cornell.edu/uscode/usc042/usc042usc_sec_42_00005_154_000_0.html">http://www.law.cornell.edu/uscode/usc042/usc042usc_sec_42_00005_154_000_0.html</a>
Refugee Education Assistance Act of 1980, (Public Law 96-422) Part 501(e)	Allows the President to exercise authorities over Cuban and Haitian immigrants identical to the authorities exercised in the Immigration and Nationality Act, 8 U.S.C. 1158.	<a href="http://www.ssa.gov/OP_Home/comp/F096-422.html">http://www.ssa.gov/OP_Home/comp/F096-422.html</a>





Reference	Description	Web Link
FEMA P-550, <i>Recommended Residential Construction for Coastal Areas: Building on Strong and Safe Foundations</i> (2nd Edition, December 2009)	Provides recommended designs and guidance for rebuilding homes destroyed by hurricanes in the Gulf Coast. The manual also provides guidance in designing and building less vulnerable new homes that reduce the risk to life and property.	<a href="http://www.fema.gov/library/Record.do?d=1853">http://www.fema.gov/library/Record.do?d=1853</a>
FEMA 551, <i>Selecting Appropriate Mitigation Measures for Floodprone Structures</i> (March 2007)	This manual is intended to provide guidance to community officials for developing mitigation projects that reduce or eliminate identified risks for floodprone structures.	<a href="http://www.fema.gov/library/Record.do?d=2137">http://www.fema.gov/library/Record.do?d=2137</a>
FEMA 577, <i>Design Guide for Improving Hospital Safety in Earthquakes, Floods, and High Winds: Providing Protection to People and Buildings</i> (June 2007)	The intent of the Design Guide is to provide its audience with state-of-the-art knowledge on the variety of vulnerabilities faced by hospitals exposed to earthquakes, flooding, and high-winds risks, as well as the best ways to mitigate the risk of damage and disruption of hospital operations caused by these events.	<a href="http://www.fema.gov/library/Record.do?d=2139">http://www.fema.gov/library/Record.do?d=2139</a>
FEMA P-804, <i>Wind Retrofit Guide for Residential Buildings</i> (December 2010)	The purpose of this Guide is to provide guidance on how to improve the wind resistance of existing residential buildings. The content of this document should serve as guidance on retrofitting existing buildings for improved performance during high-wind events in all coastal regions.	<a href="http://www.fema.gov/library/Record.do?d=4569">http://www.fema.gov/library/Record.do?d=4569</a>
Mitigation Planning Guidance	This guidance provides information on preparing and updating mitigation plans in compliance with the mitigation planning regulations found at 44 CFR Part 201.	<a href="http://www.fema.gov/mitigation-planning-laws-regulations-guidance">http://www.fema.gov/mitigation-planning-laws-regulations-guidance</a>
Mitigation Planning How-To Guides (FEMA)	The guides focus on initiating and maintaining a planning process that will result in safer communities and are applicable to jurisdictions of all sizes and all resource and capability levels.	<a href="http://www.fema.gov/hazard-mitigation-planning-resources">http://www.fema.gov/hazard-mitigation-planning-resources</a>
<i>Uniform Standards of Professional Appraisal Practice</i> (2012–2013)	The generally accepted standards for professional appraisal practice in North America. Standards are included for real estate, personal property, business, and mass appraisal.	<a href="http://www.uspap.org">http://www.uspap.org</a>
<i>Hazard Mitigation Assistance Tool for Identifying Duplication of Benefits</i> (January 2013)	This guide provides instruction on what constitutes Duplication of Benefits in the use of Hazard Mitigation Assistance funds for property mitigation. It gives direction regarding verification processes and actions that can be taken to ensure that Duplication of Benefits does not occur.	<a href="http://www.fema.gov/library/Record.do?d=6815">http://www.fema.gov/library/Record.do?d=6815</a>
<b>OTHER RESOURCES</b>		
Government-to-Government Relations with American Indian and Alaska Native Tribal Governments, January 12, 1999 ( <i>Federal Register</i> vol. 64 no. 7)	Guides FEMA interactions with American Indian and Alaska Native Tribal governments.	<a href="http://www.gpo.gov/fdsys/pkg/FR-1999-01-12/html/99-642.htm">http://www.gpo.gov/fdsys/pkg/FR-1999-01-12/html/99-642.htm</a>

Reference	Description	Web Link
OMB Circular A-94, <i>Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs</i> (October 29, 1992)	Specifies certain discount rates that will be updated annually when the interest rate and inflation assumptions in the budget are changed.	<a href="http://www.whitehouse.gov/omb/circulars/a094/a094.htm">http://www.whitehouse.gov/omb/circulars/a094/a094.htm</a>
OMB Circular A-133, <i>Audits of States, Local Governments, and Non-Profit Organizations</i> (revised June 27, 2003 and June 26, 2007)	Sets forth standards for obtaining consistency and uniformity among Federal agencies for the audit of States, local governments, and non-profit organizations expending Federal awards.	<a href="http://www.whitehouse.gov/sites/default/files/omb/assets/a133/a133_revised_2007.pdf">http://www.whitehouse.gov/sites/default/files/omb/assets/a133/a133_revised_2007.pdf</a>
ASCE/SEI 24-05, <i>Flood Resistant Design and Construction</i> (2006)	Provides minimum requirements for flood-resistant design and construction of structures located in flood hazard areas.	<a href="https://secure.asce.org/files/esto/re/6419/40818_40818.pdf">https://secure.asce.org/files/esto/re/6419/40818_40818.pdf</a>
ASCE/SEI 7-05, <i>Minimum Design Loads for Buildings and Other Structures</i> (2005)	Provides requirements for general structural design and includes means for determining dead, live, soil, flood, wind, snow, rain, atmospheric ice, and earthquake loads, and their combinations that are suitable for inclusion in building codes and other documents.	<a href="https://secure.asce.org/files/esto/re/896/40809_40809.pdf">https://secure.asce.org/files/esto/re/896/40809_40809.pdf</a>
ASTM International Standard E1527-05, <i>Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process</i> (2005)	Defines good commercial and customary practices for conducting an environmental site assessment of a parcel of commercial real estate.	<a href="http://www.astm.org/Standards/E1527.htm">http://www.astm.org/Standards/E1527.htm</a>
ASTM International Standard E2247-08, <i>Standard Practice for Environmental Site Assessments: Phase I Assessment Process for Forestland or Rural Property</i> (2008)	This practice is intended for use on a voluntary basis by parties who wish to assess the environmental condition of forestland or rural property of 120 acres or greater taking into account commonly known and reasonably ascertainable information.	<a href="http://www.astm.org/Standards/E2247.htm">http://www.astm.org/Standards/E2247.htm</a>
<i>International Building Code</i> (International Code Council)	The scope of this code covers all buildings except three-story, and one- and two-family dwellings and townhomes. This comprehensive code features time-tested safety concepts, structural, and fire and life-safety provisions covering means of egress, interior finish requirements, comprehensive roof provisions, seismic engineering provisions, innovative construction technology, occupancy classifications, and the latest industry standards in material design.	<a href="http://publiccodes.cbarrqs.co.uk/cod/ibc/index.htm">http://publiccodes.cbarrqs.co.uk/cod/ibc/index.htm</a>
<i>International Code Council, International Wildland-Urban Interface Code</i> (2012)	Contains provisions addressing fire spread, accessibility, defensible space, water supply, and more for buildings constructed near wildland areas.	<a href="http://publiccodes.cbarrqs.co.uk/cod/iwui/2012/index.htm">http://publiccodes.cbarrqs.co.uk/cod/iwui/2012/index.htm</a>

Reference	Description	Web Link
International Code Council, <i>Reducing Flood Losses through the International Codes</i> (3rd Edition, 2008)	This guide is intended to help community officials decide how to integrate the 2006 edition of the International Codes (I-Codes) into their current floodplain development and regulatory processes in order to meet the requirements to participate in the NFIP.	<a href="http://www.fema.gov/library/ViewRecord.do?l=2094">http://www.fema.gov/library/ViewRecord.do?l=2094</a>
<i>International Residential Code for One- and Two-Family Dwellings</i> (International Code Council)	A comprehensive code for homebuilding that brings together all building, plumbing, mechanical and electrical provisions for one- and two-family residences.	<a href="http://publiccodes.cvberrsgs.com/icoad/ric/index.html">http://publiccodes.cvberrsgs.com/icoad/ric/index.html</a>
National Fire Protection Association (NFPA) 225, <i>Model/Manufactured Home Installation Standard</i> (2009 Edition)	Includes updated criteria covering the anchoring of the home and protection against seismic events, floods, and wind. Rules apply to single- and multi-section units.	<a href="http://www.nfpa.org/catalog/product.asp?pid=22509">http://www.nfpa.org/catalog/product.asp?pid=22509</a>
NFPA 703, <i>Standard for Fire-Retardant Treated Wood and Fire-Retardant Coatings for Building Materials</i>	Provides enforcers, engineers, and architects with the industry's most advanced criteria for defining and identifying fire retardant-treated wood and fire-retardant coatings for building materials.	<a href="http://www.nfpa.org/catalog/product.asp?pid=70312">http://www.nfpa.org/catalog/product.asp?pid=70312</a>
NFPA 914, <i>Code for Fire Protection of Historic Structures</i>	Intended to improve or upgrade the fire protection features in a wide range of historic buildings, and address ongoing operations as well as renovation and restoration projects.	<a href="http://www.nfpa.org/catalog/product.asp?pid=91410">http://www.nfpa.org/catalog/product.asp?pid=91410</a>
NFPA 1141, <i>Standard for Fire Protection Infrastructure for Land Development in Suburban and Rural Areas</i>	Provides recommendations for planning and installing fire protection infrastructure for new developments in a community.	<a href="http://www.nfpa.org/catalog/product.asp?pid=114112">http://www.nfpa.org/catalog/product.asp?pid=114112</a>
NFPA 1144, <i>Standard for Reducing Structure Ignition Hazards for Land Development in Suburban and Rural Areas</i>	Covers minimum design, construction, and landscaping elements for structures in the wildland/urban interface.	<a href="http://www.nfpa.org/catalog/product/documents/WUIwrite/NFPA1144.pdf">http://www.nfpa.org/catalog/product/documents/WUIwrite/NFPA1144.pdf</a>
NFPA 5000 Code, <i>Building Construction and Safety Code</i> (2012 Edition)	Combines regulations controlling design, construction, quality of materials, use and occupancy, location, and maintenance of buildings and structures, with fire and life-safety requirements found in NFPA codes and standards.	<a href="http://www.nfpa.org/catalog/product.asp?pid=500012">http://www.nfpa.org/catalog/product.asp?pid=500012</a>
Firewise Communities	A multi-agency effort designed to reach beyond the fire service by involving homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire—before a fire starts.	<a href="http://www.firewise.org/">http://www.firewise.org/</a>
U.S. Department of Commerce, Bureau of Economic Analysis	Produces economic account statistics that enable government and business decision-makers, researchers, and the American public to follow and understand the performance of the Nation's economy.	<a href="http://www.bea.gov">http://www.bea.gov</a>

Reference	Description	Web Link
U.S. Bureau of Labor and Statistics	An independent national statistical agency that collects, processes, analyzes, and disseminates essential statistical data to the American public, the U.S. Congress, other Federal agencies, State and local governments, business, and labor.	<a href="http://stats.bls.gov">http://stats.bls.gov</a>

## E. Eligibility and Completeness Review Checklist for Project Subapplications

Applications submitted to FEMA that do not contain at least the basic components listed below may be immediately denied because there is no method to determine eligibility without this data. Additional information may be requested during FEMA review. This information is required for all submittals, including potential substitutions.

Application Component	Yes	No	Comment
<b>General</b>			
Documentation included in the subapplication?			
Is this a phased project?			
Technical Assistance Needed? Subapplicant is encouraged to contact the State (Applicant) to request application development assistance. FEMA resources may be available but will only be provided if requested by the Applicant.			
<b>Applicants</b>			
Eligible Applicant is identified (State or local government; eligible Private, non-profit organization; or Indian Tribal government)			
Applicant participates in the National Flood Insurance Program			
<b>Plan Requirement</b>			
Project conforms with State Mitigation Plan per 44 CFR Part 201			
Project conforms with Local Mitigation Plan per 44 CFR Part 201			
Project conforms with Indian Tribal Mitigation Plan per 44 CFR Part 201			
<b>Scope of Work</b>			
SOW describes the proposed solution			
Alternatives considered as part of the decision-making process			
Project includes photographs of each structure and general project area			
Project includes appropriate maps that orient the reviewer to the entire project area			
Latitude and longitude are provided for each structure			
SOW justifies the proposed solution as the best option over a range of alternatives			
Project site is clearly identified using maps, GPS coordinates, or other means			
Project addresses a repetitive problem or a significant risk to public health			

Application Component	Yes	No	Comment
Project solves a problem independently or constitutes a functional portion of a solution			
<b>Schedule</b>			
A work schedule of 3 years or less is provided			
<b>Budget/Match Source</b>			
A cost estimate/budget is provided that supports the SOW			
If project requires phased or incremental funding, the budget reflects amounts estimated for each funding increment			
Non-Federal cost shares and match sources are identified			
Project should identify potential Duplication of Benefits such as Insurance, Small Business Administration loans if information is available during project development			
<b>Cost-effectiveness and Feasibility</b>			
Project includes a benefit-cost analysis, or alternate cost-effectiveness documentation, such as Substantial Damage verification, and located in a riverine floodplain; or a narrative supporting cost-effectiveness and request for consideration under 5 percent HMGP discretionary funding			
Project includes technical information to support proposed action. For example, level of protection for drainage projects, engineering data to support proposed seismic retrofits, and population data to support safe room placement and size. Elevations are technically feasible.			
<b>Environmental and Historic Preservation</b>			
Project includes information and documentation to demonstrate conformance with 44 CFR Part 9.6 and Part 10			
Project demonstrates that it minimizes harm to the environment			
Project includes construction date for each structure			
Project includes all available information relating to known historic, archaeological, or environmentally sensitive areas (e.g., critical Coastal Barrier Resources Act or Otherwise Protected Area)			
All appropriate Federal, State, and local agencies have been consulted			
Project includes environmental coordination letters or contact information to obtain required coordination information			
<b>Assurances</b>			
FEMA Form 20-16A, Assurances Non-Construction Programs			
FEMA Form 20-16B, Assurances Construction Programs			
FEMA Form 20-16C, Certifications Regarding Lobbying, etc.			



Application Component	Yes	No	Comment
SF-LLL, Disclosure of Lobbying Activities			
Considers long-term changes to the area it proposes to protect and has manageable future maintenance and modification requirements			
<b>Acquisition Demolition / Relocation Information</b>			
Project confirms compliance with timelines and all other criteria set forth in 44 CFR Part 80 requirements			
Project includes Voluntary Participation Documentation for each property			
Documentation (if needed) that the property owner is National of United States or qualified alien			
For properties that are to be relocated, will the structure be relocated outside of the Special Flood Hazard Area?			
<b>Elevation Information</b>			
Project identifies the Base Flood Elevation or Advisory Base Flood Elevation			
Project includes finished floor elevation (Elevation certificate is preferred)			
Project includes proposed elevation height of the structure			
Designed and implemented consistent with ASCE/SEI 24-05			
<b>Safe Room Information</b>			
Project includes population size and basis			
Designed and implemented consistent with FEMA P-320 or FEMA P-361			
<b>Wind Retrofit Information</b>			
Project includes proposed level of protection			
Designed and implemented consistent with P-804			
<b>Drainage Information</b>			
Project includes initial technical information to support size, costs and local permitting requirements			

**F. Safe Room Application Using Pre-Calculated Benefits**

**Expedited HMGP Application for Residential Safe Rooms**

- ◆ The State must have an approved State Administrative Plan and State Hazard Mitigation Plan prior to grant award.
- ◆ If a local jurisdiction is the subapplicant, they must have an approved local mitigation plan in place (or receive an Extraordinary Circumstances exception) prior to grant award.
- ◆ Each safe room included in this project must meet the criteria of FEMA P-320, *Taking Shelter From the Storm, Building a Safe Room For your Home or Small Business*, or FEMA P-361, *Design and Construction Guidance for Community Safe Rooms*.
- ◆ Safe rooms cannot be placed in floodways, velocity zones, Coastal A Zones, or areas subject to coastal storm surge inundation associated with a Category 5 hurricane.
- ◆ If a residential safe room is sited in a Special Flood Hazard Area, the structure must be insured for Flood Damage, and a deed notice must be conveyed to retain this requirement.
- ◆ This project conforms with applicable Hazard Mitigation Grant Program eligibility criteria for all projects.
- ◆ Applicant may request approval for pre-award costs. Implementation costs incurred prior to grant award are not eligible for reimbursement.

**State (Grantee) Information**

Disaster number: \_\_\_\_\_ State or local government \_\_\_\_\_ Private non-profit entity \_\_\_\_\_  
 Eligible subapplicant: \_\_\_\_\_ State/local mitigation plan? \_\_\_\_\_ Yes \_\_\_\_\_ No

**Applicant Information**

Project Title: Residential Safe Room Construction/Installation  
 Applicant \_\_\_\_\_  
 Federal Information Processing Standard (FIPS) Code \_\_\_\_\_  
 Federal Tax ID Number (if required) \_\_\_\_\_  
 Data Universal Numbering System (DUNS) Number \_\_\_\_\_  
 Community NFIP Status: Participating Community ID # \_\_\_\_\_  
 In Good Standing \_\_\_\_\_ Non-participating \_\_\_\_\_ CRS \_\_\_\_\_  
 Legislative District(s) \_\_\_\_\_

Application prepared by:

Name \_\_\_\_\_  
Title \_\_\_\_\_  
Address \_\_\_\_\_  
City/State/Zip \_\_\_\_\_  
Telephone \_\_\_\_\_ Email \_\_\_\_\_  
Applicant Agent\* \_\_\_\_\_  
Title \_\_\_\_\_  
Address \_\_\_\_\_  
City/State/Zip \_\_\_\_\_  
Telephone \_\_\_\_\_ Email \_\_\_\_\_

\* Individual authorized to sign financial and legal documents on behalf of the Applicant

### Project Information

1. History of hazards and description of the vulnerability to be mitigated

Sample language:

*This project is being submitted in response to the recent, severe weather and tornado activity nationwide. It is the intent of the State and affected local jurisdictions to support the placement and availability of safe rooms as a means of providing life-safety level protection for our citizens.*

2. Scope/description: Project includes population size and basis

Sample language:

*This project proposes to fund the purchase, construction/installation, and verification of 150 residential safe rooms. These safe rooms will be constructed and installed to meet FEMA P-320 or FEMA P-361 design and construction criteria, prior to reimbursement by the Applicant to the property owner; the safe rooms will be verified by a qualified professional to meet FEMA P-320 standards. Prior to closeout, all property-specific data will be provided for entry into NEMIS in order to capture full information for each mitigated property.*

3. Project Useful Life: (30 years).

4. Property and Structure Information

- ◆ Address, including geo-location
- ◆ Floodplain map and flood zone information
- ◆ Structure age
- ◆ Photographs

◆ Proposed action:

- Safe room placed inside structure (no ground disturbance)
- Safe room placed above/below ground outside the structure (ground disturbance)
- ◆ Additional information if identified by FEMA/State/Applicant

### Environmental and Historic Preservation Compliance

Each site must be reviewed to determine compliance with environmental and historic preservation compliance requirements and to prepare necessary documentation. FEMA's *Programmatic Environmental Assessment for Hazard Mitigation Safe Room Construction* (June 2011) provides efficiencies for completing the environmental review for this project.

NOTE: FEMA may enter into agreements or other negotiated arrangements with the respective State Historic Preservation Officers and Indian Tribes to allow for expedited review in accordance with Section 106 of the National Historic Preservation Act.

Describe alternatives considered for this project:

Sample language:

*Alternative 1 – Do nothing. This alternative will not result in substantial risk reduction and will leave many citizens exposed to future tornado and high-wind damages, including loss of life.*

*Alternative 2 – Community safe room or evacuation. Tornadoes do not allow for sufficient time to relocate household members to an off-site facility, and evacuation is not viable as travel in severe weather exposes evacuees to another set of risks and hazards with little certainty that they can reach safe haven.*

### Project Implementation Narrative

Briefly describe the Applicant's process for selecting and prioritizing participants; describe any limits to funding, the proposed project management actions to be taken during implementation and any variations from standard quarterly reporting; and provide a list (or form) to be submitted by property owners to validate eligible costs.

Sample language:

- ◆ *This project limits the amount reimbursable to property owner to up to 50 percent of the cost of the safe room, not to exceed \$3,500 OR This project limits the amount of each safe room to \$7,000 (or other value).*
- ◆ *Participants were prioritized based on damaged areas and dates costs were incurred.*
- ◆ *Participants will be accepted as long as funds are available. Over submittals will be considered if additional funds become available.*
- ◆ *Quarterly reports will include current totals of completed, verified sites and associated costs for each completed site.*

- ◆ Applicant reserves the right to expand this project as long as the application period is open.
- ◆ Site verification form will be provided for each site location (Attachment 2).

### Project Work Schedule (not to exceed 3 years)

Sample:

- 0-6 months: Initiate outreach-marketing; identify participants
- 3-12 months: Verify FEMA P-320 or FEMA P-361 criteria and all program eligibility requirements have been met for known sites.
- 12 months (prior to application period closing): Revise project if necessary to include more participants.
- 12-30 months: Provide quarterly progress reports indicating volume of completed verified actions; complete project implementation.
- 30-36 months: Collect all closeout data and complete data dissemination to local emergency medical services.

### Cost-effectiveness Review

Sample language:

A cost-effectiveness evaluation has been performed for residential safe rooms in the (State of \_\_\_\_\_ / County of \_\_\_\_\_) and produced benefits as reflected on Table 1. These benefits are based on general sampling statewide and are based on 3 persons per household served by each safe room.

Options for capturing additional benefits: If the benefits listed in Table 1 are not sufficient to produce a ratio greater than 1:1 for this project, additional benefits may be obtained by increasing household population, where appropriate, verifying the structure type (manufactured housing produces more benefits than standard construction), and/or using a more specific local valuation that may include higher benefits based on specific risk. Technical support is available if needed.

### Budget/Funding Information

Sample budget:

Cost Item	Quantity	Est. Cost Each	Total Est. Cost	Est. Fed Share	Estimated Match Share
Data Collection	150	\$100	\$15,000	\$15,000	—
Material/Construction	150	\$5,000	\$750,000	\$525,000 <sup>(1)</sup>	\$225,000
Project Management	150	\$200	\$30,000	\$30,000	—
Inspection Certification	150	\$200	\$30,000	\$30,000	—
Design/Engineering Review	150	\$200	\$30,000	30,000	—

Cost Item	Quantity	Est. Cost Each	Total Est. Cost	Est. Fed Share	Estimated Match Share
Verification/Closeout	150	\$100	\$15,000	\$15,000	—
Outreach	—	—	\$15,000	\$15,000	—
Data Dissemination <sup>(2)</sup>	—	—	\$15,000	\$15,000	—
Grand Total	NA	NA	\$900,000	\$675,000	\$225,000

#### NOTES:

Line items for Data Collection, Project Management, Design, and Outreach could be phased. This would allow limited fund release to identify participants and collect data to complete required environmental and historic preservation reviews.

General-cost line items are samples, not all costs may be required; amounts are variable. Additional line items may be included as necessary. These values are based on historical submittals and averages.

(1) This example limits reimbursement to property owner to \$3,500.

(2) With property owner authorization, provide safe room geo-data to local emergency medical services in usable format.

### All Federal Share Obligations of \$1,000,000 or More Must Complete the Large Project Notification Process Prior to Approval

Aggregate Benefits By State (Abridged List)	
Alabama	\$13,336.96
Arkansas	\$16,717.85
Georgia	\$5,290.98
Illinois	\$13,685.72
Iowa	\$14,962.87
Indiana	\$18,126.34
Kansas	\$14,005.75
Kentucky	\$13,554.96
Louisiana	\$9,921.94
Michigan	\$6,522.49
Missouri	\$15,654.96
Mississippi	\$20,067.64
Minnesota	\$7,092.39
Nebraska	\$9,921.78
North Carolina	\$5,723.26
Ohio	\$11,469.38
Oklahoma	\$18,366.36
Pennsylvania	\$4,065.90
South Carolina	\$6,139.38
South Dakota	\$5,230.17
Tennessee	\$13,579.58
Texas	\$5,421.32
Virginia	\$3,936.05
West Virginia	\$4,973.50
Wisconsin	\$9,025.48

### Final Documentation and Certification Variable by State/Region (FEMA/State/Applicant may include additional items)

- Property Owner Name
- Property Address, including geo-location
- Verification of FEMA P-320 or FEMA P-361 criteria
- Installation Inspection
- Conforms to Categorical Exclusion or Environmental Assessment
- Conforms to Local Floodplain Ordinance (if applicable)
- Flood Insurance Deed Tag (if applicable)
- Final Cost list
- Property owner permission to distribute GEO-location to local emergency medical services (optional)

## G. Generator FAQ

### Eligibility of Generators under the Hazard Mitigation Grant Program

#### General Eligibility and Application Development

**1. How does the information in this guidance differ from current practice?**

This Hazard Mitigation Assistance (HMA) Guidance establishes that the purchase and installation of generators for the protection of critical facilities is an eligible, stand-alone project type under the Hazard Mitigation Grant Program (HMGP) and is no longer limited only to the 5 Percent Initiative. Generators that constitute a functional portion of an otherwise eligible mitigation solution (critical or not) remain eligible.

**2. Are generators still eligible under the 5 Percent Initiative?**

Yes. If there is insufficient data to evaluate a generator project using a standard, HMA-approved Benefit-Cost Analysis (BCA) method, the project may be eligible under the 5 Percent Initiative, as described in current HMA Unified Guidance. To perform this evaluation, a narrative description of the project's cost-effectiveness must be provided in lieu of a BCA. However, when data is available to perform a standard, HMA-approved BCA, the standard method must be used.

**3. Are eligible critical facilities limited to those listed in this guidance?**

No. The critical facilities listed in this guidance are not exhaustive. Eligible critical facilities are generally meant to include, but not be limited to, facilities such as hospitals, fire stations, police stations, and water and waste water treatment plants.

**4. Must the generator be permanently installed in, or anchored to, the critical facility, or can it be portable?**

Generators for a single facility or building should be permanently installed on site. Portable generators are eligible provided that they meet all HMGP requirements as described in **44 CFR Section 206.434, Eligibility**. The Applicant must ensure that the generator will be in place to protect the facility functions specified in the project application. The Application should describe relevant transport, hook up, and fuel supply and storage requirements at multiple facilities and how these will be executed if the generator is portable.

**5. Is the purchase of generators for residential structures an eligible activity?**

No. The purchase of a generator for the singular purpose of maintaining power for a single residential structure is not an eligible activity.

**6. If a generator is required by code, is the purchase of a generator for these facilities eligible?**

Yes, provided that the generator project meets all HMGP requirements as described in **44 CFR Section 206.434, Eligibility**.

**7. What size generator is appropriate for a facility?**

This will vary by facility and usage. It is not always necessary for the generator to support facility operations to their full capacity, but it should be sized appropriately to ensure the facility is able to provide uninterrupted critical functions in the event of future power outages.

**8. Is there a National Emergency Management Information System (NEMIS) code for generators as a stand-alone project type?**

Yes. The new NEMIS code for stand-alone generator projects is **601.2 – Generator Regular**. The NEMIS code for generator projects as part of the 5 percent discretionary allowance is **601.1 – Generator**.

#### Cost-effectiveness

**9. Will FEMA develop a separate BCA module for generators?**

No. A separate module is not necessary to perform the analysis. The Damage Frequency Assessment (DFA) module is able to perform this analysis for multiple hazards and project types. If you experience problems using the DFA module, contact the BC helpline at [behelpline@fema.dhs.gov](mailto:behelpline@fema.dhs.gov).

**10. What are the key elements of a BCA for generator projects?**

Key inputs required are:

- a. Project Useful Life:** According to **OMB Circular A-76, Performance of Commercial Activities**, the useful life for generators or generator sets is 19 years. This value can be used as the default useful life value when performing the BCA. It may be altered based on manufacturer warranty or other documentation that can demonstrate that the generator may be able to provide service for longer than 19 years. Analysts should use the 19-year project useful life first.
- b. Project Costs:** The cost of generators varies by size, installation, and purpose. The generator's size and specifications should be reasonable, appropriate, and necessary to continuing critical functions of the facility. The exact costs for generators, installation, and components should be provided by the subapplicant and included in the costs when performing the BCA.
- c. Facility and Value of Service:** Analysis for facilities for potable water, waste water, police stations, fire stations, and hospitals can be quickly performed using FEMA's BCA toolkit and the DFA module, which provides service values for these facilities. To use these values, the analyst will need some information regarding the population served by the facility. For example, if a generator is to be installed at a waste water treatment plant, the analyst will need to know how many customers are served by the facility, as well as how many days the facility was not able to operate because of power failure. These values can typically be obtained from the facility manager and can be provided on official letterhead for documentation purposes.

- d. **Recurrence Determination:** Recurrence information used in the analysis may vary by location or by cause of power failure, such as wind or flood. See FAQ #17 for additional information.
- e. **Other Benefits:** Other benefits (or costs avoided) may be included if they are addressed by the generator project.

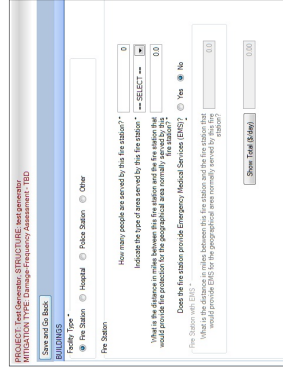
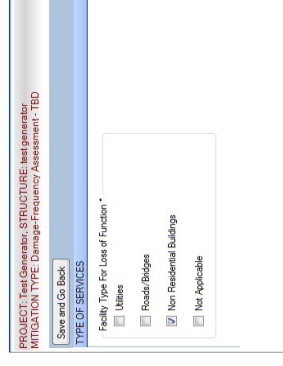
**11. What information is needed to perform a BCA for generator projects?**

Information needed for performing the BCA will vary by facility. However, the following inputs are **required** to run the BCA module:

- 11.1 For all BCAs performed, the subapplicant must provide the following:
  - a. The total project cost
  - b. Useful life (19 years for generators)
  - c. Estimated yearly maintenance costs
  - d. The frequency of the event used in analysis that would cause a power failure demonstrating the need for a backup power source (generator)
  - e. The number of days that service was affected (without power)
- To calculate the value of services (benefits to society), the following inputs **must** be included for each specified facility type:
  - 11.2 For Water or Waste Water Services:
    - a. The number of customers affected by the power outage at the treatment plants
  - 11.3 For Hospitals
    - a. The number of people served by the hospital
    - b. The distance in miles between the hospital being analyzed and the hospital that would treat these people in the event the hospital was inoperative
    - c. The number of people normally served by the alternate hospital

- 11.4 For Police Stations
  - a. The type of station (metropolitan, city, or rural)
  - b. The number of people served by the police station
  - c. The number of officers that work at the station and would serve the same area if the station were shut down as a result of a disaster
- 11.5 For Fire Stations
  - a. The number of people served by the station
  - b. The type of area served by the fire station (urban, suburban, rural, wilderness)
  - c. The distance in miles to the nearest fire station that would provide protection for the area normally served by the fire station affected

- d. Does the fire station provide emergency medical services? Value of service for hospitals, police, and fire stations are in the DFA module by selecting Non Residential Buildings for the Facility Type for Loss of Function in the DFA modules as shown in the screen shots below.



**12. Are the benefits limited to damages avoided to the facility?**

No, benefits are not limited to just damages avoided. The value of service for critical facilities can be used to demonstrate cost-effectiveness. The value of services for critical infrastructure and facilities are included in the BCA toolkit, which is available at <http://www.fema.gov/benefi-cost-analysis>. All costs associated with power failure that would be mitigated by a generator should be considered.

Additional losses can be included in the BCA if those losses are a direct result of interrupted power service that a generator would have mitigated. For waste water treatment plants, additional costs are sometimes required to bring the facility back to operating status after an extended power failure. This may include removal of sludge in equipment or additional man hours needed to bring the facility back to operational status. Those additional costs can be included above and beyond the value of service costs if a generator would have prevented those additional costs.

**13. Can an Applicant consider multiple hazards in the BCA?**

Yes. Multiple hazards may disrupt power supply. The Applicant will need to provide the frequency of each hazard used in its analysis.

**14. How does an Applicant develop the return interval for an event requiring the use of a generator?**

The recurrence interval used in the analysis will depend on the hazard that caused or will cause the facility to lose power. For example, in the New York City metropolitan area, winds of 85 miles per hour could equate to a 25-year recurrence interval. For other hazards, such as extreme snow fall, information about prior snow fall totals could be validated to estimate the recurrence interval. Recurrence interval data can be obtained from a number of sources, such as the National Weather Service for rainfall and ice storms and the U.S. Geological Survey for floods. If three or more past



events resulted in power failure, the DFA module can calculate the recurrence interval based on the years of the events. Question #17 provides some useful tools to assist in frequency determination. Generally, two events are required to perform the analysis. Applicants/subapplicants are encouraged to provide as much historical damage information as they can. Projects submitted with one frequency will be considered acceptable.

**15. In the case of a water treatment plant, is the cost of providing temporary water or other emergency protective measures considered a future cost avoided?**

Yes. If the generator will negate the need for temporary water in the future, then those costs should be included in the analysis.

**16. Are environmental benefits included in the BCA?**

To the extent they can be captured and justified, environmental costs associated with raw sewage discharge can be included in the BCA for waste water treatment plants. FEMA does not have a default value for these associated costs, and these costs will vary by location. The Applicant/subapplicant should include all reasonable costs that will be mitigated by having a backup generator installed at a facility.

**17. What resources are available to determine recurrence interval values?**

Recurrence intervals may be determined by using some of the tools provided below:

- ◆ If the facility lost power as a result of wind damage to power lines feeding the facility, the analyst can utilize the Advanced Technology Council Wind Speed tool available at <http://www.atcouncil.org/windspeed/index.php> to determine the frequency of the coastal wind event.
- ◆ If power outages are attributed to flooding, recurrence information for the flooding event should be used in the analysis. The National Weather Services provides the Precipitation Frequency Data Server at <http://hdsc.nws.noaa.gov/hdsc/pdfs/>, which can be utilized to establish a frequency for various precipitation events.
- ◆ U.S. Geological Survey stream gauge data can also be used to extrapolate frequency information for flood events, details of which can be found in the *Supplement to the Benefit-Cost Analysis Reference Guide* in the FEMA library at <http://www.fema.gov/library/viewRecord.do?id=4830>.
- ◆ National Snow and Ice Data Center (National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, National Science Foundation) at <http://nsidc.org/data/search/data-search.html>.
- ◆ Insurance claims, BureauNet information, damage repair records, data from the State/local agency, or local government Newspaper accounts citing credible sources (other than homeowner accounts) could be used in conjunction with the DFA module's unknown frequency calculator. Using this method may require more time as three events are required for analysis.

**18. How should emergency operations centers (EOCs) be evaluated for inclusion in the BCA toolkit?**

Finding the value (in loss of service terms) of a State Emergency Operation Center to prove cost-effectiveness of a generator project is difficult. FEMA will allow reasonable and justified "loss of service" costs for State and local EOCs that are identified by the Grantee to be entered into the DFA module to evaluate cost-effectiveness of an EOC generator project. Another or additional option is to investigate the costs of remobilizing an EOC to an alternate / continuity of operations location that could be avoided should the EOC be supplied with an uninterruptible power source such as a generator.

**Scenarios**

Different power failure scenarios at various facilities are outlined below. For analysis purposes, each facility was reviewed using 4 days of loss of service due to power failure at the 25-year recurrence. The 25-year recurrence interval for the test cases is based on observed wind speeds and the frequency was extrapolated using the Advanced Technology Council Wind Speed tool for the New York metropolitan area. Other project locations should use the appropriate recurrence intervals for the hazard being mitigated. Analysis was performed using the DFA module in the BCA Toolkit.

The scenarios are for demonstration purposes only. Dollar amounts and frequency intervals were chosen for comparison purposes only. Analysts should use the appropriate values for the facility being examined. For those performing the analysis, assistance is available through the benefit-cost helpline at [benefitline@fema.dhs.gov](mailto:benefitline@fema.dhs.gov) or at 1-855-540-6744. The helpline is not allowed to perform or review analyses but can provide answers to specific questions regarding methodologies.

When performing the BCA, inputs used in the module should be documented, as with all analysis. Documentation sources may include, but are not limited to, correspondence with facility or site managers, data available from the county or facility Web site, information from other government Web sites, media releases, engineering analysis, and letters from the facility manager. Discussion of data documentation is available in the BCA training materials available on FEMA.gov. There are no special or extraordinary data documentation requirements for this project type.

**Scenario 1: The Purchase and Installation of a Generator at an Urban Police Station**

Assumptions:

- ◆ The police station has 119 officers who serve up to 27,000 residents
- ◆ The police station loses power and the efficiency of the police station drops to 50 percent (assumes 50 percent of the force are working out of other facilities or within the community)
- ◆ The power is not fully restored for 4 days
- ◆ The project useful life for the generator is 19 years
- ◆ The project cost is \$50,000

Benefit-Cost Ratio:

- ◆ The resulting benefit-cost ratio (BCR) is 1.23

**Scenario 2: The Purchase and Installation of a Generator at an Urban Fire Station**

Assumptions:

- ◆ The fire station has 119 firefighters who serve up to 27,000 residents
- ◆ The fire station loses power and the efficiency of the fire station drops to 50 percent
- ◆ The power is not fully restored for 4 days
- ◆ The project useful life for the generator is 19 years
- ◆ The project cost is \$50,000

Benefit-Cost Ratio:

- ◆ The resulting BCR is 0.80

**Scenario 3: The Purchase and Installation of a Generator at an Urban Hospital**

Assumptions:

- ◆ The hospital serves up to 27,000 residents
- ◆ The power is not fully restored for 4 days
- ◆ The project useful life for the generator is 19 years
- ◆ The project cost is \$200,000

Benefit-Cost Ratio:

- ◆ The resulting BCR is 1.0

**Scenario 4: The Purchase and Installation of a Generator at a Rural Area Water Treatment Plant (Potable Water)**

Assumptions:

- ◆ The water treatment plant serves up to 15,000 customers
- ◆ The plant loses power for 3 days
- ◆ A 100-year recurrence interval is used
- ◆ The project cost is \$200,000

Benefit-Cost Ratio

- ◆ The resulting BCR is 1.05

**Scenario 5: The Purchase and Installation of a Generator at an Urban Area Waste Water Treatment Plant**

Assumptions:

- ◆ The waste water treatment plant serves up to 500,000 residents
- ◆ The waste water treatment plant loses power and there is no service
- ◆ The power is not fully restored for 4 days
- ◆ The project useful life for the generator is 19 years
- ◆ The project cost is \$1,500,000

Benefit-Cost Ratio:

- ◆ The resulting BCR is 24.8

## H. Eligibility and Completeness Review Checklist for Planning Subapplications

Applications submitted to FEMA that do not contain at least the basic components listed below may be immediately denied because there is no method to determine eligibility without this data. Additional information may be requested during FEMA review. This information is required for all submittals, including potential substitutions.

Application Component	Yes	No	Comments
<b>General</b>			
Documentation included in the subapplication?			
Technical Assistance Needed? Subapplicant is encouraged to contact the State (Applicant) to request application development assistance. FEMA resources may be available but will only be provided if requested by the Applicant.			
<b>Applicants</b>			
Applicant included management costs for delivery of technical assistance for mitigation planning (e.g., plan reviews, planning workshops, training)			
<b>Scope of Work (SOW)</b>			
Proposed planning activity is consistent with 44 CFR Part 201			
Proposed planning activity is described, including whether it will result in a new or updated hazard mitigation plan (including public involvement, identification of hazards, development of a comprehensive risk/vulnerability assessment, identification of mitigation goals and strategies, and plan implementation) or enhance an existing mitigation plan through a planning-related activity			
Participating jurisdiction(s) are identified and described			
A statement is provided on how the overall planning effort will be coordinated			
SOW is consistent with work schedule and cost estimate (describes entire planning process)			
For mitigation plan updates, the SOW describes the process that each jurisdiction will complete to review each section of the previous plan and address gaps, as needed; new information (including hazard, land use, and development trends); how the previous plan was implemented; and what process will be used			
Copy of the plan review document (i.e., review tool or crosswalk) from the FEMA approval of the previous plan is included, if available/applicable			

Application Component	Yes	No	Comments
<b>Schedule</b>			
Work schedule of 3 years or less is provided and allows sufficient time for State and FEMA reviews; preparation of required revisions, if needed; formal adoption by the jurisdiction(s); and FEMA approval			
<b>Cost Estimate</b>			
Cost estimate supports the SOW and is reasonable for the jurisdictions participating			
<b>Assurances</b>			
FEMA Form 20-16A, Assurances Non-Construction Programs			
FEMA Form 20-16C, Certifications Regarding Lobbying, etc.			
SF-LLL, Disclosure of Lobbying Activities			



## I. EHP Checklist

“Yes” indicates that the environmental regulation or statute may apply to your project.

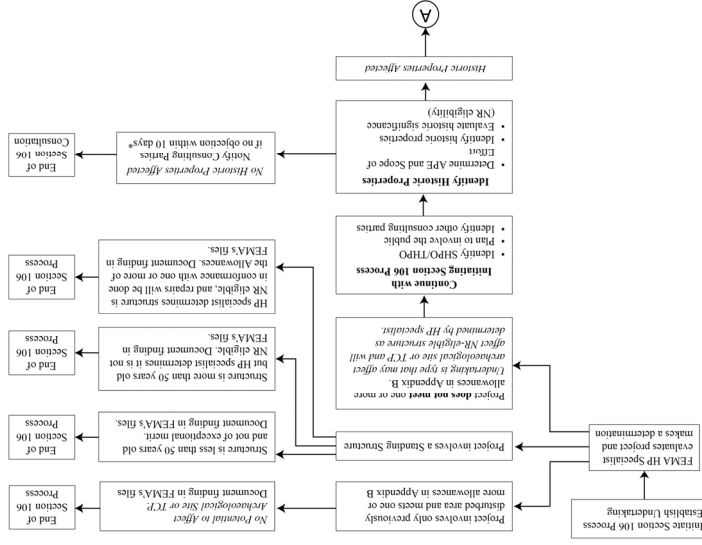
Environmental Regulation or Statute	Yes	No
<b>National Historic Preservation Act</b>		
1.A Would the proposed project affect, or is the proposed project in close proximity to, any buildings or structures 50 years or more in age?		
1.B Will the proposed project involve disturbance of ground?		
<b>Endangered Species Act and Wildlife Coordination Act</b>		
2.A Are federally listed or endangered species, or their critical habitat, present in or near the project area and, if so, which species are present?		
2.B Will the proposed project remove or affect vegetation?		
2.C Is the proposed project in or near (within 200 feet), or likely to affect, any type of waterbody or body of water?		
<b>Clean Water Act, Rivers and Harbors Act</b>		
3.A Will the proposed project involve dredging or disposal of dredged material, excavation, the addition of fill material, or result in any modification to water bodies or wetlands designated as “waters of the United States” as identified by the U.S. Army Corps of Engineers or on the National Wetland Inventory?		
<b>Executive Order 11988 (Protection of Floodplains) and Executive Order 11990 (Protection of Wetlands)</b>		
4.A Does a Flood Insurance Rate Map, Flood Hazard Boundary Map, hydrological study, or some other source indicate that the project is located in, or will affect, a 100-year floodplain, a 500-year floodplain (if a critical facility), an identified regulatory floodway, or an area prone to flooding?		
4.B Is the proposed project located in, or will it affect, a wetland as listed in the National Wetland Inventory?		
4.C Will the proposed project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?		
4.D Is the proposed project located in, or will it affect, a floodplain or wetland? If yes, the 8-step process summarized in Appendix J must be completed.		
<b>Coastal Zone Management Act</b>		
5.A Is the proposed project located in the State’s designated coastal zone?		
<b>Farmland Protection Policy Act</b>		
6.A Will the proposed project convert more than 5 acres of “prime or unique” farmland outside city limits to a non-agricultural use?		
<b>Resource Conservation Recovery Act and Comprehensive Environmental Response, Compensation, and Liability Act</b>		
7.A Is there reason to suspect there are contaminants from a current or past use on the property associated with the proposed project?		
7.B Are there any studies, investigations, or enforcement actions related to the property associated with the proposed project?		
7.C Will any project construction or operation activities involve the use of hazardous or toxic materials?		

Environmental Regulation or Statute	Yes	No
7.D Are any of the current or past land uses of the property associated with the proposed project or are any of the adjacent properties associated with hazardous or toxic materials?		
<b>Executive Order 12898 (Environmental Justice for Low Income and Minority Populations)</b>		
8.A Are there any low-income or minority populations in the project’s area of effect or adjacent to the project area?		
<b>Other Environmental/Historic Preservation Laws (including applicable State laws) or Issues</b>		
9.A Are other environmental/historic preservation requirements associated with this project?		
9.B Are any controversial issues associated with this project?		
9.C Have any public meetings been conducted, or public comment solicited, on the proposed project?		

## J. 8-Step Decision Making Process for Floodplain Management Considerations

- Step 1.** Determine whether the proposed action is located in a wetland and/or the 100-year floodplain (500-year floodplain for critical actions) and whether it has the potential to affect or be affected by a floodplain or wetland (see 44 CFR Section 9.7).
- Step 2.** Notify the public at the earliest possible time of the intent to carry out an action in a floodplain or wetland, and involve the affected and interested public in the decision-making process (see 44 CFR Section 9.8).
- Step 3.** Identify and evaluate practicable alternatives to locating the proposed action in a floodplain or wetland (including alternative sites, actions, and the “no action” option) (see 44 CFR Section 9.9). If a practicable alternative exists outside the floodplain or wetland, FEMA must locate the action at the alternative site.
- Step 4.** Identify the potential direct and indirect impacts associated with the occupancy or modification of floodplains and wetlands and the potential direct and indirect support of floodplain and wetland development that could result from the proposed action (see 44 CFR Section 9.10).
- Step 5.** Minimize the potential adverse impacts and support to or within floodplains and wetlands to be identified under Step 4, restore and preserve the natural and beneficial values served by floodplains, and preserve and enhance the natural and beneficial values served by wetlands (see 44 CFR Section 9.11).
- Step 6.** Reevaluate the proposed action to determine first, if it is still practicable in light of its exposure to flood hazards, the extent to which it will aggravate the hazards to others, and its potential to disrupt floodplain and wetland values, and second, if alternatives preliminarily rejected at Step 3 are practicable in light of the information gained in Steps 4 and 5. FEMA shall not act in a floodplain or wetland unless it is the only practicable location (see 44 CFR Section 9.9).
- Step 7.** Prepare and provide the public with a finding and public explanation of any final decision that the floodplain or wetland is the only practicable alternative (see 44 CFR Section 9.12).
- Step 8.** Review the implementation and post-implementation phases of the proposed action to ensure that the requirements stated in 44 CFR Section 9.11 are fully implemented. Oversight responsibility shall be integrated into existing processes.

## K. Section 106 Process under the National Historic Preservation Act



## L. Application for Advance Assistance

### Hazard Mitigation Grant Program (HMGP) Advance Assistance Pilot Optional Application

The State of \_\_\_\_\_ requests \$ \_\_\_\_\_ in Advance Assistance<sup>1</sup> for DR \_\_\_\_\_ pursuant to Section 1104 of the Sandy Recovery and Improvement Act (SRIA) of 2013 to accelerate implementation of the Hazard Mitigation Grant Program (HMGP). The State will use Advance Assistance to develop mitigation strategies and obtain data to prioritize, select and develop complete HMGP applications in a timely manner, as described in the Project Description (Work Scope) below.

Disaster and Project Number \_\_\_\_\_  
 Project Title: Advance Funding Request \_\_\_\_\_  
 Applicant \_\_\_\_\_  
 Federal Information Processing Standard (FIPS) Code \_\_\_\_\_  
 Applicant's Agent and Contact Information \_\_\_\_\_

### Project Description (Work Scope)

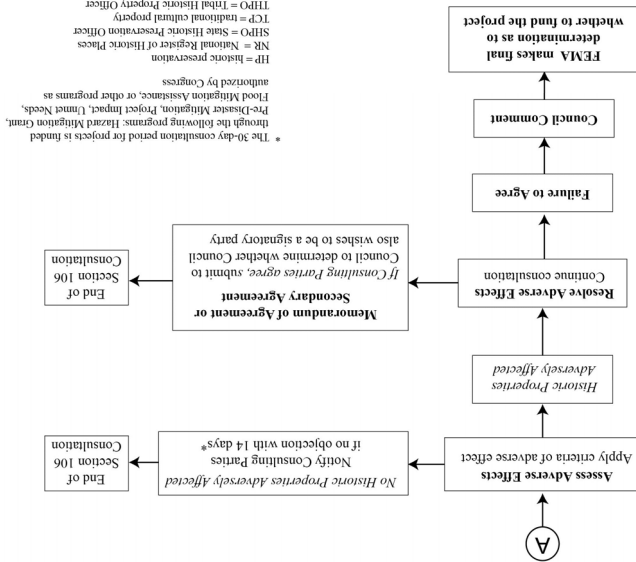
List proposed activities, estimated costs and deliverables. (See Advance Assistance Frequently Asked Questions for list of eligible activities).

Activity	Estimated Cost	Deliverable
1.		
2.		
3.		
(Etc.)		

### Work Schedule

Following is a schedule of proposed milestones by quarter for all major activities by which the State proposes to monitor progress for Advance Assistance:

<sup>1</sup>States may apply for up to 25 percent of the estimated total HMGP grant amount or \$10 million, whichever is less.



# HAZARD ANALYSIS

The hazard identification and ranking was obtained primarily from the Cerritos Hazard Identification Workshop. The Hazard Identification Workshop was conducted as a participatory Steering Committee workshop to identify the potential hazards within the City. The Hazard Identification Workshop was facilitated using an interactive software spreadsheet that asked specific questions on potential hazards and then rated them accordingly. These questions guide the team in the correct facilitation and application of the program. The following information summarizes the Hazard Identification Workshop risk ranking results, including the descriptions of each hazard factor, and provides the specific descriptor choices for each risk factor and description. Additionally, a risk ranking matrix is provided to designate the overall ranking score and categorization of each hazard.

## Hazard Identification and Risk Ranking

Each hazard profile included a profile ranking of the hazard (ranging from low risk to high risk). The Steering Committee determined this initial profile ranking based on all of the hazard identification and profile research summarized and group discussion and evaluation of all of the data, including numerical rankings (1-5) of the following criteria:

- **Consequence/Severity** – How wide spread is the impact area?
- **Secondary Effects** – Could the event trigger another event and separate response?
- **Probability/Frequency** – Historical view of how often this type of event occurs locally and projected recurrence intervals.
- **Warning/Onset** – Advance warning of the event, or none.
- **Duration** – Length of elapsed time where response resources are active.
- **Recovery** – Length of time until lives and property return to normal.



Q1 (First Quarter Following Initial Approval)

Activity	Milestone	Deliverables
1.		
2.		
3.		
(Etc.)		

### Budget Information

Total Estimated Cost (Federal and non-Federal cost) \_\_\_\_\_  
 Total Federal Cost \_\_\_\_\_

### Line Item Budget

The State may request that FEMA obligate Advance Assistance funds incrementally, based on when the State needs the funds. Please list the obligation schedule by activity below.

Activity	Initial Amount Requested	Second Amount Requested	Third Amount Requested	Total Requested
1.				
2.				
3.				
(Etc.)				

### Additional Information Section

Provide any relevant information or explanation.

Risk Factors for Hazard Identification		Risk Factor	
Value	Descriptors	Description	Probability/Frequency
0	Infeasible event - not applicable due to geographic location characteristics	Rare event - occurs less than once every 50 years	Prediction of how often a hazard will occur in the future
1	Rare event - occurs less than once every 50 years		
2	Infrequent event - occurs between once every 8 years and once every 50 years (inclusive)	Regular event - occurs between once a year and once every 7 years	Frequency
3	Regular event - occurs between once a year and once every 7 years		
4	Frequent event - occurs more than once a year	Frequent event - occurs more than once a year	Probability/Frequency
1	No damage		
2	Minor/slight damage to buildings and structures, no loss of lifelines		
3	Moderate building damage, minor loss of lifelines (less than 12 hours)		
4	Moderate building damage, moderate loss of lifelines (less than 24 hours)		
5	Extensive building damage, widespread loss of lifelines (water, gas, electricity, sanitation, roads), loss of life		
1	No physical damage, no secondary impacts	Impact Area - area impacted by a hazard event	Vulnerability
2	Localized damage area		
3	Localized damage area, minor secondary impacts, delayed hazard onset		
4	Moderate damage area, moderate secondary impacts, moderate warning time		
5	Widespread damage area, significant secondary impacts, no warning time		

Each profile includes a ranking of the hazard. The hazard rankings were determined by assigning each hazard the appropriate risk factors as described above. The risk factors were then used with a hazard ranking matrix to determine the final hazard score. The following table provides the matrix used for determining each hazard's score.

Risk Ranking Matrix																															
Probability/Frequency Description	Risk Ranking Matrix																														
Rare Event: Occurs less than once every 50 years	Probability/Frequency Value	Consequence/Severity																													
	Vulnerability	<table border="1"> <tr><td>1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>2</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>3</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>4</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>5</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> </table>	1	1	2	3	4	5	2	2	3	4	5	6	3	3	4	5	6	7	4	4	5	6	7	8	5	5	6	7	8
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5	5	6	7	8	9																										
Infrequent Event: Occurs between once every 8 years and once every 50 years (inclusive)	Probability/Frequency Value	Consequence/Severity																													
	Vulnerability	<table border="1"> <tr><td>2</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>3</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>4</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>5</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>6</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> </table>	2	1	2	3	4	5	3	2	3	4	5	6	4	3	4	5	6	7	5	4	5	6	7	8	6	5	6	7	8
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4	3	4	5	6	7																										
5	4	5	6	7	8																										
6	5	6	7	8	9																										
Regular Event: Occurs between once a year and once every 7 years	Probability/Frequency Value	Consequence/Severity																													
	Vulnerability	<table border="1"> <tr><td>3</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>4</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>5</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>6</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>7</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> </table>	3	1	2	3	4	5	4	2	3	4	5	6	5	3	4	5	6	7	6	4	5	6	7	8	7	5	6	7	8
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6	4	5	6	7	8																										
7	5	6	7	8	9																										
Frequent Event: Occurs more than once a year	Probability/Frequency Value	Consequence/Severity																													
	Vulnerability	<table border="1"> <tr><td>4</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr> <tr><td>5</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr><td>6</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr> <tr><td>7</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>8</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr> </table>	4	1	2	3	4	5	5	2	3	4	5	6	6	3	4	5	6	7	7	4	5	6	7	8	8	5	6	7	8
4	1	2	3	4	5																										
5	2	3	4	5	6																										
6	3	4	5	6	7																										
7	4	5	6	7	8																										
8	5	6	7	8	9																										

The hazard scores from the Hazard Ranking Matrix were compared to the hazard rank criteria to finally categorize each hazard with a hazard ranking. The table below provides the value determinations for each hazard ranking.

Risk Rank Categorization	
High Hazard	50 to 100
Moderately High Hazard	25 to 49
Moderate Hazard	15 to 24
Moderately Low Hazard	5 to 14
Low Hazard	1 to 4

The hazard ranking worksheets are provided in the following pages.

HAZARD IDENTIFICATION AND RISK RANKING	
<b>Earthquake</b>	
Hazard Rank Factors	Hazard Factor Description
Probability	Inrequent event - occurs between once every 8 years and once every 50 years (Inclusive)
Consequence	Extensive building damage, widespread loss of lifelines (water, gas, electricity, sanitation, roads), loss of life
Vulnerability	Widespread damage area, significant secondary impacts, no warning time
Risk	High
Comments	
<b>Windstorm</b>	
Hazard Rank Factors	Hazard Factor Description
Probability	Rare event - occurs less than once every 50 years
Vulnerability	Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability
Consequence	Localized damage area
Risk	Low
Comments	
<b>Flood/ Dam Failure</b>	
Hazard Rank Factors	Hazard Factor Description
Probability	Rare event - occurs less than once every 50 years
Consequence	Moderate building damage, minor loss of lifelines (less than 12 hours), lost time injury but no disability
Vulnerability	Moderate damage area, moderate secondary impacts, moderate warning time
Risk	Moderately Low
Comments	

HAZARD IDENTIFICATION AND RISK RANKING	
<b>Drought</b>	
<b>Hazard Rank Factors</b> Hazard Factor Description Probability Consequence Vulnerability Risk Comments	Regular event - occurs between once a year and once every 7 years Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability Localized damage area Moderately Low Moderate
Rank	12
<b>Urban Fire</b>	
<b>Hazard Rank Factors</b> Hazard Factor Description Probability Consequence Vulnerability Risk Comments	Infrequent event - occurs between once every 8 years and once every 50 years (inclusive) Moderate building damage, minor loss of lifelines (less than 12 hours), lost time injury but no disability Localized damage area, minor secondary impacts, delayed hazard onset Moderate
Rank	18

HAZARD IDENTIFICATION AND RISK RANKING	
<b>Transportation Accident/Incident</b>	
<b>Hazard Rank Factors</b> Hazard Factor Description Probability Consequence Vulnerability Risk Comments	Rare event - occurs less than once every 50 years Moderate building damage, lifeline loss (less than 24 hours), severe injury or disability Moderate damage area, moderate secondary impacts, moderate warning time Moderate
Rank	16
<b>Terrorism</b>	
<b>Hazard Rank Factors</b> Hazard Factor Description Probability Consequence Vulnerability Risk Comments	Rare event - occurs less than once every 50 years Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability Localized damage area Low
Rank	4
<b>Pipeline Failure/ Hazardous Material Release</b>	
<b>Hazard Rank Factors</b> Hazard Factor Description Probability Consequence Vulnerability Risk Comments	Rare event - occurs less than once every 50 years Moderate building damage, lifeline loss (less than 24 hours), severe injury or disability Localized damage area, minor secondary impacts, delayed hazard onset Moderately Low
Rank	12

# PUBLIC PARTICIPATION & PLANNING PROCESS DOCUMENTATION

In order to facilitate the development of a Hazard Mitigation Plan that includes valuable input from the community, the City of Cerritos (City) solicited public participation in a survey posted on the City's website. The survey included 10 questions designed to provide insight into the community's opinion on perceived vulnerability to certain hazard events, to clarify which methods the community prefers to receive educational and outreach materials, and to illustrate the participants' overall level of hazard awareness.

## D.1 Survey Contents and Responses

This section includes the survey questions followed by the responses received. Over a period of a month, the City received 37 responses from the public. Those responses were tabulated and listed below.

- In the past five years, have you or someone in your household experienced a disaster such as an earthquake, severe windstorm, flood, utility loss, or other type of disaster? Yes or No?**

Yes	No	No Answer	Total
12	24	1	37

- If yes, which of these disasters have you or someone in your household experienced?**

- Earthquake
- Wildfire
- Transportation Incident
- Flood/ Dam Failure
- Pipeline Failure/ Hazardous Materials Leak
- Drought
- Terrorism
- Windstorm
- Other: \_\_\_\_\_

Hazard	Number	Hazard	Number
Earthquake	11	Drought	5
Wildfire	0	Terrorism	0
Transportation Incident	2	Windstorm	1
Flood/ Dam Failure	1	Other	0
Pipeline Failure/ Hazardous Materials Release	0		

Notes: This is based on the 12 respondents who answered "yes" to Question 1. There is no total as some respondents may have answered yes to multiple hazards while others may have answered no to all hazards.

- How concerned are you about the following disasters affecting the City of Cerritos? (Place a checkmark along the line)**

Hazard	Not Concerned	Extremely Concerned
Earthquake	_____	_____
Wildfire	_____	_____
Transportation Incident	_____	_____
Flood/ Dam Failure	_____	_____
Pipeline Failure/ Hazardous Materials Leak	_____	_____
Drought	_____	_____
Terrorism	_____	_____
Windstorm	_____	_____

To tally the results for question three, the levels of concern were given numerical values from one to seven with seven being most concerned. The results for each hazard were averaged and then ranked highest to lowest. The result was the following hazard ranking based on the participants' responses.



Table D-1: Participant Hazard Ranking

Hazard	Average Level of Concern
Earthquake	5.3
Drought	4.8
Transportation Incident	4.5
Terrorism	4.3
Pipeline Failure\ Hazardous Material Release	4.2
Windstorm	3.8
Flood/ Dam Failure	3.2
Wildfire	2.7

4. Have you ever received or requested information on ways to make your family and/or home safer from local hazards?

Yes	No	Total
22	15	37

5. How recently did you receive this information?

- In the last 6 months
  - 2-5 years ago
  - More than 5 years ago
- 6-12 months ago
  - I don't remember
- 1-2 years ago

Timeframe	Number	Timeframe	Number
In the last 6 months	3	2-5 years ago	3
6-12 months ago	4	More than 5 years ago	1
1-2 years ago	5	I don't remember	6

Note: This is based on the 22 respondents who answered "yes" to Question 4.

6. From whom did you last receive this information?

- News Media
  - Insurance Agent or Company
- Government Agency
  - Utility Company

- American Red Cross
  - Other: \_\_\_\_\_
- Other Non-profit Organization
- Unsure

Information Source	Number	Information Source	Number
News Media	6	American Red Cross	3
Government Agency	6	Other Non-profit Organization	1
Insurance Agent or Company	1	Unsure	1
Utility Company	2	Other	2

7. What are the best ways for you to receive information about making your family and home safer from local disasters? (Please check all that apply)

Newspapers:

- Newspaper stories (billboards, etc.)
- Newspaper ads

Television:

- Television news
- Television ads
- Radio news
- Radio ads

Radio:

- Radio news
- Radio ads

Other methods:

- City of Cerritos newsletter
- City of Cerritos website
- Schools
- Outdoor advertisements (billboards, etc.)
- Books
- Mail
- Fire Department/Rescue
- Internet search
- Fact sheet or brochure available at a City facility or event
- Chamber of Commerce
- Public workshop/meeting
- Magazine
- Other (please explain)

The following table illustrates the number of responses for each information source listed by total number of responses.

Information Source	Number	Information Source	Number
City of Cerritos Newsletter	29	Outdoor Advertisements	8
Television News	25	Public Workshop/Meeting	7
Radio News	18	Newspaper Ads	6
City of Cerritos Website	17	Television Ads	6
Newspaper Stories	17	Radio Ads	4
Fact Sheet/Brochure at City Event	15	Chamber of Commerce	3
Mail	13	Magazine	3
Internet Search	11	Books	2
Schools	10	Other	2
Fire Department Resources	9		

8. What steps, if any, have you or someone in your household taken to prepare for a disaster? (Check all that apply)

Our household has an emergency supply with the following:

- Food
- Water
- Flashlight(s)
- Batteries
- Battery-powered radio
- Medical supplies (First aid kit)
- Fire extinguisher
- Moist towelettes, garbage bags and plastic ties for personal sanitation
- Dust mask or cotton t-shirt (for air filtering)
- Plastic sheeting and duct tape (to shelter in-place)
- Wrench or pliers to shut off utilities

- Clothing
- Sleeping bag or warm blanket for each person
- Prescription medications
- Important family documents (copies of insurance policies, ID and bank account records)
- Other: \_\_\_\_\_

Our household has:

- Smoke detectors in each room of the house
- Received First Aid/CPR Training
- Made a fire escape plan
- Developed a reconnection plan: (where to go and who to call after a disaster)
- Discussed utility shutoffs
- Other: \_\_\_\_\_

The following table illustrates the number of responses for each disaster preparation action listed by total number of responses.

Emergency Supply Item	Number	Emergency Supply Item	Number
Flashlight	32	Personal Sanitation Items	21
Water	30	Fire Extinguisher	19
Batteries	29	Clothing	18
First Aid Kit	28	Dust Mask or T-shirt	16
Food	26	Prescription Medications	16
Wrench or Pliers	25	Plastic Sheeting and duct-tape	14
Radio	24	Important Family Documents	14

Emergency Supply Item	Number	Emergency Supply Item	Number
Sleeping Bag/Blanket	23	Other	2

Emergency Supply Item	Number	Emergency Supply Item	Number
Smoke Detector in each room	31	Made a Fire Escape Plan	13
Received First Aid/CPR Training	18	Developed a Reconnection Plan	10
Discussed Utility Shutoffs	17	Other	1

9. How long have you lived in the City of Cerritos? \_\_\_\_\_ years

Years of Residence	
0-15 year	6
16-26 year	8
26-35 years	6
	16
	1

The years of residence for each participant ranges from three years to 47 years. The average length of residence among participants was 30 years with the majority of responders falling into the 36-50 year residency range.

10. Do you own or rent your home?

Rent	Own	Total
1	36	37

## D.2 Inferences

The results of the public survey served three main purposes. It created a profile of the group of responders, provided insight regarding the methods the public would like to receive safety information, and, lastly, it provided the Steering Committee with the public's opinion of the hazard ranking. Conclusions drawn from the collected responses for each of these areas are discussed in more detail in the following subsections.

### Participant Profile

It was important for the Steering Committee to identify certain characteristics of the participating group in order to give proper weight to the feedback received. First, each participant was asked to provide their years of residence and whether or not they owned or rented their home. With regards to years of residence, the assumption was made that those who had lived in the City over a long period of time would have a better understanding of the hazards that have affected the City historically. Next, the Steering Committee assumed homeowners would take more interest in their community than renters due to higher personal investment in the long-term stability and functionality of the City. Based on these two assumptions and the responses received (see questions 9 and 10 above), the Steering Committee determined the participating group was invested in the success of the City and had a good grasp of historical hazard events as many of these homeowners have lived in the City more than 30 years. Next the Steering Committee wanted to assess whether or not the participating group had actively tried to mitigate hazards in their own homes. An assumption was made that those who took a proactive role in mitigating hazards individually would have a better understanding of the City's efforts to mitigate the effects of a regional hazard. While the details of the responses from question 8 can be viewed above, the main point is that over 90 percent of the participants had taken steps to prepare themselves for a disaster. In doing so, this demonstrated to the Steering Committee the participating group was conscious of the threat of hazard events and were proactive about taking steps to mitigate loss. Coupled with their perceived knowledge of historical hazard events and personal investment in the City's progress, the Steering Committee determined the feedback from the participating group was credible and beneficial to the Hazard Mitigation Plan update process.

### Methods for Successful Public Outreach

For nearly every hazard identified by the Steering Committee, public education and outreach serves as one of the main ways to mitigate future losses. While the City already has many outreach campaigns in place, the Steering Committee decided it would be useful for the public to comment on which information distribution methods were best for receiving information. The data provided from this line of questioning will allow the City to maximize its outreach efforts by utilizing those methods provided by the public to guide future outreach campaign planning.

As outlined in question 8, 59% of the public had received or requested safety information regarding local hazards. This number is significantly different from the 90% who said they took steps in their homes to protect themselves against disasters. Therefore, nearly half of the participating group took preventive actions without requesting information from local authorities. While this data tells us little about the best ways to reach the public, it provided a little more insight into the participating group profile.

According to the survey results, the primary method the public would like to receive safety information is through the City Newsletter. However, the Steering Committee acknowledged that the survey was advertised through the City Newsletter so many participants may have been notified via this method. Therefore, this result may be biased based on the preferences of the participation group. Conversely, the survey received a great response compared to the level of public participation through other methods. Therefore, the City Newsletter has proven to be a good method for reaching the public. Future outreach campaigns within the City will consider using the City Newsletter whenever appropriate, in addition to exploring other options.

Other methods that received strong support from the public were TV news, radio news, and newspaper stories. The Steering Committee resolved to examine how they could expand the City's use of each of these mediums in future outreach programs. Additionally, the Steering Committee discussed how the average age of each participant may have resulted in less interest in more recent methods for information distribution. The use of social media was discussed as a new element the City should consider incorporating into future outreach programs.

### Hazard Profiling

To fulfill FEMA's requirement to include the public in the planning process, the survey participants were asked to rank the hazards identified in the first Steering Committee meeting. The participants ranked the hazards based on their level of concern. The results were tallied and organized greatest to least to create a public hazard ranking. The list

created by the Steering Committee and the Public ranking were reviewed side by side as shown below.

Steering Committee Hazard Ranking	Survey Participant Hazard Ranking
Earthquake	Earthquake
Urban Fire	Drought
Transportation Accident/ Incident	Transportation Incident
Flood/ Dam Failure	Terrorism
Pipeline/ Hazardous Materials Release	Pipeline/ Hazardous Materials Release
Drought	Windstorm
Terrorism	Flood/ Dam Failure
Windstorm	Wildfire

The Steering Committee reviewed the two hazard rankings and considered the difference between each list. The Steering Committee found that those hazards which affected individuals received the highest ranking from the public while the Steering Committee gave a higher ranking to hazards with the most perceived vulnerability to the whole City. The Steering Committee discussed several potential reasons for the differences in perceived vulnerability. The first reason may be that the public might only be privy to hazard information that affects them directly or that is publicized by the media. Another reason might be the manner in which the question was asked. Asking about a personal level of concern may have led participants to reflect only on their personal safety rather than the vulnerability of the entire City. With these two items in mind, the Steering Committee resolved to use the public's ranking as a guide to which mitigation actions would be well received by the community. The Steering Committee assumed when the City implements mitigation measures for hazards which present the highest level of concern, the action will lessen the magnitude of concern and will therefore be viewed favorably by the public. The Steering Committee intends for the City to use this information as a way to include the public's opinion as it continues to implement new mitigation measures.

## D.3 Planning Process

The following sections provide additional information and supporting documentation about the planning process implemented by the Steering Committee to update the Hazard Mitigation Plan. For descriptions of the content of each Steering Committee meeting, please refer to Chapter 1.

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## MEMORANDUM

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**To:**  
**From:**  
**Cc:**  
**Date:**  
**Subject:**

### Project Background

Congress passed Public Law 106-390 to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act and provide for assistance by the Federal Government to State and local governments in carrying out their responsibilities to alleviate the suffering and damage resulting from disasters. As part of the requirements for receiving Federal Grants for improving a locality's resistance to disasters, each locality must determine their existing vulnerabilities and develop a plan to reduce or eliminate these vulnerabilities and must have this plan approved by the appropriate State officials. The City is currently updating a Hazard Mitigation Plan to fulfill this requirement and prepare for potential disasters.

### FEMA Requirements

FEMA requires that the Hazard Mitigation Plan meet certain requirements. First, the plan must be approved by the State Authority in order to receive funding for Hazard Mitigation for disasters following that date. Second, the planning process must be open and public, and must allow the public to have an opportunity to comment during the drafting stage and prior to plan approval. Third, the process must allow other local jurisdictions to be involved in the planning process. Fourth, the plan must incorporate, if appropriate, existing plans, studies, reports and technical information. To meet these requirements, the cities are compiling a Steering Committee that includes representatives from the public and local agencies.

### Steering Committee Goals

Guide and provide support to develop a list of hazards, determine the full impacts throughout the cities, interface with partner agencies to determine existing mitigation measures, develop possible approaches to projects which will reduce the impacts on the cities, and prioritize them for implementation.

### Steering Committee Responsibilities

The Steering Committee will provide essential insight into the past natural hazard events, current natural hazard vulnerability (including specific locations), critical City assets, and possible mitigation projects. In addition, the Steering Committee will be responsible for reviewing each stage of the document prior to finalization.

### Planned Committee Meeting Schedule and Summary

Steering Committee meetings will be held approximately six times during the course of the project, according to the following schedule/topics:

### Steering Committee Meeting #1 – Project Initiation, Hazard Identification, & Information Collection

During the Project Initiation Meeting, we will present an overview presentation that details the objectives and scope of the project. After a review of the project schedule and key tasks, the Steering Committee participants' areas of expertise and resultant member responsibilities and the community meeting process will be discussed. Based on each participant's area of expertise, subcommittees will be formed to focus on particular tasks of the Hazard Mitigation Plan.

To effectively characterize each agency's risk and vulnerability, surveys and interviews with appropriate Committee members will be conducted during this meeting. This meeting will also serve as a forum to discuss information that may need to be gathered for the upcoming tasks, including agency background information and asset inventory.

### Steering Committee Meeting #2 – Development of Goals and Objectives

During the second Meeting, mitigation goals and objectives will be developed with the intention of reducing or eliminating the potential hazard impacts, which will provide the basis for determining the associated mitigation projects.

### **Steering Committee Meeting #3 – Asset Inventory and Vulnerability Assessment**

As part of the third meeting, the team will develop the asset inventory to determine the quantity of buildings, people, and assets within the City. The asset inventory will include locations and specifications for general building stock, recreational areas, schools, hospitals, and other critical City facilities.

The asset inventory will be used to develop loss estimates for all hazard scenarios. The hazard probabilities and recurrence intervals will be applied to the City assets to determine which assets are subject to the greatest potential damages and which hazard events are likely to produce the greatest potential losses

### **Steering Committee Meeting #4 – Mitigation Action Identification**

At the fourth meeting, the team will identify mitigation actions and projects that will reduce the impact of identified hazards. During the meeting, Steering Committee participants will brainstorm possible projects and actions to mitigate the effects of the identified hazards based on the hazard profiles and loss estimates. As the mitigation projects are identified, the Steering Committee will discuss mitigation action implementation plans according to mitigation action categories, corresponding goals & objectives, responsible departments, available resources, and implementation timeframe.

### **Steering Committee Meeting #5 – Mitigation Project Benefit-Cost Review**

The fifth Meeting will be held to perform a benefit-cost review on each of the identified mitigation actions. The review will consist of identifying all benefits and costs associated with implementing a mitigation action. Once the benefits and costs are calculated, a relative priority will be assigned for each action based upon the evaluation. Prior to the sixth meeting, a draft Plan will be provided to each member of the Steering Committee for comments.

### **Steering Committee/Planning Team Meeting #6 – Presentation of Final Documents**

The final Meeting will be held to present the final draft of the Hazard Mitigation Plan. This Meeting will provide an opportunity for public review and the subsequent timeline for the submission (prior to board/council adoption) of the HMP to Cal EMA and FEMA.

### **Committee Invitation**

The first Steering Committee Meeting is scheduled for July 31, 2014 at 10:00 a.m. and will also include a brief project kickoff presentation. In addition, subsequent Steering Committee Meetings will be scheduled during this meeting. Please notify Rebecca Scott if you are interested in participating on the Steering Committee, and if you are able to attend the first meeting. If you are unable to attend, meeting minutes and a project schedule (including project milestones and meetings) will be emailed to all Steering Committee participants.

## Potential Steering Committee Participants

The following list outlines potential Steering Committee participants that should be invited to the initial meeting. The invitation should be documented to be included in the Hazard Mitigation Plan as evidence of public and stakeholder outreach.

1. Community Safety Services Representatives
2. Community and Cultural Services Representatives
3. Community Development Representatives
4. City Finance Representatives
5. Public Works Representatives
6. City Engineering Representatives
7. Local Fire Department Representatives
8. Local Police Department Representatives
9. Los Angeles County Office of Emergency Services Representatives
10. Local Hospital Representatives
11. Local School Representatives
12. Interested Public Representatives
13. Red Cross Representatives
14. Neighboring Agencies Representatives



**City of Cerritos**  
**Hazard Mitigation Plan**

Steering Committee Meeting #1:  
Project Initiation, Hazard Identification, Information Collection  
July 31, 2014



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**MEETING AGENDA**

- Project Overview and Background
- Steering Committee Goals
- Risk Assessment Background
- Hazard Identification and Ranking
- Information Collection

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**STEERING COMMITTEE MEETING SCHEDULE**

- Meeting #1 – Project Initiation, Hazard Identification, and Information Collection
- Meeting #2 – Review and Update Goals and Objectives
- Meeting #3 – Asset Inventory and Vulnerability Assessment
- Meeting #4 – Mitigation Action Identification
- Meeting #5 – Mitigation Project Benefit-Cost Review
- Meeting #6 – Presentation of Final Documents

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**Risk Assessment Methodology**

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**Project Overview**

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**DISASTER MITIGATION ACT OF 2000**

- Revitalized Federal Planning Requirements
  - State and Local Hazard Mitigation Plans
  - Plans must be updated every five years
- Federal Grant Funding Eligibility
  - Hazard Mitigation Grant Program (HMGP)
  - Pre-Disaster Mitigation Program (PDM)
- Disaster Mitigation Act of 2000 is intended to facilitate cooperation between state and local authorities on risk reduction measures and to expedite funding allocation


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**RISK ASSESSMENT – POTENTIAL HAZARDS**

- Earthquake
- Utility Loss
- Flooding
- Wildfires
- Aircraft Accident
- Terrorism
- Extreme Heat
- Hazardous Materials Release
- Other
- Transportation Failure
- Severe Weather
- Windstorm
- Urban Fire
- Downed Power Lines
- Pipeline Failure
- Other

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**RISK RANK METHODOLOGY**



- The risk ranking is facilitated using an iterative process that asks specific questions on potential hazards and then assigns a relative value to each potential hazard accordingly.
- The result of the workshop will be a ranked list of hazards to be studied in detail in the Hazard Mitigation Plan.

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**PUBLIC PROCESS**

DMA 2000 Stresses Public Participation:

- An open public involvement process that is comprehensive, starts early and continuous
- Coordination with neighboring communities and various interest groups in Plan development

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**STEERING COMMITTEE GOALS**

- Review existing Plan for implementation
- Review the list of potential hazards and add additional hazards for the revision
- Determine the hazard impacts throughout the City of Cerritos
- Interface with partner agencies to determine existing mitigation measures
- Develop possible approaches to projects which will reduce the impacts
- Prioritize mitigation projects for implementation

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**HAZARD IDENTIFICATION AND RISK RANKING**



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**RISK RANKING – PROBABILITY/FREQUENCY**

Recurrence Interval – Prediction of how often a hazard will occur in the future, including projected return intervals

Probable/Frequency Rank, Descriptions	Rank
High-Risk event – not applicable to geographic location thousands	0
Very rare – occurs less frequently every 100 years	1
Rare event – occurs between every 5 years and once every 20 years (100 year)	2
Regular event – occurs between once a year and once every 7 years	3
Frequent event – occurs more than once a year	4

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### RISK RANKING – CONSEQUENCE/SEVERITY

Physical Damage – Structures and lifelines  
Economic Impact – Loss of power, water, sanitation, roads, etc.

Frequency/Severity Rank Descriptors	Risk
Low damage	1
Minor damage to buildings and structures, no loss of lifelines, 10 to 20 minutes to return to normal	2
Minor damage to buildings and structures, no loss of lifelines, 10 to 20 minutes to return to normal	3
Minor damage to buildings and structures, no loss of lifelines, 10 to 20 minutes to return to normal	4
Minor damage to buildings and structures, no loss of lifelines, 10 to 20 minutes to return to normal	5

### RISK RANKING – VULNERABILITY

Impact Area – Area impacted by a hazard event  
Secondary Impacts – Possibility of triggering additional hazards  
Onset – Period of time between initial recognition of an approaching hazard and when the hazard begins to impact the community

Vulnerability Rank Descriptors	Risk
Minimal damage, no secondary impacts	1
Localized damage area	2
Localized damage area, minor secondary impacts, delayed hazard onset	3
Major damage area, moderate secondary impacts, moderate, delayed onset	4
Widespread damage area, significant secondary impacts, very delayed onset	5

### RISK RANKING – MATRIX

### RISK RANK CATEGORIZATION

Risk = Probability x Consequence x Vulnerability

Risk Rank Categorization

- High Risk: 500 to 1000
- Medium-High Risk: 250 to 500
- Medium Risk: 100 to 250
- Medium-Low Risk: 50 to 100
- Low Risk: 1 to 50

### Contact Information

Risk Management Professionals, Inc. – www.RMPCorp.com

### CONTACT INFORMATION

Ryan Bray  
Colin Scholtz, P.E.  
Risk Management Professionals, Inc.  
3000 Goddard, Suite 200  
Irvine, California 92618  
Office Phone: 949/282-0123 x238 / 245  
Fax: 949/745-2932  
Email: [Ryan.Bray@RMPCorp.com](mailto:Ryan.Bray@RMPCorp.com)  
[Colin.Scholtz@RMPCorp.com](mailto:Colin.Scholtz@RMPCorp.com)  
Web: [www.RMPCorp.com](http://www.RMPCorp.com)

## City of Cerritos HAZARD MITIGATION PLAN- Meeting #1 July 31, 2014

Name	Company	Position	Email Address	Phone #
Albert Arteaga	City of Cerritos	Engineering Aide	aaarteaga@cerritos.us	562-860-0311 Ext 2024
Ryan Bray	Risk Management Professionals	Project Coordinator	Ryan.Bray@RMPCorp.com	949-282-0123 Ext 238
Brenda Cabrera	City of Cerritos	Assistant City Clerk	bcabrera@cerritos.us	562-916-1249
Bob Coffin	Los Angeles County Fire Department	Captain	boffin@fire.lacounty.gov	562-986-1511
Yvette Countee	Los Angeles County Fire Department	Program Manager	ycountee@ceocom.lacounty.gov	323-980-2253
Cynthia Doss	City of Cerritos	Management Analyst	cdoss@cerritos.us	562-916-1201
Charles Emig	City of Cerritos	Water Superintendent	cemig@cerritos.us	562-916-1223
Tom Hamilton	City of Cerritos	Technical Operations Director	tech@cerritoscenter.com	562-916-8522

# Steering Committee Meeting #2

Name	Company	Position	Email Address	Phone #
Nick Hipsley Cox	American Red Cross	Disaster Program Manager	hipsley@earthlink.net	310-415-6504
Edwin Malonzo	City of Cerritos	Accountant	emalonzo@cerritos.us	562-860-0311 Ext 2037
Emely Merina	City of Cerritos	Community Services Supervisor	emerina@cerritos.us	562-916-1252
Collin Scholtz	Risk Management Professionals	Senior Engineer	Collin.Scholtz@RMPCorp.com	949-282-0123 Ext 245
Rebecca Scott	City of Cerritos	Management Analyst	rscott@cerritos.us	562-916-1227
Sherré Titus	City of Cerritos	Recreation Superintendent	stitus@cerritos.us	562-916-1255
Alan Strickland	City of Cerritos	House Manager	astrickland@cerritos.us	562-916-8530

**City of Cerritos**  
**Hazard Mitigation Plan**

Steering Committee Meeting #2:  
Hazard Rankings Review, Goals and Objectives, Asset Inventory  
October 9, 2014



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**MEETING AGENDA**

- Review Hazard Rankings
- HMP Goals and Objectives
- Review and Update Asset Inventory List

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**HAZARD RANKINGS**

Hazard	Rank	Score
Earthquake	5	50
Moderately High	10	18
Urban Fire	11	18
Transportation Accident/Incident	16	16
Moderately Low	17	12
Flood/Dam Failure	18	12
Power Failure	19	12
Hazardous Material Release	20	12
Drought	21	12
Low	22	4
Terrorism	23	4
Wildfire	24	4

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**Develop Mitigation Goals and Objectives**

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**Hazard Rankings Review**

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**RISK RANK METHODOLOGY**



- The risk ranking is facilitated using an spreadsheet program that asks specific questions on potential hazards and then assigns a relative value to each potential hazard accordingly.
- The result of the workshop will be a ranked list of hazards to be studied in detail in the Hazard Mitigation Plan.

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**GOALS AND OBJECTIVES**

- Review Previous HMP Goals and Objectives
- Engage in discussions to review and develop Goals and Objectives specific to the needs of the City of Cerritos

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**PREVIOUS PLAN GOALS AND OBJECTIVES**


**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 hazards.
- Develop and implement programs for adverse hazard events while providing insurance coverage for catastrophic hazard.
- Improve hazard assessment information to make recommendations for discouraging new development in high hazard areas and encouraging preventative measures for existing development in areas vulnerable to natural hazards.

**Public Awareness**

- Develop and implement education and outreach programs to increase public awareness of the City's hazard mitigation plan.
- Provide information on both partnership opportunities, and funding resources to assist in implementing mitigation activities.

Hazard Mitigation Plan



**RISK RANKING – MATRIX**

Hazard	Very High	High	Moderate	Low	Very Low	Negligible
Earthquake	High	High	Moderate	Low	Very Low	Negligible
Wildfire	High	High	Moderate	Low	Very Low	Negligible
Flood	High	High	Moderate	Low	Very Low	Negligible

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**PREVIOUS PLAN OBJECTIVES (cont.)**

**Natural Systems**

- Balance natural resource management and land use planning with natural hazard mitigation, property, and the environment.

**Partnerships & Implementation**

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local and regional hazard mitigation activities.

Hazard Mitigation Plan

**PREVIOUS PLAN OBJECTIVES (cont.)**

**Emergency Services**

- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry.
- Coordinate and integrate natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

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**VALIDATE GOALS AND OBJECTIVES**

- Validate the previous HMP Goals and Objectives
  - Ensure they align with current trends in the City
- Develop hazard-specific goals and objectives
  - These will be used to transform possible mitigation actions in the future

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**Next Steps...**

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**ASSET INVENTORY**

- Review Asset Inventory
  - Types and number of existing and future buildings
  - Infrastructure
  - Critical Facilities
  - Loss Estimates
- Review each asset category and assign potential percentage of damage expected due to each identified hazard

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**Contact Information**

Risk Management Professionals, Inc. - www.RMPCorp.com

**CONTACT INFORMATION**

Ryan Bray  
 Risk Management Professionals, Inc.  
 300 Goddard, Suite 200  
 Irvine, California 92618  
 Office Phone: 949/282-0123 x238  
 Fax: 949/745-2892  
 Email: [Ryan.Bray@RMPCorp.com](mailto:Ryan.Bray@RMPCorp.com)  
 Web: [www.RMPCorp.com](http://www.RMPCorp.com)

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**City of Cerritos  
 HAZARD MITIGATION PLAN-  
 Meeting #2**

October 9, 2014

Name	Company	Position	Email Address
Cynthia Doss	City of Cerritos	Mgmt Analyst	cdoss@cerritos.us
N Hipsley-Coxe	ARC	DISASTER PROGRAM MANAGER	nhipsley@ CERRITOSLINK.NET
Rebecca Scott	City of Cerritos	Mgmt. Analyst	RScott@cerritos.us
Colin Scholtz	RMP	Sr. Engineer	Colin.Scholtz@ RMPCorp.com
Alan Strickland	CEQA	House Wgn	A.Strickland@ CERRITOS.US
Phil Winowicz	ARC	VOLUNTEER- AMPAASSADOR	phil.winowicz@Hortman SG
Mirze Warner	CO C	Building Performance MANAGER	MirzeWarner@Cerritos.us
Eskin Mayburo	City of Cerritos	Accountant	<del>ESKIN.MAYBURO@CERRITOS.US</del> ESKIN.MAYBURO@CERRITOS.US



# Steering Committee Meeting #3

**City of Cerritos**  
**Hazard Mitigation Plan**

Steering Committee Meeting #3:  
Asset Inventory and Vulnerability Assessment  
February 9, 2015



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**Meeting Agenda**

- Review Hazard Ranking & Public Survey Results
- Review HMP Goals and Objectives
- Validate Asset Inventory List
- Complete Vulnerability Assessment (Loss Estimate Calculations)
  - Assign estimated percent damage to each asset from the identified hazards

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**Public Survey Results**

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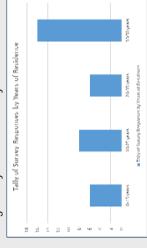
**Public Survey**

- To fulfill FEMA's requirement to include the public during the Hazard Mitigation Planning Process, a 10-question survey was published through the City newsletter in January 2015
- The feedback from each of the 37 responses will provide insight into how the public perceives the vulnerability of the City to hazardous events

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**Community Sample Profile**


- Years of City Residence
  - Ranged from 3-47 years
  - Averaged 30 years with the City



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**Community Sample Profile (Cont.)**

- 33% of the Community Sample reported personal experience of a hazardous event while 67% did not
  - Earthquake was the most common hazard
  - Drought was the second most common hazard
- 36 were homeowners; 1 renter



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### Community Sample Profile (Cont.)

- Preparedness
  - A large majority of the Community Sample reported taking measures to mitigate personal risk in the event of an incident including the following
    - Food/Water
    - Flashlights/Batteries
    - First Aid
    - Tools
    - Sleeping Bag/ Blankets
    - Smoke Detectors
    - CPR Training (50%)

### Hazard Rankings Review

### Current Goals & Objectives (Cont.)

- Promote Public Awareness
  - Develop and implement educational and outreach programs to increase public awareness of hazards
    - Provide information on back-to-back, participatory opportunities, and funding resources to assist in implementing mitigation activities
  - Protect the Environment
    - Identify environmental and land use planning with hazard mitigation to protect wildlife and the environment
    - Improve hazard assessment information to make recommendations for encouraging preventative measures for new and existing developments vulnerable to hazards, with regard to environmental protection

### Current Goals & Objectives (Cont.)

- Develop and Expand Partnerships and Implementation
  - Strengthen communication and coordinate participation among and within public and private organizations, business, and industry to gain vested interest in implementation
  - Encourage leadership within public and private sector organizations to prioritize and implement local and regional hazard mitigation activities
- Enhance Emergency Services Capabilities
  - Establish a policy to ensure the creation of mitigation projects for critical facilities, services, and infrastructure
  - Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business, and industry
  - Coordinate and integrate all hazard mitigation activities, where appropriate, with emergency operations plans and procedures

### Hazard Rankings

Rank	Score
High	
Earthquake	50
Moderately High	
Drought	18
Moderate	
Urban Fire	18
Acid-Sulfate Soils	
Historical Loss	12
Flood Dam Failure	12
Pipeline Failure/Hazardous Material Release	12
Drought	12
Low	
Terrorism	4
Windsblow	4
Wild Fire	4

### Public Survey Hazard Ranking Comparison

Steering Committee Ranking	Community Sample Ranking
Earthquake	Earthquake
Urban Fire	Drought
Transportation Incident	Transportation Incident
Flood Dam Failure	Terrorism
Pipeline Failure/Hazardous Materials Release	Pipeline Failure/Hazardous Materials Release
Drought	Windsblow
Terrorism	Flood Dam Failure
Windsblow	Wild Fire

### Hazard-Specific Objectives

Hazard Mitigated	Hazard Specific Objectives
Earthquake	<p><b>ES01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>ES02</b> - Ensure earthquake preparedness and recovery</p> <p><b>ES03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>ES04</b> - Ensure urban fire preparedness and recovery</p> <p><b>ES05</b> - Ensure urban fire preparedness and recovery</p>
Urban Fire	<p><b>UF01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>UF02</b> - Ensure earthquake preparedness and recovery</p> <p><b>UF03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>UF04</b> - Ensure urban fire preparedness and recovery</p> <p><b>UF05</b> - Ensure urban fire preparedness and recovery</p>
Transportation Incident	<p><b>TI01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>TI02</b> - Ensure earthquake preparedness and recovery</p> <p><b>TI03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>TI04</b> - Ensure urban fire preparedness and recovery</p> <p><b>TI05</b> - Ensure urban fire preparedness and recovery</p>
Flood Dam Failure	<p><b>FD01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>FD02</b> - Ensure earthquake preparedness and recovery</p> <p><b>FD03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>FD04</b> - Ensure urban fire preparedness and recovery</p> <p><b>FD05</b> - Ensure urban fire preparedness and recovery</p>
Pipeline Failure/Hazardous Materials Release	<p><b>PL01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>PL02</b> - Ensure earthquake preparedness and recovery</p> <p><b>PL03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>PL04</b> - Ensure urban fire preparedness and recovery</p> <p><b>PL05</b> - Ensure urban fire preparedness and recovery</p>
Drought	<p><b>DR01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>DR02</b> - Ensure earthquake preparedness and recovery</p> <p><b>DR03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>DR04</b> - Ensure urban fire preparedness and recovery</p> <p><b>DR05</b> - Ensure urban fire preparedness and recovery</p>
Terrorism	<p><b>TR01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>TR02</b> - Ensure earthquake preparedness and recovery</p> <p><b>TR03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>TR04</b> - Ensure urban fire preparedness and recovery</p> <p><b>TR05</b> - Ensure urban fire preparedness and recovery</p>
Windsblow	<p><b>WB01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>WB02</b> - Ensure earthquake preparedness and recovery</p> <p><b>WB03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>WB04</b> - Ensure urban fire preparedness and recovery</p> <p><b>WB05</b> - Ensure urban fire preparedness and recovery</p>
Wild Fire	<p><b>WF01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>WF02</b> - Ensure earthquake preparedness and recovery</p> <p><b>WF03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>WF04</b> - Ensure urban fire preparedness and recovery</p> <p><b>WF05</b> - Ensure urban fire preparedness and recovery</p>

### Hazard-Specific Objectives (Cont.)

Hazard Mitigated	Hazard Specific Objectives
Public Safety/Hazardous Materials Release	<p><b>PS01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>PS02</b> - Ensure earthquake preparedness and recovery</p> <p><b>PS03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>PS04</b> - Ensure urban fire preparedness and recovery</p> <p><b>PS05</b> - Ensure urban fire preparedness and recovery</p>
Drought	<p><b>DR01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>DR02</b> - Ensure earthquake preparedness and recovery</p> <p><b>DR03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>DR04</b> - Ensure urban fire preparedness and recovery</p> <p><b>DR05</b> - Ensure urban fire preparedness and recovery</p>
Terrorism	<p><b>TR01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>TR02</b> - Ensure earthquake preparedness and recovery</p> <p><b>TR03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>TR04</b> - Ensure urban fire preparedness and recovery</p> <p><b>TR05</b> - Ensure urban fire preparedness and recovery</p>
Windsblow	<p><b>WB01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>WB02</b> - Ensure earthquake preparedness and recovery</p> <p><b>WB03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>WB04</b> - Ensure urban fire preparedness and recovery</p> <p><b>WB05</b> - Ensure urban fire preparedness and recovery</p>
Wild Fire	<p><b>WF01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>WF02</b> - Ensure earthquake preparedness and recovery</p> <p><b>WF03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>WF04</b> - Ensure urban fire preparedness and recovery</p> <p><b>WF05</b> - Ensure urban fire preparedness and recovery</p>

### Mitigation Goals and Objectives Review

### Current Goals & Objectives

- Protect Lives, Property, and Commerce
  - Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from natural hazards
  - Reduce losses and repetitive damages for chronic hazard events while promoting loss prevention options for catastrophic hazards
  - Improve hazard assessment information to make recommendations for encouraging preventative measures for new and existing developments which are vulnerable to hazards
  - Promote business continuity planning for local businesses

### Hazard-Specific Objectives (Cont.)

Hazard Mitigated	Hazard Specific Objectives
Terrorism	<p><b>TR01</b> - Continue to coordinate with law enforcement and fire to ensure response and recovery procedures are fully implemented</p> <p><b>TR02</b> - Coordinate with the City GIS division and contracted service providers to update policies to combat cyber terrorism</p> <p><b>TR03</b> - Coordinate with the County Public Health Department to ensure response and recovery in the event of a bioterrorism event</p> <p><b>TR04</b> - Continue public education to identify potential acts of terrorism (See inventory, see inventory)</p> <p><b>TR05</b> - Continue to maintain the fire training program to minimize the effects of severe weather and destructive winds</p> <p><b>TR06</b> - Ensure that any above ground public utility assets are analyzed and upgraded to withstand a maximum</p>
Windsblow	<p><b>WB01</b> - Identify critical vulnerabilities in the City and conduct structural improvement projects, as appropriate</p> <p><b>WB02</b> - Ensure earthquake preparedness and recovery</p> <p><b>WB03</b> - Identify vulnerable communities that could be affected by urban fires</p> <p><b>WB04</b> - Ensure urban fire preparedness and recovery</p> <p><b>WB05</b> - Ensure urban fire preparedness and recovery</p>

### Asset Inventory and Vulnerability Assessment







# Steering Committee Meeting #4

**City of Cerritos**  
**Hazard Mitigation Plan**

Steering Committee Meeting #4:  
 Mitigation Action Identification  
 May 7, 2015



Risk Management Professionals, Inc. – www.RMPCorp.com

**MEETING OBJECTIVES**

- Review Mitigation Goals and Objectives
- Examine Relevant Results of Public Survey
- Develop Potential Mitigation Projects

Risk Management Professionals, Inc.

**Hazard Ranking Review**




Risk Management Professionals, Inc. – www.RMPCorp.com

**HAZARD RANKING SUMMARY**

Rank	Score
High	50
Moderately High	18
Moderate	16
Moderately Low	12
Low	12
Very Low	4
Very Low	4

Risk Management Professionals, Inc.

**Mitigation Goals and Objectives Review**



Risk Management Professionals, Inc. – www.RMPCorp.com

**OVERALL PLAN GOALS**

1. Protect Lives, Property, and Commerce
2. Promote Public Awareness
3. Protect the Environment
4. Develop and Expand Partnerships and Implementation
5. Enhance Emergency Services Capabilities

Risk Management Professionals, Inc.



**FLOOD/ DAM FAILURE EXAMPLE MITIGATION PROJECTS**

- Acquisition, Relocation, & Elevation Projects
- Dry-Flooding (e.g., plastic sheeting)
- Wet-Flooding (e.g., water resistant materials)
- Stormwater Management Ordinances or Amendments
- Floodplain Ordinances or Amendments
- Storm Damage System Improvements
- Structural Flood Control Measures (e.g., levees, dams, floodwalls) (Isolation Zone Mapping)
- Preparedness and Response Plans
- Notification Systems
- Structural Storage Tank Reservoir Improvements

Risk Management Professionals

**PIPELINE FAILURE/ HAZMAT RELEASE EXAMPLE MITIGATION PROJECTS**

- Emergency Plans
- Transportation
- Disposal
- Emergency Response Teams
- Industrial Site Buffering
- Pipeline Location and Design
- Digging Hitlines
- Contingency Planning
- Improvements to Maps and Records

Risk Management Professionals

**Next Steering Committee Meeting**

The next Steering Committee meeting will consist of a Benefit-Cost Review of the identified Mitigation Actions:

**To be scheduled**

Risk Management Professionals

**CONTACT INFORMATION**

Collin Scholtz, P.E.  
 Ryan Bray  
 Risk Management Professionals, Inc.  
 300 Goddard, Suite 200  
 Irvine, California 92618  
 Office Phone: 949/282-0123 x245  
 949/282-0123 x 238  
 Email: [Collin.Scholtz@RMPCorp.com](mailto:Collin.Scholtz@RMPCorp.com)  
 Ryan.Bray@RMPCorp.com  
 Web: [www.RMPCorp.com](http://www.RMPCorp.com)

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**DROUGHT EXAMPLE MITIGATION PROJECTS**

- Water Use Ordinances
- Contingency Plans
- Emergency Water Distribution and Storage Systems
- Water Conservation Education
- System Retrofits
- Leak Detection Programs

Risk Management Professionals

**TERRORISM EXAMPLE MITIGATION PROJECTS**

- Emergency Plans
- Emergency Response Teams
- Security
- Training


Risk Management Professionals

**WINDSTORM EXAMPLE MITIGATION PROJECTS**

- Implement Tree Trimming
- Retrofits
- Anchoring
- Traffic Light Upgrades

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**Next Steps...**



Risk Management Professionals, Inc. -- www.RMPCorp.com







**Next Steps...**

Risk Management Professionals, Inc. - www.RMPCorp.com

**NEXT ADVISORY COMMITTEE MEETING**

The Draft Hazard Mitigation Plan will be provided to each member for review. Once comments are implemented, the Public Review Draft Hazard Mitigation Plan will be presented at a City Council meeting.

**City Council Meeting:  
October 2015**

Hazard Mitigation Plan Risk Management Professionals

**City of Cerritos  
HAZARD MITIGATION PLAN-  
Steering Committee Meeting #5**

September 3, 2015

**CONTACT INFORMATION**

Colin R. Scholtz, PE  
Ryan W. Bray  
Risk Management Professionals, Inc.  
300 Goddard, Suite 220  
Irvine, California 92618  
Office Phone: 949/282-0123

Email: Colin.Scholtz@RMPCorp.com  
Ryan.Bray@RMPCorp.com  
Web: www.RMPCorp.com

Hazard Mitigation Plan Risk Management Professionals

Name	Company	Position	Email Address
Rebecca Scott	City of Cerritos	Mgmt. Analyst	
Colin Scholtz	Risk Management Professionals	Sr. Engineer	Colin.Scholtz@RMPCorp.com
Raoul Venant	Norwalk	ESD	NorwalkEncmde@a.com
Eric Wosick	CITY OF NORWALK	EMERGENCY PREP OFFICER	EWOSICK@NORWALKCA.GOV
Ciro Racovishin	LASD	OPS. Sergeant	CIRACOWS@LASD.ORG
JOE NUNEZ	LASD	CAPTAIN	JSNUNEZ@LASD.ORG
MIKE GUTRIE	LASD	EOC	MIGUTRIE@LASD.ORG
Sherré Titus	City of Cerritos	Recreation Superintendent	stitus@cerritos.us

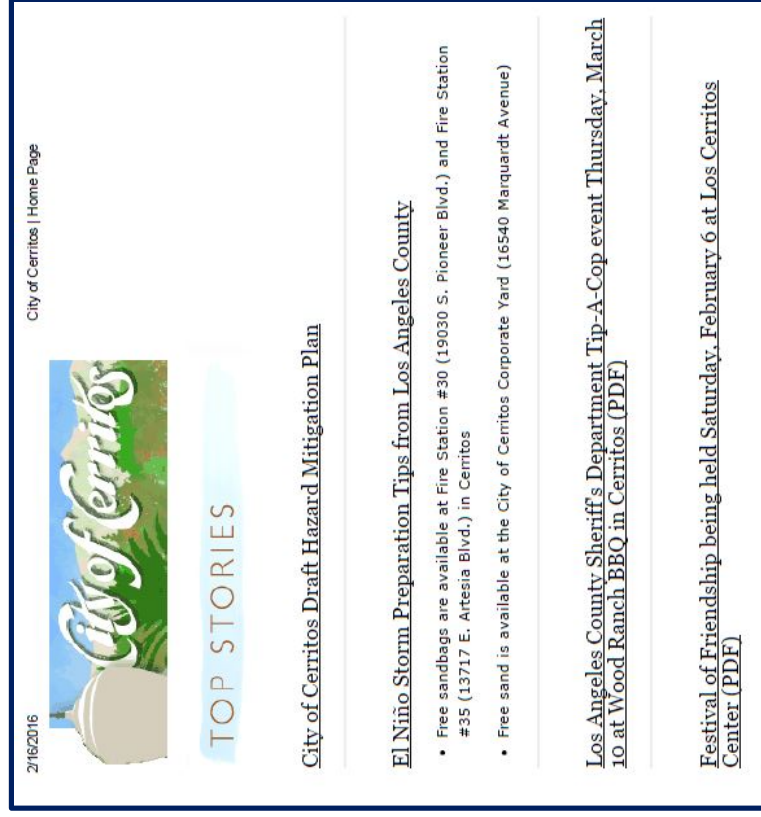





## Public Comment Advertisement

The City solicited public involvement during the review of the draft Hazard Mitigation Plan. The following Figures D.1 and D.2 illustrate the posting of the draft Plan on the City's website as well as an invitation to submit comments at the February 25, 2016 City Council meeting.

Figure D.1: Draft Hazard Mitigation Plan Posting for Public Review



2/16/2016 City of Cerritos | Home Page



TOP STORIES

[City of Cerritos Draft Hazard Mitigation Plan](#)

[El Niño Storm Preparation Tips from Los Angeles County](#)

- Free sandbags are available at Fire Station #30 (19030 S. Pioneer Blvd.) and Fire Station #35 (13717 E. Artesia Blvd.) in Cerritos
- Free sand is available at the City of Cerritos Corporate Yard (16540 Marquardt Avenue)

[Los Angeles County Sheriff's Department Tip-A-Cop event Thursday, March 10 at Wood Ranch BBQ in Cerritos \(PDF\)](#)

[Festival of Friendship being held Saturday, February 6 at Los Cerritos Center \(PDF\)](#)

Figure D.2: Invitation for Public Participation at a City Council Meeting



2/16/2016 City of Cerritos | Local Hazard Mitigation Plan draft available for review



# Local Hazard Mitigation Plan draft available for review

February 1, 2016

The City of Cerritos has updated its Local Hazard Mitigation Plan (LHMP) as mandated by the Federal Emergency Management Agency. A current LHMP allows the City to reduce the costs associated with disaster response and recovery by implementing hazard mitigation strategies.

Beginning Friday, February 12, a final draft of the LHMP will be available for review at the Public Works counter at City Hall and on the City's website at [cerritos.us](http://cerritos.us). The City Council will conduct a public hearing to discuss the draft at the February 25 City Council meeting.

As part of the City Council meeting, a short overview of the planning process and intent of the Hazard Mitigation Plan update was provided by Rebecca Scott, Management Analyst for the City. During the meeting, Dr. Mark Chung, a City resident, came forward to voice his support for the Plan. Dr. Chung stated that he and his wife have been residents of the City for five years, and are always amazed at the City's progressiveness. He found the City's original Mitigation Plan six months previously when he was searching the internet. He read it with great detail and looks forward to the new plan as he is not only a physician, but a volunteer for the Sheriff and the Community Emergency Response Team (CERT). He stated that he looks forward to FEMA support of training citizens and volunteers in case of an emergency, such as earthquakes, tornados or acts of terrorism. He wishes to be informed about any possible FEMA funding for a CERT van, radio communications for emergencies (like HAM radios), supplies, emergency food supplies and sheltering. Dr. Chung stated that his wife Jane is a Red Cross volunteer and a nurse and that they both feel that this is a great opportunity to move forward and support the City in its disaster planning.

# BENEFIT-COST ANALYSIS

Benefits can be classified as avoided damages and losses. To calculate the benefit of implementing mitigation recommendations, one would first calculate the likely damage without the mitigation action. Next, one would calculate the likely damage after the implementation of the mitigation recommendation. Then, the losses after mitigation are subtracted from the losses without mitigation to calculate net benefits. Finally, the useful life of the building and the time value of money (discount rate) are used to convert those average annual losses to their present value using the following Net Present Value (NPV) equation:

$$NPV = -M + B^*[(1 - (1 + i)^{-T}) / i]$$

Where M is the cost of the mitigation measure, B is the net benefit (loss without mitigation - loss with mitigation), T is the useful life of the asset (50 years), and I is the interest rate to calculate the present day value (7%).

The net benefits of mitigation are compared to the direct costs of implementing the mitigation action. This relationship is expressed as the ratio of benefits to costs.

$$\text{Benefit / Cost} = (\text{NPV of expected benefit}) / (\text{mitigation cost})$$

A ratio of greater than 1.0 is considered a worthwhile mitigation investment.

Since the Benefit-Cost Analysis is an integral part of obtaining grant money from the Federal Emergency Management Agency for mitigation efforts, this appendix includes the requirements for classifying benefits for select mitigation projects, include FEMA's *What is a Benefit and Using Benefit-Cost Review in Mitigation Planning*.

Additional comments were made by the City Council regarding the Plan's implementation strategy as well as compliments on Dr. Chung's interest in City disaster planning. A recording of the meeting can be found on the City's website at [http://cerritos.granicus.com/MediaPlayer.php?view\\_id=15&clip\\_id=3691](http://cerritos.granicus.com/MediaPlayer.php?view_id=15&clip_id=3691). Item 8A of the agenda contains the review and consideration of the City's draft Hazard Mitigation Plan.

The close of the City Council meeting marked the end of a two-week period in which the public had the opportunity to comment on the draft Hazard Mitigation Plan before submission for State review. Dr. Chung's statement was the only comment submitted by the public during the comment period. For more information, and to direct any public comments, please contact Rebecca Scott at 562-916-1227.

The table on the following page documents the City personnel, Risk Management Professionals staff, and public representatives that took part in the City Council discussion regarding the draft Hazard Mitigation Plan.

**Table D.1: City Council Meeting Attendees**

Name	Affiliation	Title
Rebecca Scott	City of Cerritos	Management Analyst
Ryan Bray	Risk Management Professionals	Project Coordinator
Jim Edwards	City of Cerritos	Councilmember
Mark Pulido	City of Cerritos	Councilmember
Naresh Solanki	City of Cerritos	Councilmember
George Ray	City of Cerritos	Mayor Pro Tem
Carol Chen	City of Cerritos	Mayor
Dr. Mark Chung	Citizen	Citizen

# WHAT IS A BENEFIT?

## GUIDANCE ON BENEFIT-COST ANALYSIS OF HAZARD MITIGATION PROJECTS

**DRAFT**

### REVISION 2.0

(Supersedes Revision 1.0)



Federal Emergency Management Agency  
Flood Insurance and Mitigation Administration  
500 C Street, SW  
Washington, DC 20472

**May 1, 2001**

## Table of Contents

<b>Section 1</b>	<b>Introduction</b> .....	<b>1-1</b>
	1.1 What Is Mitigation?.....	1-1
	1.2 What Are Benefits?.....	1-2
	1.3 What Benefits Should Be Counted?.....	1-3
	1.4 Categories of Benefits.....	1-4
	1.5 What Benefits Cannot Be Counted?.....	1-7
	1.6 What Is Benefit-Cost Analysis?.....	1-8
	1.7 Why Does FEMA Do Benefit-Cost Analysis?.....	1-11
	1.7.1 The Stafford Act.....	1-11
	1.7.2 44 CFR, Emergency Management and Assistance.....	1-12
<b>Section 2</b>	<b>How to Calculate Benefits</b> .....	<b>2-1</b>
	2.1 Avoided Physical Damages.....	2-1
	2.2 Loss-of-Function Impacts.....	2-3
	2.2.1 Displacement Time and Functional Downtime.....	2-4
	2.2.2 Loss-of-Function Impacts for Buildings.....	2-5
	2.2.3 Economic Impact of Loss of Utility Services.....	2-9
	2.2.4 Economic Impact of Road and Bridge Closures.....	2-9
	2.3 Casualties.....	2-11
	2.4 Emergency Management Costs.....	2-12
	2.5 Summary.....	2-13
<b>Section 3</b>	<b>Counting Benefits for Ordinary Buildings</b> .....	<b>3-1</b>
	3.1 Single Residential Buildings.....	3-1
	3.2 Groups of Residential Buildings.....	3-5
	3.3 Commercial Buildings.....	3-6
	3.4 Public Buildings.....	3-9
	3.5 Summary.....	3-11
<b>Section 4</b>	<b>Critical Facilities: Police, Fire and Medical Buildings</b> .....	<b>4-1</b>
	4.1 Physical Damage Estimates for Police, Fire and Medical Buildings.....	4-2
	4.2 Displacement Costs.....	4-3
	4.3 Loss of Public Services.....	4-4
	4.3.1 Continuity Premiums for Police, Fire and Medical Services.....	4-5
	4.3.2 Functional Downtime Estimates for Police, Fire and Medical Services.....	4-7



















## SECTION ONE

### Introduction

that is included in the analysis, not the FEMA share of the cost. For example, consider a mitigation project with a total cost of \$500,000 and calculated benefits of \$300,000 (i.e., a benefit-cost ratio of 0.60). This project fails the cost-effectiveness criterion. From the perspective of the community as a whole, the benefits are less than the cost of the project. This conclusion does not depend on what fraction of the project is FEMA funded, even if FEMA funds less than \$300,000 of the project cost, because the OMB guidance for benefit-cost analysis requires the entire project be cost-effective in order to be eligible for funding.

## SECTION TWO

### How to Calculate Benefits

As discussed in Section 1, the benefits of mitigation projects are future damages and losses avoided by undertaking the mitigation project. Damages and losses become benefits when they are avoided by a mitigation project. This section describes the major categories of damages and losses estimated before and after mitigation; the estimates of damages and losses are then used to calculate the benefits of avoided such damages and losses.

In most cases, FEMA's goal is to count fully all of the benefits of each mitigation project. There are four major categories of benefits:

1. Avoided physical damages
2. Avoided loss-of-function impacts
3. Avoided casualties,
4. Avoided emergency management costs

A brief summary of how to count each of these four categories is provided in this section.

## 2.1 Avoided Physical Damages

Physical damages are the most direct kind of damages and usually are the easiest to count. Physical damages are simply the costs to repair or replace damaged facilities, including buildings, building contents, and infrastructure. Physical damages may also include repair or replacement costs for landscaping, site contamination restoration, vehicles, and equipment. The most common sub-categories of avoided physical damages are:

- Buildings
- Contents
- Infrastructure
- Landscaping
- Outbuildings
- Site Contamination
- Vehicles
- Equipment

Physical damage estimates (before and after mitigation) are expressed in dollars. For benefit-cost analysis of hazard mitigation projects, damages are often expressed as a percentage of the replacement value of the damaged element (e.g., a building, the contents of a building, a utility component or a bridge). Damage functions are used to express the percentage damage expected as a



## SECTION TWO

### How to Calculate Benefits

The type of loss-of-function impacts to be counted varies depending on the type of facility under evaluation. Some of the sub-categories of loss-of-function impacts are somewhat more difficult to understand and to calculate than the more self-evident physical damage sub-categories. As a result, loss-of-function impacts have often been only partially counted or not counted at all when conducting benefit-cost analyses of hazard mitigation projects. Undercounting loss-of-function impacts is a serious error that may result in highly meritorious and highly cost-effective mitigation projects being improperly rejected. The most common sub-categories of loss-of-function impacts are:

- Displacement costs for temporary quarters
  - Loss of rental income
  - Loss of business income
  - Lost wages
- Disruption time for residents
- Loss of public services
- Economic impact of loss of utility services
- Economic impact of road/bridge closures

#### 2.2.1 Displacement Time and Functional Downtime

Estimating loss-of-function economic impacts for a building or other facility always requires two steps. First, the time duration of the interruption of function must be estimated, and second, the economic value per unit time of interruption of service must be estimated.

For purposes of benefit-cost analysis, displacement time and functional downtime must be considered. **Displacement time** is the time period during which occupants are displaced from a building so repairs can be made. For low levels of damage, displacement time is generally zero; that is, minor repairs can be made without displacing occupants. **Functional downtime** is the time period during which services are lost.

Functional downtime may be much shorter than displacement time. For example, consider a city hall building that is badly damaged in a disaster. The occupants of the building may be displaced to temporary quarters for six months – this is the displacement time. Displacement costs are estimated from the displacement time and the daily or monthly cost of displacement. However, in this simple example, the functional downtime is much less than six months. If the services are re-established in the temporary quarters in two weeks, then the functional downtime is only two weeks, not six months.

## SECTION TWO

### How to Calculate Benefits

Functional downtime can also be fractional. One day of functional downtime can be one day of complete loss of service, or two days of 50% loss of service, or 10 days of 10% loss of service, and so on.

For utility and transportation systems, there are generally no displacement costs because such service generally can't simply be moved to temporary quarters. Thus for these systems the loss-of-function economic impacts are calculated from the estimated functional downtime and the value of the service per day.

#### 2.2.2 Loss-of-Function Impacts for Buildings

For buildings, loss-of-function impacts may include the following categories: displacement costs, loss of rental income, loss of business income, loss of wages, loss of public services, and disruption time.

**Displacement costs** are the extra costs incurred when occupants of a building are displaced to temporary quarters. Displacement costs may be incurred for residential, commercial, or public buildings. Displacement occurs only when damages to a building are sufficiently severe that the building cannot be repaired with occupants in place. At lower levels of damage, repairs are commonly made with occupants remaining in the building during the repair process.

Displacement costs include the following sub-categories of costs:

1. Rental costs for temporary quarters
2. Other monthly costs of displacement such as furniture rental, other costs of being in temporary space, extra commuting costs, etc.
3. One-time costs such as utility hookup fees, round-trip moving costs, etc.

Displacement costs are the most commonly counted loss-of-function impact. The necessary data is straightforward and relatively easy to obtain. Rental costs for temporary quarters can be obtained from local officials or real estate firms. Estimates for other monthly costs and one-time moving costs can be provided by applicants or estimated using common sense.

**Rental income losses** are incurred by owners when tenants vacate premises because of damages, resulting in a loss of rental income for the owner. Rental income losses may apply to any building that is rented (residential, commercial, or public).

Analysts should be aware of the potential for double-counting rental income losses. Consider an example where two homes are damaged by floods and the occupants are displaced to temporary quarters for several months while repairs are made. If one home is owner-occupied, the owner is still responsible for mortgage and tax payments on the home in addition to paying rent and other expenses

## SECTION TWO

### How to Calculate Benefits

for temporary quarters. In this case, the full displacement costs for temporary quarters are additional expenses and should be counted. However, for a rented home, the economics are different. If a renter is displaced to temporary quarters, then he/she no longer pays rent for the damaged facility. This loss of rental income is a loss to the owner and may be counted as part of the loss-of-function impacts for the building. However, in this case, the displacement costs for the renter must be adjusted to consider only the possible increase in rent above the previous rent, rather than the total cost of rent at the temporary quarters. Counting the displacement costs for the renter and the full loss of rental income for the owner is double-counting and must be avoided.

The simplest way to avoid potential double-counting is to not count rental income losses. If this is done, then the full displacement costs should be counted for both owners and renters. Counting the full displacement costs for renters, does, in effect, count the lost rental income. This approach has the additional advantage that it is no longer necessary to determine whether occupants of buildings are owners or renters.

**L**oss of business income may occur for commercial buildings when damage is severe enough to result in temporary loss of function of a building. For benefit-cost analysis, the proper measure of loss of business income is the net income, not the gross income since expenses as well as receipts are lower when a business is closed.

Estimates of net business income losses can generally be obtained from applicants, the owners, or local officials. In making estimates of net business income losses, it is important to remember that some lost business income can be made up. For example, a business that is closed for two weeks because of hurricane damage does not necessarily lose two weeks of net business income. In many cases, some of the lost sales or income will be made up after the business reopens.

FEMA considers relatively few mitigation projects for commercial buildings. In most cases, the loss of business income constitutes only a very small fraction of total damages and losses. Thus, the benefits of avoiding or reducing loss of business income are generally only a small fraction of total damages and losses. For projects that are clearly cost-effective, it may not be necessary to consider business income losses to demonstrate cost-effectiveness. However, to count fully the benefits of hazard mitigation projects for commercial buildings, it is necessary to consider loss of business income.

**L**oss of wage income may also occur for commercial buildings, when damage is severe enough to result in temporary loss of function of a building. When a business closes temporarily due to damages, loss of wages for employees is analogous to the loss of business income for the owner. Historically, loss of wage income has not been considered in FEMA's benefit-cost analysis. In economic theory, wages are considered fungible, that is, movable or transferable, and it is commonly assumed that wage earners who lose one job find another. However, since loss of wages due to

## SECTION TWO

### How to Calculate Benefits

disaster damage is short-term and not predictable, the assumption of fundability does not appear to apply.

The intent of the Stafford Act is to alleviate the "damage, loss, hardship, and suffering" caused by major disasters. In this context and for consistency with regard to counting losses in net business income, counting loss of wage income is appropriate for benefit-cost analysis of hazard mitigation projects. For purposes of benefit-cost analysis, wage income losses to be counted are only short-term losses due to temporary business closes. The wage losses to be counted are primarily those for hourly workers. Wage losses for salaried workers should not be counted unless these workers are also laid off without pay. Wage losses should be counted as business income losses only to the extent that they are not likely to be made up later after the business reopens.

Situations where a business may leave town with permanent loss of wages (if, for example, some flood protection improvements are not made) should not be counted because such impacts fall under the type of secondary impacts on employment or output that are excluded from consideration under OMB guidance.

Loss of wages for public employees should not be counted for two reasons: 1) most public employees are likely to continue to receive wages during and after disasters, and 2) the value of public sector wages is already included in evaluating the loss of public services.

Loss of hourly wages due to temporary business closures due to disaster damage should include the full value to employees, wages plus benefits. Local data on wages and benefits are generally available from local officials. If not, national average data may be used. As discussed in Section 7 of this report (Roads and Bridges), the current national average for wages and benefits is \$21.16 per hour.

**E**conomic value of disruption time for residents is the value of lost time incurred by residents for pre-disaster preventative measures, evacuation time, cleanup and repair of flood damages, replacement of damaged property, dealing with insurance claims and other disaster-related matters. The key economic concept is that personal time has value, whether or not the time is formally compensated by employment. Outlined below is an approach closely analogous to that adopted by the U.S. Department of Transportation (DOT) in calculating the benefits of reducing travel time delays. The simplest assumption consistent with economic theory is that each hour of time is worth the same amount, whether such time is personal or business, compensated or not. In other words, the last hour of work time and the first hour of leisure time are assumed to have equal value. This is the assumption suggested in Section 7 (Roads and Bridges) for placing a value on delay or detour times due to closures of roads and bridges. The same economic principles apply to personal time lost due to disaster damages to residential structures. Placing an economic value on personal disruption time is consistent with the DOT's approach and with the intent of the Stafford Act to alleviate the "damage, loss, hardship, and suffering" caused by major disasters.





duration of delays or detours, and finally, calculating the economic impact using the number of person hours of delay or detour times the average value of wages and benefits.

This section has reviewed the major types of loss-of-function impacts and how to calculate each one. A summary of loss-of-function impacts is given below in Table 2.2.

**Table 2.2**  
**Loss-of-Function Impacts**

Type of Facility	Loss-of-Function Impact	Data Inputs
Building (residential, commercial, public)	Displacement costs	<ul style="list-style-type: none"> <li>▪ Displacement time</li> <li>▪ Rent for temporary quarters</li> <li>▪ Other monthly costs</li> <li>▪ One-time costs</li> </ul>
Building (residential, commercial)	Rental income losses	<ul style="list-style-type: none"> <li>▪ Displacement time</li> <li>▪ Monthly rent</li> </ul>
Building (commercial)	Business income losses Wage income losses	<ul style="list-style-type: none"> <li>▪ Functional downtime</li> <li>▪ Net business income per month</li> <li>▪ Wages and benefits per month</li> </ul>
Building (residential)	Disruption costs	<ul style="list-style-type: none"> <li>▪ Disruption time</li> <li>▪ Economic value per person per hour</li> </ul>
Building (public, ordinary services))	Loss of public services	<ul style="list-style-type: none"> <li>▪ Functional downtime</li> <li>▪ Operating budget</li> </ul>
Building (public, critical services))	Economic Impact of Loss of public services	<ul style="list-style-type: none"> <li>▪ Functional downtime</li> <li>▪ Operating budget</li> <li>▪ Continuity premium (sometimes)</li> </ul>
Utilities	Economic Impact of Loss of public services	<ul style="list-style-type: none"> <li>▪ Functional downtime</li> <li>▪ Economic impact per capita per day</li> </ul>
Roads and Bridges	Economic impact of road and bridge closures	<ul style="list-style-type: none"> <li>▪ Functional downtime</li> <li>▪ Delay or detour time</li> <li>▪ Daily traffic load</li> <li>▪ Economic value per person per hour</li> </ul>

## 2.3 Casualties

Natural disasters commonly result in casualties, including deaths, injuries, and illnesses. Casualties are the most devastating impact of disasters. Some mitigation projects are designed to reduce casualties in future disasters. Almost all earthquake projects are designed to reduce casualties, as are some hurricanes, wind, and flood mitigation projects.

For some mitigation projects, the benefits of reduced casualties can be a large fraction of the total benefits, or even the largest category of benefits. Thus, for some mitigation projects, it is very important to count the benefits of reduced casualties.

Like other benefits, the benefits of avoided casualties are calculated as the difference in casualties occurring before mitigation and after mitigation. FEMA uses statistical values to place a monetary value on the benefits of avoided casualties. In the most recent FEMA benefit-cost analysis software, statistical values of \$1,250, \$12,500 and \$2,200,000 are assigned to minor injuries, major injuries and deaths, respectively. Minor injuries are defined as those requiring medical treatment, excluding minor bruises or scrapes. Major injuries are defined as those requiring hospitalization for treatment. Minor and major illnesses can be defined similarly, using the same statistical values.

When adjusted to year 2001, these statistical values for casualties are approximately \$1,560, \$15,600, and \$2,710,000 for minor injuries, major injuries, and deaths, respectively. For economic correctness, these adjusted values are suggested for benefit-cost analysis of FEMA hazard mitigation projects.

As reviewed in Section 1.3, OMB guidance for benefit-cost analysis mandates that the benefits to be considered in FEMA's benefit-cost analyses are social net benefits, not the benefits to FEMA or to the federal government. Even though neither FEMA nor any other Federal Agency provides compensation for disaster casualties, the perspective of benefit-cost analysis is always that of the affected community. Thus, it is proper and indeed necessary to count the benefits of avoided casualties, whenever a mitigation project directly and demonstrably will reduce future casualties.

Counting the benefits of avoided casualties is necessary for nearly all earthquake mitigation projects. Reducing casualties is often the primary motivation for earthquake mitigation projects.

For many common types of mitigation projects, life safety benefits are non-existent or negligible. For example, except for situations with flash flooding or dam failures, most flood hazard mitigation projects do not significantly reduce casualties. Similarly, except for shelter projects, most hurricane mitigation projects do not significantly reduce casualties. Assuming that a mitigation project for floods or hurricanes will increase life safety may actually increase casualties by given a potentially false sense of safety and reducing people's motivation to evacuate when necessary.





## SECTIONTHREE

### Counting Benefits for Ordinary Buildings

infrastructure projects because mitigation projects to elevate or retrofit the primary structure have no impact on these other categories of damages - thus, there are no additional benefits.

<sup>4</sup> Rental income losses are not necessary to count if the full costs of temporary quarters are included in displacement costs for both owners and renters. Double-counting must be avoided.

<sup>5</sup> Disruption costs may be significant and thus counting them may add significantly to the total benefits.

<sup>6</sup> Casualties may be important for seismic hazard mitigation projects. Counting the benefits of avoided casualties may be a substantial fraction of total benefits and thus they should always be counted. For most other mitigation projects, benefits of casualties avoided are non-existent or negligible and thus should be counted only in special circumstances.

<sup>7</sup> Acquisition, elevation or retrofit of single residential structures, small groups of structures, or groups at scattered locations does not significantly reduce a community's emergency management costs because the area affected by a disaster is not decreased, and the total population affected by disaster is not decreased or not decreased significantly.

**C**ounting Other Physical Damage. This simplified example is for floods, but the same principles apply for other hazards as well. Consider a one-story home without basement, with a replacement value of \$100,000. Building damage estimates, before and after mitigation, are calculated as percentages of building replacement value. If other physical damages are to be added to building damages, these damages must also be expressed as percentages of building replacement value (not as percentages of their replacement value). For example, if landscaping damages at -2 feet flood depth are estimated as \$500, then this damage is entered as 0.5% of the building replacement value (refer to Table 3.2).

## SECTIONTHREE

### Counting Benefits for Ordinary Buildings

Table 3.2  
Example Showing How to Count Other Physical Damages

Flood Depth (feet)	Building Damage %	Landscaping and Outbuilding Damage %	Vehicle and Equipment Damage %	Adjusted Total Damage %
-2	0.0%	0.5%	0.0%	0.5%
-1	0.0%	1.0%	1.0%	2.0%
0	9.0%	1.5%	2.0%	12.5%
1	14.0%	2.0%	3.0%	19.0%
2	22.0%	2.5%	4.0%	28.5%
3	27.0%	3.0%	5.0%	35.0%

In this example, the building damage percentages are the typical or default values for a one-story structure without basement. Dollar damage estimates were made, using common sense and professional judgment, for the two other categories of physical damages. The dollar estimates were then converted to percentages of building replacement value. The sum of these damage percentages then represents the total damage estimates for the building, for landscaping and outbuildings, vehicles and equipment.

In making estimates of expected dollar damages for landscaping, outbuildings, vehicles, and equipment, historical damage data can be used, along with common sense. Structures with different types of landscaping may have different levels of damage. Not all homes have outbuildings and not all vehicles and equipment will be damaged in floods, because many owners will move such items to higher ground before floods. Whenever adjustments are made as shown above in the simplified example, full documentation of data sources and assumptions are essential.

If adjustments for other physical damages are made, it is very important to make appropriate, consistent adjustments in damage estimates both before and after mitigation. For example, damages to landscaping, outbuildings, vehicles and equipment are eliminated by acquisition. However, elevation or retrofit of the primary structure does not reduce these other types of damages. Thus, estimating these types of damages makes sense only for acquisition projects.

**C**ounting Reduced Disruption Costs. To count the benefits of disruption, disruption time estimates must be made for each damage level (e.g., flood depth or wind speed bin). Then the dollar value of disruption time is calculated by multiplying the number of adults per house by the national average value of wages and benefits (\$21.16) to get a dollar value of disruption time. This







## SECTIONTHREE

### Counting Benefits for Ordinary Buildings

residential and commercial structures), then the additional benefits discussed above for groups of residential structures also apply to groups of commercial structures. These possible additional benefits, which include avoided infrastructure damages and avoided emergency management costs, are subject to the same caveats and the same calculation methods as for residential structures.

### 3.4 Public Buildings

Most of the categories of benefits to be counted for public buildings are the same as for commercial buildings discussed above. Two exceptions are that business income losses and wage income losses are generally not applicable to public buildings. For public buildings, the measure of the economic impact of loss of function of a building is the loss of public services.

For ordinary public buildings that do not provide critical services for disaster response and recovery, the measure of the value of loss of service is the cost of providing the public service. To value public services, FEMA makes the very simple and direct assumption that public services are worth what it costs to provide the services to the public. For example, if a public service costs \$1,000 per day to provide, then the value is assumed to be \$1,000 per day. If the service is lost because of damage to the building, the loss is assumed to be \$1,000 per day. If the loss of service is avoided because of a hazard mitigation project, then the benefit is assumed to be \$1,000 per day. This method for valuing the loss of public services applies to all public services.

The daily cost of services is estimated from the annual operating budget for the agencies occupying a building. The annual operating budget includes all of the direct costs necessary to provide the public services, including salaries and benefits, materials, supplies, utilities, equipment costs, and rent or the annual cost of owning the building. The only exclusion is for transfer payments. For example, if a public office distributes pension checks, the value of the service is not the value of the checks distributed, but rather the cost of providing the service.

The equivalent of wage income losses is already explicitly included in estimates of functional downtime and loss of public services, because wages and benefits are a large portion of the costs of providing public services. Thus, to count wage income losses separately for public structures would be double counting.

For ordinary public buildings, a continuity premium is not added to the normal cost of service. A continuity premium is added only for services such as police, fire and medical, that is critical to emergency response and recovery. However, if some fraction of the staff of an ordinary public building does provide emergency services, an appropriate continuity premium could be added to that proportionate fraction of the cost of services.

## SECTIONTHREE

### Counting Benefits for Ordinary Buildings

For mitigation projects for public buildings, the suggested benefit-cost analysis strategy is to count first the most easily identifiable and quantifiable benefits. For this type of project, these benefits include building damages, contents damages, displacement costs, and loss of public services. In addition, casualties should always be counted for seismic projects. If the project is cost-effective, it may not be necessary to count additional benefits. If the project is not cost-effective, the category of other physical damages may add the most significant additional benefits to count. The other benefit categories generally contribute only minor benefits or aren't applicable.

The categories of benefits to be counted for mitigation projects for public buildings are summarized below in Table 3.5.

**Table 3.5**  
**Categories of Benefits to be Counted for Public Buildings**

Types of Benefits to Consider	When to Count
<b>1. Physical Damages</b>	
Building damages	Always counted
Contents damages	Always counted
Other physical damages <sup>1</sup>	Applicable to acquisition or flood control infrastructure projects only <sup>2</sup> . Consider counting if significant, especially for projects that are close to being cost-effective without counting these categories
- landscaping	
- outbuildings	
- vehicles, equipment	
- site contamination	
<b>2. Loss-of-Function Impacts</b>	
Displacement costs	Always counted
Loss of public services	Always counted No continuity premium for ordinary services
<b>3. Casualties</b>	Always counted for seismic projects, rarely applicable to other projects <sup>3</sup>
<b>4. Emergency Management Costs</b>	Not applicable to single public structures <sup>4</sup>





## SECTIONTHREE

### Counting Benefits for Ordinary Buildings

Types of Benefits to Consider	When to Count
<ul style="list-style-type: none"> <li>Emergency management costs</li> </ul>	<p>Applicable only to flood control infrastructure projects or acquisition projects that protect entire neighborhoods; this category of benefits is generally small.</p>

## SECTIONFOUR

### Critical Facilities: Police, Fire and Medical Buildings

This section provides guidance and examples of how to count benefits for mitigation projects for buildings providing police, fire, and medical services. Such buildings are considered critical facilities because the services they provide are critical to disaster response and recovery.

Benefit-cost analysis for critical facilities is generally similar to that for ordinary public buildings. The same categories of benefits are typically counted, as summarized below in Table 4.1

**Table 4.1**  
**Categories of Benefits to be Counted for**  
**Critical Facilities: Police, Fire and Medical Buildings**

Types of Benefits to Consider	When to Count
<p><b>1. Physical Damages</b></p> <ul style="list-style-type: none"> <li>Building damages                             <ul style="list-style-type: none"> <li>Always counted</li> <li>Building replacement values may differ from those for ordinary buildings</li> <li>Specialized damage functions may be needed</li> </ul> </li> <li>Contents damages                             <ul style="list-style-type: none"> <li>Always counted</li> <li>Contents replacement values may differ from those for ordinary buildings</li> <li>Specialized damage functions may be needed</li> </ul> </li> <li>Other physical damages                               <ul style="list-style-type: none"> <li>landscaping</li> <li>outbuildings</li> <li>vehicles, equipment</li> <li>site contamination</li> </ul> </li> </ul>	<p>Applicable to acquisition or flood control infrastructure projects only<sup>2</sup>. Consider counting if significant, especially for projects that are close to being cost-effective without counting these categories</p>
<p><b>2. Loss-of-Function Impacts</b></p> <ul style="list-style-type: none"> <li>Displacement costs</li> <li>Loss of public services</li> </ul>	<ul style="list-style-type: none"> <li>Generally counted</li> <li>May not be applicable for some facilities</li> <li>Always counted</li> <li>A continuity premium must be added to the normal cost of providing service</li> <li>In many cases, the continuity premium has a large impact on the benefit-cost analysis</li> </ul>
<p><b>3. Casualties</b></p>	<p>Always counted for seismic projects, rarely applicable to other projects<sup>3</sup></p>
<p><b>4. Emergency Management Costs</b></p>	<p>Not applicable to single public structures<sup>4</sup></p>

Notes:

<sup>1</sup> Other physical damages can be counted by adding appropriate damage percentages to the damage function for building or contents. These damages may be significant and thus counting them may add significantly to the total benefits. This type of mitigation project does not reduce damages to off-site utilities or transportation systems and no benefits should be counted for such other physical damages.

<sup>2</sup> Other physical damages are applicable only to acquisition or flood control infrastructure projects because mitigation projects to elevate or retrofit the primary structure have no impact on these other categories of damages - thus, there are no additional benefits.

<sup>3</sup> Casualties may be important for seismic hazard mitigation projects. Counting the benefits of avoided casualties may be a substantial fraction of total benefits and thus they should always be counted. For most other mitigation projects, benefits of casualties avoided are non-existent or negligible and thus should be counted only in special circumstances.

<sup>4</sup> Acquisition, elevation or retrofit of single public structures, does not significantly reduce a community's emergency management costs because the area affected by a disaster is not decreased, and the total population affected by disaster is not decreased or not decreased significantly.

There are, however, important differences in benefit-cost analysis of mitigation projects for critical facilities as compared to analysis for ordinary buildings.

## 4.1 Physical Damage Estimates for Police, Fire and Medical Buildings

Physical damage patterns for these types of buildings are generally similar to those for ordinary buildings. However, in some cases critical facilities are designed to higher codes and standards than ordinary buildings and thus may be somewhat less vulnerable to damages. Building replacement values may also differ because of the specialized nature of these buildings. For example, building replacement values for hospitals can be as high as \$300 per square foot. On the other hand, building replacement values for fire stations can be quite low, because of the simple nature of most fire stations, with much of the space being garage space for fire apparatus. Building replacement values for police, fire, or medical facilities are generally available from the agencies providing such services, from local building officials, or from local building engineers.

Contents damage patterns for these types of buildings are generally similar to those for ordinary buildings. In some cases, professional judgment is necessary to adjust typical or default contents damage functions to reflect the specialized communications or medical equipment in these types of facilities. For hospitals and other medical facilities, the contents replacement value may be very high, in some cases similar to or exceeding the building replacement value. Appropriate contents

replacement values for police, fire, or medical facilities are generally available from the agencies providing such services, from local building officials, or from local building engineers.

For acquisition or flood control infrastructure mitigation projects, one of the benefits may be reductions in other physical damages. As for ordinary buildings discussed in Section 3, other physical damages for critical service buildings include damages to landscaping, outbuildings, vehicles, and equipment and possible site contamination. Such damages can be estimated, but are generally small compared to the other categories of benefits for critical service facilities. Thus, such benefits can generally be ignored except for projects that are very close to being cost-effective without counting this category. For mitigation projects other than acquisition or flood control infrastructure, there are no benefits in this category because elevation, retrofit or strengthening of a building itself does not reduce this category of damages.

## 4.2 Displacement Costs

When facilities housing police and fire services are damaged to an extent such that the buildings cannot be occupied during repairs, the services are moved to temporary quarters. The displacement costs for such temporary quarters are part of the damages and losses attributed to a disaster and these displacement costs become part of the benefits to the extent that they are avoided or reduced by a mitigation project.

Displacement costs for police and fire facilities are counted in the same manner as for ordinary buildings. Displacement costs include:

- Monthly costs of rent for temporary space
- Other monthly costs such as furniture rental
- One-time costs such as round-trip moving costs, utility connection fees and other such costs

For police and fire facilities, the one-time costs may be higher than for ordinary buildings because of the critical communications equipment that would have to be moved and reinstalled. Other monthly costs could also include extra transportation time and costs if the temporary facility is not as well located as the permanent facility.

For police facilities that include jails, the concept of displacement costs is somewhat more complicated. For security reasons, inmates probably cannot be housed in ordinary temporary quarters. Rather, displacement of jail inmates probably requires moving inmates to another correctional facility. In such cases, displacement costs would include the transportation or moving costs, any extra daily transportation time and costs, plus the monthly cost of housing inmates in the alternative facility.



**SECTIONFOUR** **Critical Facilities: Police, Fire and Medical Buildings**

For earthquakes, the potential for mass casualties means that an appropriate continuity premium will be governed by the capacity to provide emergency medical services. A continuity premium of 10 times the normal cost of service is suggested for medical facilities providing direct patient care.

For floods, there is very little likelihood of significantly more than normal demand for emergency medical services and therefore no continuity premium should be applied.

For hurricanes, the typical number of casualties is low because of the widespread evacuations that are commonly ordered in advance of a hurricane. Thus, there is very little likelihood of significantly more than normal demand for emergency medical services and no continuity premium should be applied.

For tornadoes and fires, some casualties are likely. However, such events typically impact only very small segments of a hospital service area and thus, there is very little likelihood of significantly more than normal demand for emergency medical services and no continuity premium should be applied

Thus, for hospitals and other patient care medical facilities, a continuity premium is suggested only for seismic hazard mitigation projects. For seismic hazard mitigation projects for hospitals, a continuity premium of 10 is suggested only for facilities providing direct patient care. For a hospital complex as a whole, many facilities are support facilities not directly related to immediate patient care; therefore for hospital complexes as a whole, a continuity premium of 5 is suggested. For non-patient care buildings within a hospital complex, continuity premiums from none to perhaps 5 are suggested, depending on the strength of the linkage between the building's services and patient care. A more detailed analysis of continuity premiums for hospitals and other medical care services is given in Chapter 1 of the Supporting Documentation (Technical Appendix: Guidance for Benefit-Cost Analysis of Mitigation Projects for Police, Fire, and Medical Service Facilities).

Suggested continuity premiums for police, fire and medical services are summarized below in Table 4.2.

**SECTIONFOUR** **Critical Facilities: Police, Fire and Medical Buildings**

Table 4.2  
Continuity Premiums  
Police, Fire, and Medical Services

Type of Facility	Continuity Premium
Police Services	10
Fire Services	10
Medical Services	<ul style="list-style-type: none"> <li>▪ 0 for non-seismic mitigation projects</li> <li>▪ 10 for seismic mitigation projects for patient care facilities</li> <li>▪ 5 for seismic mitigation projects for whole hospital complex</li> <li>▪ 0 to 5 for seismic mitigation projects for non-patient care buildings, depending on linkage between services provided and patient care</li> </ul>

**4.3.2 Functional Downtime Estimates for Police, Fire and Medical Services**

Functional downtime is the number of days that a public service is not available because of disaster damage. Functional downtime days may be fractional. For example, one day of functional downtime may be one day with 100% loss of service or two days with 50% loss of service or 10 days with 10% loss of service.

Functional downtime is not the same as displacement time. For example, a building providing a public service is damaged in a flood and occupants are displaced to temporary quarters for 3 months while repairs are made. The public service, however, is restored in two weeks from the temporary quarters. In this simple example, the functional downtime is two weeks, while the displacement time is three months.

Estimates of functional downtime are substantially different for critical services than for ordinary services. For example, if a library suffers damage in a flood or an earthquake, the library may close for several weeks or several months. Loss of library service may be tolerable to a community for an extended period of time. However, if a police or fire station suffers a similar level of damage, the police or fire services cannot be closed down for an extended period of time because these services are simply too important to the community. Thus, in the case of damage to a police or fire station, the essential police or fire services are generally reestablished quickly in temporary quarters. Essential services will be reestablished much more quickly than would less important services.

**A general rule of thumb is that the more important a public service is to a community, the shorter the functional downtime will be.**

## SECTIONFOUR

### Critical Facilities: Police, Fire and Medical Buildings

Police and fire services are in large part provided away from the facility housing the staff and apparatus. This aspect of such services is very important because it means that, to a considerable degree, service can be continued even when the facility housing the service has considerable damage. In an emergency, many operations can be run from a parking lot with manual dispatch or cell phone dispatch in the event that a station is heavily damaged in a disaster.

For the reasons cited above, loss of police and fire services is almost always partial. It would be very rare for a police or fire department to provide no service for any significant period of time. Rather, damage to facilities or disruption of communication links commonly result in delays or disruption of normal service. For any given disaster event, days of loss of service are not likely to be complete days with 100% loss of service. More likely there might be, for example, one day with 50% service, several days with 80% service and several days with 90% service. When historical data on service disruption are available, the functional downtime can be calculated by summing up the fractional days of lost service over the service restoration time period after the disaster.

The concepts discussed above and the analysis of functional downtime for police and fire services suggests that functional downtimes for these services are expected to be significantly shorter than for ordinary (non-critical) public services. A common sense rule of thumb, based on professional judgment and experience, is that functional downtimes might average a factor of three less than for ordinary public services.

Functional downtime estimates for hospitals are, in some regards, similar to those for police and fire services. Because hospital services, like police and fire services, are obviously important to a community in a disaster situation, functional downtimes are likely to be shorter for hospitals than for ordinary facilities. That is, repair and restoration of damaged hospital facilities almost always has a very high priority.

However, the shorter functional downtimes expected for hospitals because of their importance to the community is counterbalanced by the fact that many critical hospital services require special, sterile medical conditions and complex modern medical equipment. Thus, while police and fire staff and apparatus can be dispatched from a parking lot, if necessary, few major medical, surgical, or diagnostic procedures requiring specialized equipment and/or sterile conditions can be performed in a parking lot.

Similarly, a few inches of water or even a foot or two of water in a police or fire station will disrupt service, but will not result in complete loss of service. However, a few inches of water in an operating room, a diagnostic room with specialized medical equipment, or a patient care room, would almost certainly result in complete loss of service.

Combining the importance of hospital services to a community and the medical requirements for sterile conditions and other operating constraints for medical facilities suggests that functional downtimes for hospitals are likely to be shorter than those for ordinary buildings but longer than

## SECTIONFOUR

### Critical Facilities: Police, Fire and Medical Buildings

those for police and fire services. A common sense rule of thumb, based on professional judgment and experience, is that functional downtimes for hospitals might average a factor of two less than for ordinary public services.

## 4.4 Casualties

In some disaster events, occupants of facilities housing police and fire services and hospitals and other medical facilities are at risk of injury or death. Casualty estimates for such facilities are made in exactly the same manner as for ordinary buildings. Casualties are estimated from the average occupancy (24 hours per day, 365 days per year) of a facility and the estimated casualty rate as a function of severity of disaster.

For these critical facilities, casualty estimates are most important for earthquakes. Major earthquakes may pose a significant life safety risk for occupants of buildings with seismic vulnerabilities. For seismic hazard mitigation projects, the benefits of reduced or avoided casualties may be a major component of total benefits for any of these critical facilities, which usually have 24-hour occupancy. However, the benefits of avoided casualties are particularly important for hospitals because of their typically very high occupancy levels (patients, staff, and visitors). In some cases, especially for hospitals, the benefits of reduced casualties may be the largest single benefit of a mitigation project. For seismic mitigation projects, the benefits of reduced casualties are important and these benefits should always be counted.

For floods and hurricanes, casualties are generally low and many casualties that do occur are a result of individuals ignoring evacuation warnings (in the case of hurricanes) or ignoring road or bridge closures (in the case of floods). For most flood and hurricane hazard mitigation projects the benefits of reduced casualties are generally not significant and are not considered in the benefit-cost analysis. However, critical facilities such as those for police and fire services and hospitals are probably less likely to be evacuated in hurricanes than are ordinary facilities. Especially for mitigation projects that are designed to harden such facilities to withstand hurricane winds or tornadoes, the benefits of reduced casualties may be significant and should be considered in the analysis. In these circumstances, casualty rate estimates should always be made in close consultation with an engineer knowledgeable about the wind design characteristics of the existing building and the capacity of the post-mitigation building.

For benefit-cost analyses where reductions in casualties are included, the benefits of casualties avoided are often a large component of total benefits and thus estimates of casualty rates before and after mitigation become a very important determinant of the overall benefit-cost analysis and results. Making realistic estimates of casualty rates is difficult and requires a substantial understanding of the failure modes of buildings and the likely casualty rates that would result. Estimates of casualty rates



**SECTIONFOUR** **Critical Facilities: Police, Fire and Medical Buildings**

Damages/Benefits Categories	Data Sources and Guidance
<b>3. Casualties</b>	
▪ Average Facility occupancy	Local officials or applicant
▪ Casualty rates	HAZUS casualty rates for earthquakes, professional judgement for other hazards
▪ Statistical values of deaths, injuries, and illnesses	FEMA values, updated to 2001 values, see Section 2.3 <ul style="list-style-type: none"> <li>- deaths: \$2,710,000</li> <li>- major injuries/illnesses: \$15,600</li> <li>- minor injuries/illnesses: \$1,560</li> </ul>

Mitigation projects for critical facilities are, by definition, important projects to communities. The guidance for benefit-cost analysis presented above makes it more likely that mitigation projects are cost-effective, compared to similar mitigation projects for ordinary facilities. Most importantly, the continuity premium places a greater value on avoiding loss of service, thus substantially increasing benefits. Furthermore, especially for hospitals, the greater building values, contents values, and high occupancy all result in higher benefits when mitigation projects will reduce damages and casualties. Benefit-cost analysis properly and fully recognizes and counts the importance of these critical facilities to a community.

However, regardless of how important these facilities may be to a community, not every mitigation project for a critical facility will be cost-effective. For example, consider a mitigation project for a seismic upgrade or replacement of a fire station built below the current building codes. If the building is located in a high seismic hazard area and is constructed of unreinforced masonry, subject to collapse during an earthquake with resulting casualties and substantial loss of the important services, then the benefits of retrofit or replacement will be very high. In many such cases, even a complete replacement of the building with a new building may be cost-effective. On the other hand, if the existing fire station has only minor seismic deficiencies, with little potential for casualties, and only limited potential for loss of service, then a very expensive seismic retrofit (e.g., \$100 or \$150 per square foot) to bring the entire building up to current code requirements will almost certainly not be cost-effective. In these circumstances a more modest seismic retrofit to address the specific deficiencies has a higher likelihood of being cost-effective.

Mitigation projects for critical facilities, which are reasonable in cost and address specific deficiencies in high hazard areas, have a high likelihood of being cost-effective. On the other hand, expensive mitigation projects that correct only minor deficiencies or located in areas with only minor exposure to hazards are unlikely to be cost-effective, even for critical facilities. It is important to understand that a benefit-cost analysis indicating that a mitigation project for a critical facility is not

**SECTIONFOUR** **Critical Facilities: Police, Fire and Medical Buildings**

cost-effective does not mean that the benefit-cost analysis is flawed but may instead indicate that the mitigation project is poorly conceived and, indeed, not worth doing.



## SECTION FIVE Critical Facilities: Emergency Operations Centers and Emergency Shelters

In many regards, benefit-cost analysis of mitigation projects for emergency operations centers (EOCs) and emergency shelters is similar to that for other critical facilities. For EOCs and emergency shelters, however, there are two very important differences: 1) such facilities often occupy only part of a building, and 2) such facilities are in function only immediately before, during or immediately after disaster events. Both of these differences affect benefit-cost analysis of mitigation projects for EOCs and emergency shelters.

Many mitigation projects for EOCs and emergency shelters address only the portion of a building used for the EOC or shelter. In this case, the benefit-cost analysis should consider only the portion of the building used for the EOC or shelter, because such a mitigation project has no effect on the remainder of the building. Estimates of building damages, contents damages, displacement costs, casualties, loss of public services and any other categories of benefits should consider only the portion of the building used as an EOC or shelter.

If a mitigation project affects the entire building housing an EOC or shelter and other non-critical public functions, then the easiest way to approach the benefit-cost analysis is to consider separately the parts of the building providing ordinary services and critical services and then add the benefits together. For benefit-cost analysis, the part of the building providing ordinary services is evaluated in exactly the same manner as “ordinary” public buildings, with guidance as outlined in Section 3.

**For benefit-cost analysis, the portion of a building providing EOC or shelter services is treated conceptually as a separate building.**

The guidance in this section focuses only on portions of a facility providing EOC or shelter services, or the whole building if the whole building provides EOC or shelter services.

Benefit-cost analysis for these buildings or parts of buildings providing EOC or emergency shelter services is generally similar to that for ordinary public buildings. The same categories of benefits are typically counted, as summarized below in Table 5.1

## SECTION FIVE Critical Facilities: Emergency Operations Centers and Emergency Shelters

Table 5.1  
Categories of Benefits to be Counted  
Critical Facilities: EOCs and Emergency Shelters

Types of Benefits to Consider	When to Count
<b>1. Physical Damages</b> <ul style="list-style-type: none"> <li>▪ Building damages                             <ul style="list-style-type: none"> <li>▪ Always counted</li> <li>▪ Building replacement values may differ from those for ordinary buildings</li> <li>▪ Specialized damage functions may be needed</li> </ul> </li> <li>▪ Contents damages                             <ul style="list-style-type: none"> <li>▪ Always counted</li> <li>▪ Contents replacement values may differ from those for ordinary buildings</li> <li>▪ Specialized damage functions may be needed</li> </ul> </li> <li>▪ Other physical damages<sup>1</sup> <ul style="list-style-type: none"> <li>- landscaping</li> <li>- outbuildings</li> <li>- vehicles, equipment</li> <li>- site contamination</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>▪ Applicable to acquisition or flood control infrastructure projects only<sup>2</sup></li> <li>▪ Consider counting if significant, especially for projects that are close to being cost-effective without counting these categories</li> </ul>
<b>2. Loss-of-Function Impacts</b> <ul style="list-style-type: none"> <li>▪ Displacement costs</li> <li>▪ Loss of public services</li> </ul>	<ul style="list-style-type: none"> <li>▪ May be applicable for some facilities. Displacement time estimates are different than for ordinary buildings: limited to normal duration of use during disasters</li> <li>▪ Always counted</li> <li>▪ A continuity premium must be added to the normal cost of providing service</li> <li>▪ In many cases, the continuity premium has a large impact on the benefit-cost analysis</li> <li>▪ Functional downtime estimates are different than for ordinary buildings: limited to normal duration of use during disasters</li> </ul>
<b>3. Casualties</b>	Always counted for seismic projects, may be applicable for hurricane and tornado projects as well <sup>3</sup>
<b>4. Emergency Management Costs</b>	Not applicable to single public structures <sup>4</sup>



Notes:  
1 Other physical damages can be counted by adding appropriate damage percentages to the damage function for building or contents. These damages may be significant and thus counting them may add significantly to the total benefits. This type of mitigation project does not reduce damages to off-site utilities or transportation systems and no benefits should be counted for such other physical damages.  
2 Other physical damages are applicable only to acquisition or flood control infrastructure projects because mitigation projects to elevate or retrofit the primary structure have no impact on these other categories of damages - thus, there are no additional benefits.  
3 Casualties may be important for seismic hazard mitigation projects. Counting the benefits of avoided casualties may be a substantial fraction of total benefits and thus they should always be counted. Benefits of avoided casualties may also be important for hurricane and tornado mitigation projects because EOCs and emergency shelters are intended to be occupied during disaster events.  
4 Acquisition, elevation or retrofit of single public structures, does not significantly reduce a community's emergency management costs because the area affected by a disaster is not decreased, and the total population affected by disaster is not decreased or not decreased significantly.

## 5.1 Physical Damage Estimates for EOC and Emergency Shelter Buildings

Physical damage estimates for EOCs and emergency shelters are generally similar to those for ordinary buildings. If the EOC or shelter is designed to higher than normal building code standards, then professional judgement must be used to make appropriate estimates of damages, before and after mitigation.  
Contents damage estimates for EOCs and emergency shelters are also generally similar to those for ordinary buildings. For EOCs, the extra value of communications and other EOC equipment must be considered in the analysis.

Acquisition projects are uncommon for EOC or shelters. However, if a mitigation project is acquisition or is a flood control infrastructure project that provides better flood protection for an EOC or shelter, other physical damages (landscaping, outbuildings, etc.) can also be counted. However, for typical mitigation projects for EOCs and shelters, that involve hardening of the building itself, there are no additional benefits in this category and they should not be counted.

## 5.2 Displacement Costs

In principle, the public services provided by EOCs and emergency shelters are subject to being displaced to temporary quarters due to disaster damages, just like any other public service. In practice, however, the operation of EOCs or emergency shelters is typically only for short periods of time immediately before, during, or after disaster events. Furthermore, because of the specialized, temporary function of EOCs and shelters, displacement to temporary quarters may not be physical possible, during the brief periods that EOCs and shelters would normally operate in a single disaster event. Typically, there is ample time between disasters to allow for repairs between uses of EOCs or shelters.

Because of the operating characteristics of EOCs and emergency shelters, the possible benefits of reduced displacement time are likely to be substantially less than for ordinary buildings. For ordinary buildings, the benefits of reduced displacement time generally constitute only a small fraction of total benefits. Thus, for EOC or emergency shelter mitigation projects the benefits of reduced displacement time are likely to be very minor. Except for mitigation projects that are very close to being cost-effective without counting the benefits of reduced displacement time, it may not be necessary to count displacement benefits for most mitigation projects for EOCs and emergency shelters.

## 5.3 Loss of Public Services for EOCs

In principle, the benefits of avoiding loss of public services provided by EOCs and emergency shelters are calculated from the daily cost of public services, just like any other public service. In addition, since EOCs and emergency shelters are critical facilities, an appropriate continuity premium must be added to reflect properly the greater importance of EOCs and emergency shelters during disasters.

### 5.3.1 Functional Downtime Estimates for EOCs and Shelters

Functional downtime estimates for EOCs and shelters are different from those for ordinary buildings because EOCs and shelters are typically used only for short periods of time before, during and/or after disaster events. Functional downtimes for EOCs and shelters cannot be longer than the typical duration of use.

## SECTION FIVE Critical Facilities: Emergency Operations Centers and Emergency Shelters

### 5.3.2 Value of Services

As with any public building, the base value of the service provided by an EOC or shelter is estimated from the daily cost of providing the service. However, unlike other public services, EOCs and shelters are used only for brief periods of time before, during or after disaster events. For ordinary public buildings, the daily cost of service is estimated by dividing the annual operating budget of a facility by 365 days per year.

**For EOCs the daily cost of service is estimated by dividing the annual operating budget by the typical or average number of days of use per year.**

For example, if an EOC has an annual operating cost of \$36,500 per year and operates an average of only 2 days per year, based on historical data, then the average daily cost of service is \$17,500 per day (when used). In this case, the average value of the EOC services is estimated at \$17,500 per day.

As with any public services, the annual operating budget for an EOC includes annual costs for equipment, supplies, utilities, administrative and training costs and other operating costs, as well as the salary and benefit-costs of personnel when the EOC is activated.

Rather than trying to estimate an annual operating budget for emergency shelters, a different approach is suggested for estimating the base value of emergency shelter. For Federal travel, the GSA establishes standard rates for lodging and meals. For the continental U.S., the base CONUS daily rates are \$55 or lodging and \$30 for meals and incidentals. Higher rates are published for countries with higher than these typical values (i.e., many medium- to large- urban areas). The simplest measure of the value of temporary lodging and meals provided by an emergency shelter would be \$85 per day (the base CONUS rate). A more accurate measure could be obtained by using the GSA rate appropriate for the county in which the emergency shelter is located. Current GSA lodging and meals rates are available at several websites, including a DOD site ([www.dtic.mil/perdiem](http://www.dtic.mil/perdiem)).

**For emergency shelters, the base daily value of the public service is estimated by multiplying the average number of people given shelter by the \$85 per day CONUS value (or the appropriate local value of lodging and meals from the GSA data).**

### 5.3.4 Continuity Premiums for EOCs and Shelters

Determining an appropriate continuity premium for an EOC is difficult. In many ways, evaluating a mitigation project for an EOC is similar to evaluating a mitigation planning project. An EOC does not, by itself, directly reduce damages, losses, or casualties in a disaster. Rather, by coordinating response efforts, an EOC makes a community's disaster response more efficient and thus is beneficial to the community. Indirectly, an EOC may reduce damages by targeting and

## SECTION FIVE Critical Facilities: Emergency Operations Centers and Emergency Shelters

implementing preventative measures more efficiently or reduce casualties by focusing search and rescue operations more efficiently.

Clearly, an EOC is important to a community during disasters. However, because of the indirect connection between and EOC and reductions in damages, losses, and casualties, it is difficult to estimate a suitable continuity premium. For consistency, we suggest assuming that a functioning EOC has the same continuity premium, relative to the cost of service, as police and fire services.

This assumption then assigns a common continuity factor of 10 times the daily cost of services to each of the primary emergency response functions: police, fire and EOCs.

In a disaster, there are several reasons why emergency shelter is clearly worth more to residents and to the community than during ordinary times. First, hotels and motels are likely to be filled to capacity, or unavailable due to closures and/or damage. Second, emergency shelter is more important than discretionary temporary shelter. Discretionary travel and shelter can be postponed, but the need for emergency shelter is immediate and cannot be postponed. Third, there is a life safety impact of emergency shelter. Availability of safe emergency shelters in tornadoes and hurricanes reduces casualties because people move from less safe structures to safer emergency shelters. In hurricanes, the availability of shelters undoubtedly reduces the number of people who are at risk because they ignore evacuation warnings. That is, the availability of emergency shelter makes it more likely that people will evacuate when so ordered by local officials.

Estimating the value of emergency shelter to a community and determining an appropriate continuity premium depends primarily on common sense and professional judgement. Clearly, people displaced from their homes or evacuated would be willing to pay more than the normal cost of shelter and food - perhaps twice normal costs, or several times normal costs or even ten times normal costs, but not 100 or 1000 times normal costs. At 100 or 1000 times normal costs, the value per day of temporary shelter would be \$8,500 or \$85,000 per person per day, respectively, and clearly such numbers exceed the bounds of common sense for the typical or average value of emergency shelter in disasters.

For emergency shelters, a continuity premium similar to, but not larger than, those assigned to police and fire services and EOCs appears reasonable. Thus, a continuity premium of 10 times the normal cost of service for emergency shelters should be used.

## 5.4 Casualties

In some disaster events, occupants of EOCs and shelters may be at risk of injury or death. In estimating casualties, the occupancy characteristics of EOCs and shelters must be carefully considered. Methods for estimating casualties depend on whether or not the facility has alternative





Because of the complex, technical, and specialized nature of the components of utility infrastructure systems, damage estimates should always be made in close consultation with qualified individuals familiar with the specific systems under evaluation.

## 6.3 Functional Downtime Estimates

Functional downtime estimates for utility systems differ fundamentally from functional downtime estimates for buildings because of the network characteristics of utility systems. In order for an electric power or potable water or wastewater system to deliver service and to function as intended, a myriad of interconnected components has to work together as designed. Utility system networks are generally described in terms of links and nodes. Links are the lines or pipes that connect the other elements of the system, defined as nodes. Nodes include generating plants, treatment plants, substations, pumping plants and other facilities that are necessary to provide utility service.

In complex, networked utility systems, some components may be redundant; that is, there is an alternative, functionally equivalent component that can serve the same function if the first component fails. Other components are unique; that is, alternative components are not available if the first component fails. Therefore, the extent of loss of utility service that results from specific levels of damage depends on the detailed network operating characteristics of each specific utility system. For example, damage to one substation or pumping plant might result in little or no loss of function if the component is redundant. However, the same level of damage to another substation or pumping plant might result in loss of service to an entire neighborhood or city.

Because of the networked nature of utility systems, estimating functional downtime requires a thorough understanding of the network operating characteristics of the specific utility system under evaluation. Functional downtime estimates for utility systems should always be made in conjunction with qualified individuals knowledgeable about the specific utility system under evaluation and in close cooperation with local utility staff.

For utility systems, functional downtimes are best expressed as “system days” of lost service. A “system day” of lost service is defined as one day in which the entire system is without service. However, system days are usually fractional. For example, one system day may be one day of complete loss of service, or two days with 50% loss of service, or 10 days with 10% loss of service, and so on. Loss of service is generally defined as the percentage of customers without service. For example, if 20% of a utility’s customers have no service for 2 days, with 5% having no service for a third day, then the functional downtime is 0.45 system days. In this example the system days are calculated as 20% (0.20) times two days plus 5% (0.05) times one day or 0.45 days.

## 6.4 Economic Impact of Loss of Utility Services

The economic impact of loss of utility services is analogous to estimating the impact on a community of loss of public services provided from a building. The estimated economic impacts of loss of utility services differ for electric power systems, potable water systems, and wastewater systems. Thus, guidance for each of these types of utility systems is presented separately.

### 6.4.1 Economic Impacts of Loss of Electric Power

The base economic value of electric power is the cost of service. Recent data from the U.S. Department of Energy show a national average price of electricity of 6.74 cents per kilowatt-hour. However, electric power is extremely important for the functioning of a modern community. The economic impacts of loss of electric power are far greater than the simple cost of electric power. The primary motivation for most mitigation projects for electric power is to minimize the loss of electric power service to the community. Reductions in damage to the electric power system are an important objective, but generally secondary to preserving the delivery of electric power to the community.

The direct economic impact of loss of electric power is estimated from nationwide data on economic activity by sector of the economy (1997 Economic Census, North American Industry Classification System, and NAICS). These data were combined with electric power importance factors for each major economic sector. These importance factors reflect the reality that different sectors of the economy have varying degrees of dependence on electric power. Importance factors were taken from the FEMA-sponsored publication [ATC-25](#) (Applied Technology Council, Seismic Vulnerability and Impact of Disruption of Lifelines in the Conterminous United States, 1991). These estimated economic impacts include both wage and business income losses.

For purposes of benefit-cost analysis, the economic impacts calculated as described in the previous paragraph were updated to 2000 values and then adjusted downwards. The downwards adjustments were made because: 1) some facilities have on-site generation or back-up power sources, 2) some lost economic production can and will be made up after restoration of electric power, and 3) there is a high potential for double-counting of reasons for the loss of economic production. With these corrections, the direct economic impact of loss of electric power is estimated to be \$87 per capita per day. Following this approach, the direct regional economic impact of one system day of complete loss of electric service for a community of 100,000 people would be estimated at \$8,700,000 (100,000 times \$87).

## SECTIONSIX Utilities: Electric Power, Potable Water, Wastewater

In addition to these regional economic impacts, loss of electric power service also has direct economic impacts on residents, separate from the regional economic impacts estimated above. Examples of these impacts include food spoilage during prolonged outages, extra costs for meals or temporary lodging for some people, water damages due to frozen pipes and so on. Rough, common sense estimates outlined in the Supporting Documentation Volume Chapter 3 (to be available in late 2001) suggest that these impacts may total about \$30 to \$35 per capita per day, on average.

In addition, there is an economic value to the major disruption of normal activities that result from loss of electric power. The key point is that people's time has economic value, whether such time is devoted to remunerative work or to personal leisure and recreation.

The estimated economic value per person per hour of disruption from loss of electric power is estimated using an approach similar to that used by the U.S. Department of Transportation (DOT) for highway planning purposes. Technical details of this approach are given in the DOT memo: The Value of Travel Time: Departmental Guidance for Conducting Economic Evaluations (U.S. Department of Transportation, memo from Frank E. Kruesi, Assistant Secretary for Transportation Policy, April 9, 1997).

The simplest assumption consistent with economic theory is that each hour of people's time is worth the same amount, whether such time is personal or business time. In other words, the last hour of work time and the first hour of leisure or recreation time are assumed to have equal value. This is the assumption that should be used when valuing the direct economic impact of the disruption time for residents subjected to electric power outages.

Following the DOT approach, the average hourly compensation rate (wages and benefits) is the best available measure of the economic value of people's time. The latest available data, for March 2000, of average employer cost for employee compensation for civilian workers (private industry and state and local government) is \$21.16 per hour (U.S. Department of Labor, Bureau of Labor Statistics News, USDL: 00-186, June 29, 2000). A value of \$21.16 per person per hour should be used as the value for the economic impact of disruption time for customers subject to loss of electric power service.

Loss of electric power has a major disruptive impact on residential customers. The impacts include loss of lighting and in many cases loss of cooking capability, hot water and heating. Almost all normal daily activities, including preparing food, cleaning, reading, watching television, listening to music, and using computers, are disrupted. As a conservative estimate, such disruptions total at least 3 to 4 hours per person per system day of electric power outage. At slightly more than \$21 per hour, such disruption of normal activities would add \$63 to \$85 per capita per day to the estimated direct economic impacts of \$30 to \$35 for residential customers estimated above. The resulting total estimated economic impacts for residential customers are approximately \$93 to \$110 per capita per day. The midpoint of this range of estimates is \$101 per day per person.

## SECTIONSIX Utilities: Electric Power, Potable Water, Wastewater

Combining the estimated impact of losing electric power on regional economic activity and the estimated impact on residential customers yields a total estimated impact of \$187 per person per day of lost service. These estimates are summarized below in Table 6.2.

**Table 6.2  
Economic Impacts of Loss of Electric Power  
Per Capita Per Day**

Category	Estimated Economic Impact
<b>Reduced regional economic activity<sup>1</sup></b>	<b>\$87</b>
Impacts on Residential Customers	
▪ Direct economic losses	\$30 to \$35
▪ Disruption economic impact	<u>\$63 to \$85</u>
▪ Total Best estimate	\$101
<b>Total economic impacts</b>	<b>\$188</b>

<sup>1</sup> This value of reduced regional economic activity is based on national economic data. If desired, more detailed estimates could be made for specific metropolitan areas using NAICS data in the economic census referenced above.

As an example, consider a community of 40,000 people that suffers a partial loss of electric power due to flood damage at one substation. If 50% of the customers have no power for 1 day, 15% have no power for an additional day, and 5% have no power for two additional days, then the number of system days of loss of power is calculated as 0.50 times 1 plus 0.15 times 1 plus 0.05 times 2 or 0.75 system days. With 0.75 system days of lost service, total economic impacts of \$188 per person per day and 40,000 customers, the total economic impacts are calculated as 0.75 times 40,000 times \$188 or \$5,640,000.

### 6.4.2 Economic Impacts of Loss of Potable Water

The economic impacts of loss of potable water service are estimated in the same manner as for electric power service above. For potable water systems, two levels of loss of service are evaluated: 1) complete loss of water service, and 2) water unsafe for drinking.

## SECTION SIX Utilities: Electric Power, Potable Water, Wastewater

The impact of loss of water service on regional economic activity is estimated using nationwide economic data by economic sector and water importance factors from the same sources as referenced in Section 6.4.1. The economic impact of loss of water service is large, but smaller than that for electric power. For complete loss of water service, and water unsafe for drinking, the regional economic impacts are estimated at \$35 and \$8.75 per person per day, respectively.

In addition to these regional economic impacts, loss of potable water service also has direct economic impacts on residents, separate from the regional economic impacts estimated above. Examples of these impacts include costs of bottled water for drinking, cleaning and sanitation purposes, increased meal costs for restaurant meals, temporary lodging for some people, increased transportation costs to obtain water, meals, and sanitation facilities and so on. Prolonged outages could also cause landscape damage in climates where irrigation is necessary. Rough, common sense estimates outlined in the Supporting Documentation Volume (Chapter 4) (to be available in late 2001) suggest that these impacts may total about \$15 per capita per day, on average.

In addition, there is an economic value to the major disruption of normal activities that result from loss of potable water service. As described in Section 6.4.1, people's time has economic value, whether such time is devoted to remunerative work or to personal leisure and recreation. As a conservative (lower bound) estimate, we suggest that such disruptions would total about 2 to 3 hours per person per system day of complete loss of water service. At about \$21 per hour (the average hourly wage, as described in Section 6.4.1), the economic impact of such disruption would add \$42 to \$63 per day to the estimated direct economic impacts of \$15 per day. The resulting total estimated economic impacts of complete loss of water service for residential customers are approximately \$57 to \$78 per day. The midpoint of this range is about \$68 per person per day.

For loss of water quality, such that water is unsafe for drinking, the estimated economic impacts on residential customers are about 50% of the estimates for complete loss of service, or about \$34 per person per day.

The above estimates of the economic impact of loss of potable water service apply to all types of natural hazard events. For earthquakes, there are additional potential losses arising from fire following the earthquake event. Earthquakes commonly cause fire ignitions, due to building damage, downed power lines, and gas line breaks. For earthquake-induced fires, loss of water service reduces fire suppression capability and leads to a statistical expectation of higher fire losses. The extent of fire following earthquake losses arising from loss of water service is possible to model mathematically, with inputs on building stock, building density, climate and wind conditions, and fire suppression capability. As a first level estimate, fires following earthquake losses due to loss of water service are estimated at \$35, \$17.50, and \$8.75 per person for dry, moderate and wet climates, respectively.

## SECTION NINE Utilities: Electric Power, Potable Water, Wastewater

Fire following earthquakes occurs predominantly during the first few hours or first day after a major earthquake, although some ignitions may occur later. For example, reconnecting gas lines may lead to fires if leaks are present in the distribution lines.

Loss of water service also reduces fire suppression capability for normal fires, but such fires are relatively infrequent. Thus, the effective number of days of functional downtime to be considered for fire following earthquake should logically be capped at a smaller number than the total system restoration time.

**For purposes of benefit-cost analysis, a maximum of one system day should be used for estimating fire following earthquake losses.**

Table 6.3  
Economic Impacts of Loss of Potable Water Service  
Per Capita Per Day

Category	Complete Loss of Water Service	Water Unsafe for Drinking
Reduced regional economic activity <sup>1</sup>	\$35	\$8.75
Impacts on Residential Customers		
▪ Direct economic losses	\$15	\$7.50
▪ Disruption economic impact	\$42 to 63	\$21 to 42
▪ Total Best estimate	\$68	\$34
Total economic impacts (all hazards)	\$103	\$43
Fire following earthquake losses		
▪ Dry climates	\$35	None
▪ Moderate climates	\$17.50	None
▪ Wet climates	\$8.75	None

<sup>1</sup> This value of reduced regional economic activity is based on national economic data. If desired, more detailed estimates could be made for specific metropolitan areas using NAICS data in the economic census referenced above.

The estimated economic impacts of loss of water service, as summarized above in Table 6.3 are large, but somewhat lower than those for loss of electric power.



**SECTIONSIX** **Utilities: Electric Power, Potable Water, Wastewater**

As an example, consider a community of 500,000 people that has a partial loss of potable water service in an earthquake. The loss of service is primarily because of pipe breaks in the distribution system, coupled with minor damage at pumping plants. If 20% of the customers have no power for 1 day and 5% have no power for an average of three additional days, then the number of system days of loss of potable water service is calculated as 0.20 times 1 plus 0.05 times 3 or 0.35 system days. With 0.35 system days of lost service, total economic impacts of \$103 per person per day and 50,000 people affected, the total economic impacts are calculated as 0.35 times 500,000 times \$103 or \$18,025,000.

In this example, there are also earthquake-induced fires resulting from the loss of water service. The community is a moderate climate. The fire losses only occur on the first day (0.20 system day of lost service); therefore the estimated fire losses are 0.20 times 500,000 times \$17.50 or \$1,750,000. In this example, fire losses are slightly less than 10% of the total estimated economic impacts of loss of water service.

**6.4.3 Economic Impacts of Loss of Wastewater Service**

The economic impacts of loss of wastewater service are estimated in the same manner as for electric power and potable water service above. A detailed examination of the economic impacts of loss of wastewater service is given in the Supporting Documentation Volume (Chapter 5) (to be available in late 2001). A brief summary is presented below.

The impact of loss of wastewater service on regional economic activity is estimated using nationwide economic data by economic sector and water importance factors from the same sources as referenced sections 6.4.1 and 6.4.2. The economic impact of loss of wastewater service is large, similar to that for potable water, but smaller than that for electric power. The regional economic impacts of loss of wastewater service are estimated at \$33.50 and \$8.50 per person per day for complete loss of treatment and partial loss of treatment, respectively.

As discussed above in Sections 6.4.1 and 6.4.2, loss of electric power and potable water services has direct impacts on residential customers, separate from the impacts on regional economic activity. For wastewater services, however, impacts on residential customers are generally non-existent or negligible. Temporary loss of wastewater treatment capability (complete or partial loss of treatment) does not generally interrupt residential customer's ability to dispose of sewage or other wastewater.

The above estimates of the economic impact of loss of potable water service apply to all types of natural hazard events. These estimates are summarized below in Table 6.4

**SECTIONSIX** **Utilities: Electric Power, Potable Water, Wastewater**

Table 6.4  
Economic Impacts of Loss of Wastewater Service  
Per Capita Per Day

Category	Complete Loss of Treatment	Partial Loss of Treatment
Reduced regional economic activity <sup>1</sup>	\$33.50	\$8.50
Impacts on Residential Customers		
▪ Direct economic losses	None	None
▪ Disruption economic impact	None	None
▪ Total Best estimate	None	None
<b>Total economic impacts (all hazards)</b>	<b>\$33.50</b>	<b>\$8.50</b>

<sup>1</sup> This value of reduced regional economic activity is based on national economic data. If desired, more detailed estimates could be made for specific metropolitan areas using NAICS data in the economic census referenced above.

The estimated total economic impacts of loss of wastewater service, as summarized above in Table 6.4 are large, but significantly smaller than those for loss of potable water or electric power service. As an example, consider a community of 27,000 people with flood damage to a wastewater treatment plant. There is complete loss of service for 2.5 days and then partial loss of treatment capability for an additional 5 days. These losses of service affect the entire community. The estimated economic impact of complete loss of service for 2.5 days is 2.5 times 27,000 times \$33.50 or \$2,261,250. The estimated economic impact of partial loss of service for 5 additional days is 5.0 times 27,000 times \$8.50 or \$1,147,500. The total estimated economic impact of loss of wastewater services is \$3,408,750.

The above analysis does not explicitly consider environmental impacts of loss of wastewater treatment services. Discharge of untreated or partially treated wastewater has potential negative environmental impacts. Flooding of wastewater treatment plants is the most common reason for loss of wastewater treatment services. Discharges of untreated or partially treated wastewater most commonly occur during periods of high water flows, when dilution of wastes is maximized and potential environmental impacts (are minimized).

The scope of the present guidance does not include evaluating environmental damages or the benefits of reducing or avoiding such damages. However, in effect, such environmental impacts are partially considered in the present analysis of the economic impacts of loss of function of wastewater treatment facilities, as described below.



## SECTION SIX Utilities: Electric Power, Potable Water, Wastewater

The analysis of the regional economic impacts of loss of wastewater services implicitly assumes that business activity will be curtailed during periods of loss of wastewater service. When wastewater services are lost, communities sometimes impose operating restrictions on industrial and large commercial facilities to reduce the inflow of waste. More commonly, however, communities simply discharge partially treated or completely untreated waste.

In making a public policy decision to discharge partially treated or completely untreated waste, rather than to impose drastic restrictions to curb waste inflows, communities are implicitly deciding that possible environmental impacts are less than the economic losses that would arise from imposing more drastic reductions to curb waste inflows. To the extent that communities choose to release completely untreated or partially treated waste instead of curbing economic activity to reduce waste inflow, the estimated regional economic impacts of loss of wastewater service, as outlined above, will be over-estimated.

Following the above analysis, the estimated regional economic impacts of loss of wastewater treatment services probably overestimate the actual economic impacts. However, the estimated regional economic impacts implicitly are deemed equal to or greater than possible environmental damages. In effect, possible environmental impacts are counted indirectly (at least roughly) in the proposed methodology for estimating regional economic impacts.

## 6.5 Casualties

Loss of function of utilities - electric power, potable water and wastewater - has potential life safety impacts on affected communities. In some cases there may be deaths, injuries or illnesses arising from loss of utility services.

Loss of electric power may result in casualties. However, facilities for which electric power is a critical life safety issue (such as acute care in hospitals) always have redundant backup power supplies (e.g., battery back-ups and emergency generators). An upper bound analysis of potential casualties due to loss of electric power in Chapter 3 of the Supporting Documentation Volume (to be available in late 2001), suggests that the economic value of casualties is likely to be well below \$2.50 per person per day of lost service. This upper bound value is very low compared to the estimated economic impacts of loss of electric power, \$188 per person per day, and thus may be ignored as negligible for benefit-cost analysis. Actual casualties are likely to be less than these upper bound estimates.

Loss of potable water service may also result in casualties, most commonly illness from drinking contaminated water. Deaths from contaminated water are possible, but extremely rare. A rather extreme upper bound analysis of potential casualties due to loss of potable water service in Chapter 4 of the Supporting Documentation Volume (to be available in late 2001), suggests that the economic

## SECTION NINE Utilities: Electric Power, Potable Water, Wastewater

value of deaths is likely to be well below \$2.50 per person per day of lost service, with the economic value of illnesses likely to be well below \$1.50 per person per day. These upper bound values is low compared to the estimated economic impacts of loss of potable water service, \$103 per person per day, and thus can probably be ignored as negligible for benefit-cost analysis. Actual casualties are likely to be less than these upper bound estimates.

Loss of wastewater service also has the potential for casualties, most commonly illness from drinking or exposure to contaminated water. However, any such illnesses are likely to be much less than those estimated above for potable water systems, since few people are likely to drink raw untreated water. Casualties arising from loss of function of wastewater treatment plants appear to be negligible for purposes of benefit-cost analysis.

## 6.6 Summary Guidance

The basic concepts of benefit-cost analysis of mitigation projects for utilities are the same as those for buildings (as discussed in previous sections). Significant differences are as follows:

Physical damage estimates for utility systems must be estimated by qualified individuals thoroughly familiar with the specific utility systems under evaluation, based on historical damage data, professional judgement and engineering calculations.

Displacement costs are not applicable to utility systems, since utility system components cannot be displaced to temporary quarters. Displacement costs should not be counted in benefit-cost analysis of mitigation projects for utility systems.

Loss of function of utility services has a great economic impact on regional economic activity in general and residential customers in particular. In addition, for loss of potable water service in earthquakes, there are additional losses due to fires following earthquakes. These economic impacts are summarized in Table 6.5 below.







### 7.4.4 Economic Impact Per Person Per Hour of Delay or Detour Time

The economic impacts of road or bridge closures are estimated by combining the number of days of road or bridge closure, the average daily number of vehicles using the road, the average delay or detour time per vehicle, and the estimated economic value per person per hour of delay or detour.

The estimated economic value per person hour of delay or detour is estimated using an approach similar to that used by the U.S. Department of Transportation (DOT) for highway planning purposes (The Value of Travel Time: Departmental Guidance for Conducting Economic Evaluations, U.S. Department of Transportation, memo from Frank E. Kruesi, Assistant Secretary for Transportation Policy, April 9, 1997).

The DOT memo referenced above has a detailed analysis of economic theory and references to its approach. For the present purposes, a condensed summary of the analysis is presented. The key point is that time saved from travel has economic value, whether such time is devoted to remunerative work or personal leisure/recreation. Furthermore, if travel is associated with unpleasant conditions of crowding (or delays and detours), exposure to weather, risk, effort or boredom, cutting the time it requires will be beneficial. In simple terms, people would, on average, be willing to pay something to avoid such unpleasant travel conditions.

The simplest assumption consistent with economic theory is that each hour of time lost in travel delays or detours is worth the same amount, whether such time is personal or business time. In other words, the last hour of work time and the first hour of leisure/recreation time are assumed to have equal value. This is the assumption that should be used for valuing the direct economic impact of the time lost by closures of roads and bridges. For benefit-cost analyses of FEMA-funded hazard mitigation projects, 100% of the national average hourly wage (plus benefits) should be the value of travel time lost by road and bridge closures. As described in Section 6.4.1, the average employer cost for employee compensation is \$21.16 per hour according to U.S. Department of Labor.

The U.S. DOT also has data on average vehicle occupancies. For 1996, the total highway passenger miles were 3.962 trillion. A passenger mile is one person traveling one mile by automobile, motorcycle, light truck, heavy truck, or bus. For 1996, the total highway vehicle miles were 2.482 trillion. The ratio of these two numbers, 1.596 is the average vehicle occupancy. Applying this occupancy value and the \$21.16 per person per hour value derived above yields a value of \$33.78 per vehicle hour of lost travel time.

The U.S. Census Bureau population estimate for November 2000 indicates that 74.47% of the population is 18 or over, with 25.53% under 18. If these ratios are applied to the average vehicle occupancy, assuming that drivers are 18 or over, then the average vehicle occupancy is 1.444 adults

and 0.152 children under 18. This estimated proportion of adult and child passengers does not consider that some drivers are under 18 (about 3% of the total population is between 16 and 18) but this is offset by the fact that the proportion of children as passengers is likely lower than in the population as a whole, because there are few children as passengers for commuting or business travel. Combining these data, we estimate that the average vehicle occupancy is about 1.45 adults and 0.15 children.

If lost time for children were assumed to have no economic value (a somewhat extreme assumption), then the estimate of \$33.78 per vehicle hour of lost travel time would be reduced by nearly 10% to \$30.68. More reasonably, lost time for children has an economic value, but less than that for adults. Taking the midpoint of these two extremes (counting children's lost time the same as adults or counting children's lost time at zero) yields an estimate of \$32.23, which appears to be a reasonable estimate. Thus, the average economic value of lost travel time as \$32.23 per vehicle hour of delay or detour due to road and bridge closures.

The above analysis considers all traffic to be of equal economic value. However, there are two other possible economic impacts from closures of roads and bridges that need to be evaluated for possible inclusion in benefit-cost analysis, namely:

1. Economic impacts for commercial traffic
2. The impact of road and bridge closures on emergency vehicles

For commercial travel (including heavy trucks) the analysis presented above includes only the value of the driver's time. As discussed above, typical delay or detour times are short, on the order of a few minutes to perhaps an hour or two. For such short delays there are unlikely to be major economic impacts such as spoilage of perishables goods or interruption of normal economic activity. Therefore, no adjustments for commercial traffic need be made.

For emergency vehicles, the delay or detour times may increase the response time and thus lower the quality of emergency response. However, the fraction of normal traffic that is emergency vehicles is extremely small, a very small fraction of 1% of total traffic. Furthermore, delays and detours may be shorter for emergency vehicles as such vehicles typically have expedited access to the transportation system and some emergency response vehicles have off-road capabilities or higher ground clearances and thus can travel on roads closed to normal traffic. Thus, the impact of road and bridge closures on emergency vehicle response is assumed to be minor.

**For purposes of benefit-cost analysis, the economic impact of road or bridge closures is estimated as \$32.23 per vehicle hour of delay.**

## 7.5 Casualties

Failure of a road or bridge may occasionally result in deaths or injuries from vehicular accidents at the failure location. However, such incidents are extremely rare. Closure of a road or bridge, or even a major washout of a section of road or complete washout of a bridge very rarely results in casualties. Historical experience suggests that deaths from such accidents would be many times less than 1 person per 1,000,000 in a community affected by a typical road or bridge closure. Based on the statistical value of human life (deaths and injuries), such rare incidents are generally negligible compared to the economic impact of delay and detour times discussed above.

The statistical value of casualties avoided may be important for one type of hazard mitigation project: seismic retrofit of bridges subject to collapse in earthquakes. For example, if one of the approximately 300-foot long segments of the Bay Bridge between Oakland (CA) and Treasure Island were to fail completely in an earthquake, the expected death rate would be a very high percentage of the average “occupancy” of the bridge segment. For high traffic bridges that could be subject to complete failure in earthquakes, the value of casualties avoided should be evaluated individually for each mitigation project.

Estimating casualty rates from bridge failures from earthquakes requires professional judgement. Such estimates should be made in close consultation with seismic engineers thoroughly familiar with seismic bridge engineering.

## 7.6 Summary Guidance

The suggested approach for benefit-cost analysis of hazard mitigation projects for roads and bridges has five steps, each of which must be done for both the before and after mitigation states of the road or bridge, as a function of the severity of disaster:

1. Estimate the physical damages to road or bridges in dollar terms
2. Estimate the repair time to restore normal traffic flow,
3. Estimate the average delay or detour time
4. Obtain the average daily traffic count for the road or bridge
5. Calculate the economic impacts of loss of function of the road or bridge, using the above data and the per vehicle per hour value of lost travel time of \$32.23

For floods, these estimates are made as a function of flood depth or flood frequency. For hurricanes or earthquakes, these estimates are made as a function of wind speed or peak ground acceleration

(PGA), respectively. Data sources and guidance for making these estimates calculations are summarized in Table 7.2 below. For earthquakes only, the additional category of casualties losses is also considered for bridge mitigation projects.

**Table 7.2**  
**Summary Guidance for Benefit-Cost Analysis**  
**of Hazard Mitigation Projects for Roads and Bridges**

Parameter	Data Sources
1. Physical damages to road or bridge	Historical data and professional judgement from individuals knowledgeable about roads and bridges
2. Repair time to restore normal traffic flow	Historical data and professional judgement or estimates from local traffic officials
3. Average delay or detour time	Historical data or estimates from local traffic officials
4. Average daily vehicle count	Historical data or estimates from local traffic officials
5. Economic impact of road or bridge closure	\$32.23 per vehicle hour of delay or detour

As an example, consider a situation in which a culvert washout closes a road until repairs are made. For benefit-cost analysis, estimates are made of the physical damage costs and loss-of-function economic impacts for each flood depth or flood frequency, both before and after mitigation. As an example, we show a typical calculation of the damages and losses before mitigation for one flood frequency (a 25-year event).

### Example

Physical damages, the actual cost to repair the road and culvert, are estimated from historical sources to be **\$6,500**. Local traffic officials estimate the number of days of closure to be **3 days**, the average delay or detour time to be **30 minutes**, and the average daily vehicle count to be **1,200**.

To determine the economic impact of the road closure, we take the product of the repair time (3 days), average delay or detour time (0.5 hours), average daily vehicle count (1,200 vehicles per day), and the cost per vehicle hour of the delay or detour (\$32.23) (see Table 7.2), or:

$$3 \times 0.5 \times 1,200 \times \$32.23 = \$58,014 \quad \text{for the economic impact of the road closure.}$$

Add the physical damage cost:

$$+ 6,500$$

for total damages and losses: **\$64,514**

## SECTION SEVEN

### Roads and Bridges

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In this example, nearly 90% of the total damages and losses arise from the economic impact of the road closure. Only 10% of the total damages and losses are from the repair costs. For benefit-cost analysis of mitigation projects for roads and bridges, it is always extremely important to count the benefits of avoiding road closures. To not do so would be to grossly undercount the benefits of mitigation projects for roads and bridges.

# Using Benefit-Cost Review in Mitigation Planning

State and Local Mitigation Planning  
How-To Guide Number Five  
FEMA 386-5 *May 2007*



FEMA

U.S. Department of Homeland Security  
500 C Street, SW  
Washington, DC 20472

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**TABLE OF CONTENTS**

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**INTRODUCTION ..... 1**  
About This Document ..... 2  
Purpose ..... 2  
Benefit-Cost Review vs. Benefit-Cost Analysis ..... 2  
How to Use This How-To Guide ..... 3  
**PART 1: REVIEW BENEFITS AND COSTS ..... 5**  
**PART 2A: PRIORITIZE ACTIONS - QUALITATIVE METHODS..... 8**  
Method A: Simple Listing ..... 8  
Step 1: List identified actions ..... 8  
Step 2: Identify benefits and costs ..... 8  
Step 3: Assign priority ..... 8  
Method B: Relative Rating ..... 10  
**PART 2B: PRIORITIZE ACTIONS - QUANTITATIVE METHODS ..... 11**  
Method C: Simple Score ..... 11  
Method D: Weighted Score ..... 12  
**PART 3: DOCUMENT THE REVIEW AND PRIORITIZATION PROCESS ..... 13**  
**APPENDIX A: EXHIBITS**  
*List of Exhibits*  
Exhibit 1: Measuring Vulnerability Before and After Mitigation ..... 5  
Exhibit 2: Benefits ..... 6  
Exhibit 3: Costs ..... 6  
Exhibit 4: Prioritization by Listing Benefits and Costs ..... 10  
Exhibit 5: Prioritization Using STAPLEE and Qualitative Scores ..... 11  
Exhibit 6: Prioritization Using STAPLEE and Simple Scores ..... 12  
Exhibit 7: Prioritization Using STAPLEE and Weighted Scores ..... 13



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## INTRODUCTION

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The **Disaster Mitigation Act of 2000** (DMA 2000) provides an opportunity for States, Tribal governments, and local jurisdictions to significantly reduce their vulnerability to natural hazards. It also allows them to streamline the receipt and use of Federal disaster assistance through pre-disaster hazard mitigation planning. DMA 2000 places new emphasis on State, Tribal, and local mitigation planning by requiring these entities to develop and submit mitigation plans as a condition of receiving various types of pre- and post-disaster assistance (such as the Pre-Disaster Mitigation [PDM] program and the Hazard Mitigation Grant Program [HMGPI]) under the Stafford Act.

On February 26, 2002, the Department of Homeland Security's Federal Emergency Management Agency (FEMA) published an **Interim Final Rule** (the Rule) to implement the mitigation planning requirements of DMA 2000. The Rule outlines the requirements for State, Tribal and local mitigation plans.

FEMA has developed a series of guides, called the **Mitigation Planning "How-To" Guides**, to provide State, Tribal, and local governments with easy-to-understand information needed to initiate and maintain a hazard mitigation planning process and meet the requirements of the Rule. The guides can be ordered free of cost by calling 1-800-480-2520, or they can be downloaded from [http://www.fema.gov/plan/mitplanning/planning\\_resources.shtml#1](http://www.fema.gov/plan/mitplanning/planning_resources.shtml#1).

The first four How-To Guides are known as the "core four" guides. They provide the basic instructions for preparing a natural hazard mitigation plan. They are:

- *Getting Started: Building Support for Mitigation Planning* (FEMA 386-1)
- *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA 386-2)
- *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies* (FEMA 386-3)
- *Bringing the Plan to Life: Implementing the Hazard Mitigation Plan* (FEMA 386-4)

This How-To Guide, Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5), supplements FEMA 386-3 and focuses on guidance for using Benefit-Cost Review when prioritizing mitigation actions in a hazard mitigation plan.

### About This Document

#### Purpose

The purpose of a mitigation plan is to reduce the community's vulnerability to hazards. After assessing its risks, a community may consider many mitigation options. However, due to monetary as well as other limitations, it is often impossible to implement all mitigation actions. Hence, the Planning Team needs to select the most cost-effective actions for implementation first, not only to use resources efficiently, but to make a realistic start toward mitigating risks.

The Rule supports the principle of cost-effectiveness by requiring hazard mitigation plans to have an action plan that includes a prioritization process that demonstrates a special emphasis on maximization of benefits over costs. The requirement states:

*The mitigation strategy section shall include[an action plan describing how the actions identified in section (c)(3)(ti) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs. §201.6(c)(3)(iii)]*

The purpose of this guide is to help local jurisdictions understand how to apply the concepts of Benefit-Cost Review to the prioritization of mitigation actions, and thereby meet the requirement of the Rule.

#### Benefit-Cost Review vs. Benefit-Cost Analysis

The Benefit-Cost Review for mitigation planning differs from the benefit-cost analysis (BCA) used for specific projects. BCA is a method for determining the potential positive effects of a mitigation action and comparing them to the cost of the action. To assess and demonstrate the cost-effectiveness of mitigation actions, FEMA has developed a suite of BCA software, including hazard-specific modules. The analysis determines whether a mitigation project is technically cost-effective.

The principle behind the BCA is that the benefit of an action is a reduction in future damages. The Benefit-Cost Review method described in this guide is based on the same principle, but this guide does NOT explain how to conduct a BCA. DMA 2000 does not require hazard mitigation plans to include BCAs for specific projects.

A Benefit-Cost Review can satisfy the DMA 2000 requirements even if it is relatively simple. Remember that a Benefit-Cost Review can be broad and need not be complex. It needs to be comprehensive so that it covers

monetary as well as non-monetary costs and benefits associated with each action. Some projects can be extremely cost-effective but not as beneficial for the community at large. The Planning Team should think through a wide variety of questions, such as: How many people will benefit from the action? How large an area is impacted? How critical are the facilities that benefit from the action (e.g., is it more beneficial to protect the fire station than the administrative building, even though it costs more)? Environmentally, does it make sense to do this project for the overall community?

A hazard mitigation plan must demonstrate that a process was employed that emphasized a review of costs and benefits when prioritizing the mitigation actions. This requirement allows the Planning Team flexibility in determining which method to use. Four methods are described in this document, ranging from qualitative to more quantitative. These examples are intended to be illustrative of acceptable processes, but do not cover all possible methods that are approvable under DMA 2000.

#### How to Use This How-To Guide

The Rule states, "The mitigation strategy shall include a section that identifies and analyzes a comprehensive range of mitigation actions." However, no specific methodology for the analysis is specified or required. FEMA 386-3 discusses some ways to conduct an analysis. This How-To Guide, Using Benefit-Cost Review in Mitigation Planning (FEMA 386-5), provides methods and examples to review benefits and costs, prioritize actions and document the entire process.

This guide is organized as follows:

**Part 1 - Review Benefits and Costs** – This section explains how to review benefits and costs for each action.

**Part 2 A - Prioritize Actions – Qualitative Methods** – This section provides two qualitative methods to prioritize actions (Methods A and B).

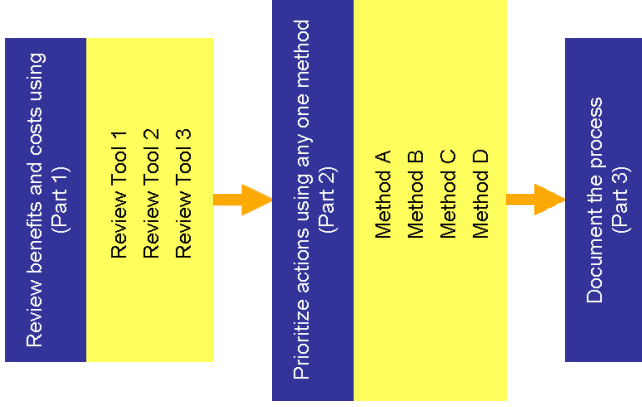
**Part 2 B - Prioritize Actions – Quantitative Methods** – This section provides two quantitative methods to prioritize actions (Methods C and D).

**Part 3 - Document the Review and Prioritization Process** – This section discusses documentation of the Benefit-Cost Review process in the plan to meet DMA 2000 requirements.

Worksheets (Review Tools) like the ones in Part 1 can be used to summarize the costs and benefits. After the review of benefits and costs for each action, the Planning Team will be able to prioritize the actions.

## INTRODUCTION

They can then use one of the four methods (A to D), which range from simple to complex. See Figure 1 for an illustration of how to use this guide. Blank worksheets are included in Appendix A, Exhibits. The worksheets can be duplicated and used to record the progress of prioritizing mitigation actions for the hazard mitigation plan.



**Figure 1. How to Use This How-To Guide**

Therefore, a hazard mitigation plan will meet the requirements of the Rule by:

- Using Review Tools 1, 2, and 3 from Part 1,
- Using any one prioritization method from Part 2 (Method A, B, C, or D), and
- Documenting the process (as described in Part 3).

## PART 1: REVIEW BENEFITS AND COSTS

To assess the measurable and non-measurable benefits and costs associated with each action, use Review Tools 1, 2, and 3. Then, summarize the analysis of each action's benefits and costs and use this review later when prioritizing the actions.

### Review Tool 1: Measuring Vulnerability Before and After Mitigation

Action: \_\_\_\_\_

Vulnerability	Before the Action is implemented*	After the Action is implemented*	Difference
Number of people affected by the hazard			
Area affected (acreage) by the hazard			
Number of properties affected by the hazard			
Property damage (amount in \$)			
Loss of use (number of properties/physical assets [e.g., bridges] in number of days)			
Loss of life (number of people)			
Injury (number of people)			
**			

\*Include measurable items, where possible, based on experience, professional estimate, or judgment.

\*\*Add more categories of risk as appropriate for the specific community's plan.

### Sample Exhibit 1: Measuring Vulnerability Before and After Mitigation

(Exhibit 1 shows Review Tool 1 filled out for one action)

Action: Floodproof 10 businesses in the downtown area

Vulnerability	Before the Action is implemented	After the Action is implemented	Difference
Number of people affected by the hazard	Almost entire community (because downtown is affected)	Same as before but they will be less affected if businesses are able to remain open	Less impact
Area affected (acreage) by the hazard	1 acre	1 acre	Area still affected but less impact
Number of properties affected by the hazard	15	5	10
Property damage (amount in \$)	\$100,000 every year	\$10,000 every year	\$90,000 every year
Loss of use (number of properties/physical assets [e.g., bridges] in number of days)	10 properties every year for 5 days	0	Completely eliminated
Loss of life (number of people)	2 every 20 years	1 every 20 years	Reduced by half
Injury (number of people)	0	0	0

## PART 1: REVIEW BENEFITS AND COSTS

A simple listing of other costs and benefits (that do not fit into the quantitative format of Review Tool 1) can supplement Review Tool 1, as shown in Review Tools 2 and 3. Fill out as many items as possible.

### Review Tool 2: Benefits

Action: _____	<b>Benefits</b>
Risk reduction (short- or long-term)	
If other community goals are achieved, explain	
If easy to implement, explain	
If funding is available, explain	
If politically/socially acceptable, explain	

### Sample Exhibit 2: Benefits

Action: Floodproof 10 businesses in the downtown area

<b>Benefits</b>
City's cost to repair flooded properties reduced by 80%; approximate saving of \$5,000 per year
Flooding problem in downtown area solved for the long-term; community's problem of business interruption solved
Federal grants like Flood Mitigation Assistance (FMA) and FDM can be applied for to implement the proposed floodproofing
Will help improve CRS rating in the long term (so entire community's flood insurance premium will be reduced)
More than half the members of the City Council are opposed to buy-outs; it might be easier to get their support for an alternative to buy-outs

### Review Tool 3: Costs

Action: _____	<b>Costs*</b>
Construction cost (amount in \$)	
Programming cost (amount in \$, # of people needed to administer)	
Time needed to implement	
If unfair to a certain social group, explain	
If there is public/political opposition, explain	
If there are any adverse effects on the environment, explain	
*If precise costs are not available, use costs based on experience, professional estimate, or judgment.	

### Sample Exhibit 3: Costs

Action: Floodproof 10 businesses in the downtown area	<b>Costs</b>
Floodproofing cost = \$10,000 X 10 = \$100,000	
Need at least 3 people to administer (after technical assistance from the State)	
Need a year to implement	

## PART 1: REVIEW BENEFITS AND COSTS

After reviewing benefits and costs for all the actions using the Review Tools, go on to prioritize the actions. Note that there are many ways of prioritizing actions; however, DMA 2000 mandates an emphasis on Benefit-Cost Review as part of the prioritization process. Directly linking the prioritization process to the Benefit-Cost Review clearly shows that costs and benefits were emphasized. Therefore, when the review of benefits and costs of actions in Part 1 is used to prioritize the actions using one of the methods from Part 2, the process meets DMA 2000 requirements.

## PART 2A: PRIORITIZE ACTIONS - QUALITATIVE METHODS

Based on the review completed in Part 1, use Part 2 to prioritize or rank the actions.

The two qualitative methods described in this section rely on a holistic response or common sense ranking. The two quantitative approaches in Part 2B rely more on comparative analysis that can be translated into mathematical scores. When the number of actions is relatively small, a subjective or qualitative process may be used. The greater the number of actions, the more likely it is that a more quantitative approach will be useful in assigning priority.

### Method A: Simple Listing

The qualitative method described below helps the Planning Team judge the priorities of actions based on perceived pros and cons (i.e., benefits and costs).

The method is best used when it is not possible, or appropriate, to identify a quantitative measure of benefits and costs. Each action can have a unique advantage or disadvantage that can subsequently be used for prioritization.

Using this method ensures that special emphasis is given to Benefit-Cost Review by categorizing prioritization criteria (e.g., ease of implementation, technical effectiveness) as either benefits or costs.

#### Step 1: List identified actions

For each hazard, list the actions identified earlier in the plan.

#### Step 2: Identify benefits and costs

Identify all expected benefits (i.e., positive effects) and costs (i.e., perceived obstacles) of the actions and write these down in the benefits and costs columns, respectively. Use Review Tools 1, 2, and 3 (see Exhibits 1, 2, and 3) from Part 1.

#### Step 3: Assign priority

As a result of the Benefit-Cost Review, the Planning Team assigns a priority to each action. Priority can be expressed in many ways, such as:

- High, medium, low, accompanied by an explanation of what each term means.
- Priority 1, Priority 2, etc.
- Immediate, short-term, and long-term, accompanied by an explanation of what each category means (e.g., immediate = within a month, short-term = within 6 months, long-term = within 2 years).

## PART 2A: PRIORITIZE ACTIONS - QUALITATIVE METHODS

Sample Exhibit 4: Prioritization by Listing Benefits and Costs

Priority	Costs (Cons)	Benefits (Pros)	Actions
High (Priority no. 1)	- Floodproofing cost = \$10,000 X 10 = \$100,000 - Need at least 3 people to administer (after obtaining technical assistance from the State) - Need a year to implement	- Avoidance of 1 loss of life every 20 years (casualties reduced by half) - Savings of \$90,000 in private damages and \$5,000 in public cost - Loss of use of 10 downtown businesses completely eliminated - Community's problem of business interruption solved - Federal grants like FEMA and PDM can be applied for to implement the proposed floodproofing - Will help improve CRS rating in the long term (so entire community's flood insurance premium will be reduced) - Council are opposed to buy-outs; it might be easier to get their support for an alternative to buy-outs	- Floodproof 10 businesses in the downtown area
Medium (Priority no. 2)	- City will share 50% of the cost per existing home = \$2,000 X 50 = \$100,000 - Administrative cost per home = \$1,000 X 50 = \$50,000 - Need 3 years to complete - Tornadoes are unpredictable; they may never strike this exact area	- Avoidance of 5 lives lost every 20 years (casualties reduced by half) - Public and political support for regular recurrence of tornadoes (due to mitigating this hazard exists) - 50 homes without basements	- Build safe rooms for a neighborhood of 50 homes without basements
Low (Priority no. 3)	- Cost of preparing video = \$5,000 - Only 5% of population might notice the broadcast - Only 5% of that 5% might actually consider acting on individual mitigation methods	- Local channel might be willing to broadcast free of cost - Publicity would spread awareness about mitigation methods as well as what to do in an emergency	- Broadcast educational video on local channel

## PART 2A: PRIORITIZE ACTIONS - QUALITATIVE METHODS

### Method B: Relative Rating

A second approach is to assign relative scores to the actions based on qualitative factors. By rating costs and benefits as High, Medium, and Low, this method clearly emphasizes the Benefit-Cost Review. Exhibit 5 uses a set of factors commonly called STAPLEE, which stands for **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental factors. They are typically used for evaluating planning alternatives. For details on using STAPLEE, refer to FEMA 386-3.

**Sample Exhibit 5: Prioritization Using STAPLEE and Qualitative Scores**

Actions Criteria	Floodproof 10 properties in the downtown area		Build safe rooms in a neighborhood of 50 homes without basements		Broadcast educational video about hazard mitigation on local channel	
	Cost	Benefit	Cost	Benefit	Cost	Benefit
Social	-	-	L	-	-	-
Technical	M	H	M	M	L	L
Administrative	M	-	M	-	L	-
Political	-	L	-	H	-	-
Legal	-	-	-	-	-	-
Economic	M	H	H	-	-	-
Environmental	-	-	-	-	-	-
Priority	High (priority 1)		Medium (priority 2)		Low (priority 3)	

**Definition of rating scale:** H=High, M=Medium, L=Low, - None/Not applicable

Use the Review Tools completed in Part 1 to help rate the costs and benefits. For help on how to rank High, Medium, Low, None, or NA, see the explanation about STAPLEE in FEMA 386-3.

## PART 2B: PRIORITIZE ACTIONS - QUANTITATIVE METHODS

Quantitative methods typically assign numerical values to concepts like high, medium, and low. The Planning Team needs to review the scores and make sure they make sense.

### Method C: Simple Score

A simple way of using scores based on the STAPLEE criteria is shown in Exhibit 6. After the table is completed, the scores can be added to determine priority.

**Sample Exhibit 6: Prioritization Using STAPLEE and Simple Scores**

Actions Criteria	Floodproof 10 properties in the downtown area		Build safe rooms in a neighborhood of 50 homes without basements		Broadcast educational video about hazard mitigation on local channel	
	Cost	Benefit	Cost	Benefit	Cost	Benefit
Social	0	1	-1	1	0	0
Technical	-1	2	-1	2	-1	1
Administrative	-1	0	-1	0	-1	0
Political	0	1	0	1	0	0
Legal	0	0	0	0	0	0
Economic	-1	2	-1	0	0	0
Environmental	0	0	0	0	0	0
Sub-total of cost/benefit	-3	6	-4	4	-2	1
Total Score	-3+6 = 3		-4+4 = 0		-2+1 = -1	
Priority	No. 1		No. 2		No. 3	

**Definition of rating scale:** 2=Very beneficial, 1=Beneficial, 0=None/Not applicable, -1=Not Favorable

The Planning Team should be careful when assigning criteria, scores, and weights to avoid the problem inherent in comparing different types of actions. In the example above, the scores allowed the participants to objectively compare the various actions. The weakness of such a simple method is that very different kinds of actions may score similarly, and if not given qualitative consideration (a common-sense check), may yield a questionable ranking. In this example, the safe-room action's total score is very low compared to the floodproofing action, but the Relative Rating method (Method B in Part 2A) showed that for floodproofing and safe rooms, the actions were similar in how their benefits measured up against the costs, and for both actions the benefits exceeded the costs. The Simple Score method shown above, however, results in a greater difference in the final priority scores (3 vs. 0), indicating a large difference



## PART 2B: PRIORITIZE ACTIONS - QUANTITATIVE METHODS

in these actions' cost-effectiveness. A formal Benefit-Cost Analysis for each project would verify whether this large difference is accurate, although it is not required for the plan.

### Method D: Weighted Score

As noted in the Simple Score method (Method C), a common-sense adjustment may be necessary to adapt the prioritization to the plan. The weighted score method attempts to compensate for the limitations of the Simple Score method by adding emphasis to those factors judged to be more important.

An example of weighted scores using STAPLEE follows.

**Sample Exhibit 7: Prioritization Using STAPLEE and Weighted Scores**

Actions Criteria	Floodproof 10 properties in the downtown		Build safe rooms in a neighborhood of 50 homes without basements		Broadcast educational video about hazard mitigation on local channel	
	Cost	Benefit	Cost	Benefit	Cost	Benefit
Social (weight = 1)	0	1	-1	1	0	0
Technical (weight = 2)	-1x2=-2	2x2=4	-1x2=-2	2x2=4	-1x2=-2	1x2=2
Administrative (weight = 1)	-1	0	-1	0	-1	0
Political (weight = 1)	0	1	0	1	0	0
Legal (weight = 1)	0	0	0	0	0	0
Economic (weight = 2)	-1x2=-2	2x2=4	-1x2=-2	0	0	0
Environmental (weight = 1)	0	0	0	0	0	0
Sub-total of cost/benefit	-5	10	-6	6	-3	2
Total Score	-5+10 = 5		-6+6 = 0		-3+2 = -1	
Priority	No. 1		No. 2		No. 3	

**Definition of rating scale:** 2=Very beneficial, 1=Favorable, 0=None/Not applicable, -1=Not Favorable

Assigning weights to some factors over others can become challenging for the Planning Team. Local knowledge and values should guide the process to achieve the priorities most appropriate for the local situation.

## PART 3: DOCUMENT THE REVIEW AND PRIORITIZATION PROCESS

Remember to document in the plan the Benefit-Cost Review process and prioritization method used. Include the Review Tools and prioritization worksheets from this How-To Guide in the plan. Clearly explain how the scores and priorities were assigned.

Be sure to explicitly state that Benefit-Cost Review was **emphasized** in the prioritization process. Using the Review Tools and one of the methods for prioritization from this guide ensures the emphasis on the maximization of benefits over costs. This approach demonstrates that the actions are being evaluated in terms of their pros and cons, which are represented as costs and benefits.

The intention of DMA 2000 is for the hazard mitigation plan to be useful and unique for each community; therefore, an impartial review and ranking of the mitigation actions is key. It is not so important which method is used, but rather that the method chosen is logical and clearly documented.

Remember that the Benefit-Cost Review is an important element of the community's hazard mitigation plan. Keep it simple, and focus on your community's needs and values.

**Appendix A**

**Exhibits**

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**Exhibit 1: Measuring Vulnerability Before and After Mitigation**

Action: \_\_\_\_\_

Vulnerability	Before the Action is implemented*	After the Action is implemented*	Difference
Number of people affected by the hazard			
Area affected (acreage) by the hazard			
Number of properties affected by the hazard			
Property damage (amount in \$)			
Loss of use (number of properties/physical assets [e.g., bridges] in number of days)			
Loss of life (number of people)			
Injury (number of people)			
**			

\*Include measurable items, where possible, based on experience, professional estimate, or judgment.

\*\*Add more categories of risk as appropriate for the specific community's plan.



**Exhibit 5: Prioritization Using STAPLEE and Qualitative Scores**

Actions →	Cost		Benefit	
	Cost	Benefit	Cost	Benefit
Criteria ↓				
Social				
Technical				
Administrative				
Political				
Legal				
Economic				
Environmental				
Priority				

Definition of rating scale: \_\_\_\_\_

**Exhibit 6: Prioritization Using STAPLEE and Simple Scores**

Actions →	Cost		Benefit	
	Cost	Benefit	Cost	Benefit
Criteria ↓				
Social				
Technical				
Administrative				
Political				
Legal				
Economic				
Environmental				
Sub-total of cost/benefit				
Total Score				
Priority				

Definition of rating scale: \_\_\_\_\_

**Exhibit 7: Prioritization Using STAPLEE and Weighted Scores**

Actions →	Cost		Benefit	
	Cost	Benefit	Cost	Benefit
Criteria ↓				
Social (weight = __)				
Technical (weight = __)				
Administrative (weight = __)				
Political (weight = __)				
Legal (weight = __)				
Economic (weight = __)				
Environmental (weight = __)				
Sub-total of cost/benefit				
Total Score				
Priority				

Definition of rating scale: \_\_\_\_\_



**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX N**

**LOS ANGELES COUNTY ALL-HAZARDS MITIGATION 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



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**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 Time line .....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 include 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	
<b>Element A: Planning Process</b>	
A.1. 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))	
A.2. 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))	
A.3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	
A.4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	
A.5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	
A.6. 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 Time line**

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	<p>Identified initial list of stakeholders</p> <p>Crafted public outreach messages for the Twitter handle @ReadyLACounty</p> <p>Created draft hazard figures</p> <p>Developed homeless people risk assessment tables</p> <p>Developed land area/geographic boundaries risk assessment tables</p> <p>Rewrote/updated the hazard profiles into a streamlined tabular format</p> <p>Began developing/updating/collecting draft mitigation actions</p> <p>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)</p>	AHMP project manager, AECOM
August 2019	<p>Tweeted public outreach messages about the 2019 AHMP</p> <p>Emailed stakeholders about the 2019 AHMP</p> <p>Conducted conference call with Los Angeles County Regional Planning (August 5) to discuss joint public outreach efforts as well as mitigation strategies</p> <p>Conducted meeting with Los Angeles County Public Works (August 7) to discuss 2019 AHMP, progress made to date, and existing and new mitigation strategies</p> <p>Developed critical facilities risk assessment tables</p> <p>Created draft risk assessment tables</p> <p>Revised plan maintenance approach from quarterly meetings to annual review questionnaires</p>	AHMP project manager, AECOM, Los Angeles County Department of Regional Planning, Los Angeles County Public Works, advisory committee
September 2019	<p>Updated the capability assessment tables</p> <p>Developed a list of potential mitigation actions and prioritized actions based on a new tiered approach</p> <p>Created public outreach flyers in English and Spanish and placed on the Los Angeles County OEM website</p> <p>Documented progress in local mitigation efforts</p> <p>Addressed changes in development since the 2014 AHMP</p> <p>Created Initial Draft AHMP</p> <p>Created Public Draft AHMP</p>	AHMP project manager, AECOM, advisory committee
October 2019	<p>Created Final Draft AHMP</p>	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 Ezell	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.
Angie Gragoosian	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.
Sheryl 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 VetGow	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/emergenc/vcounty-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	Arcaadia
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
Commerence	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	Kegel/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**

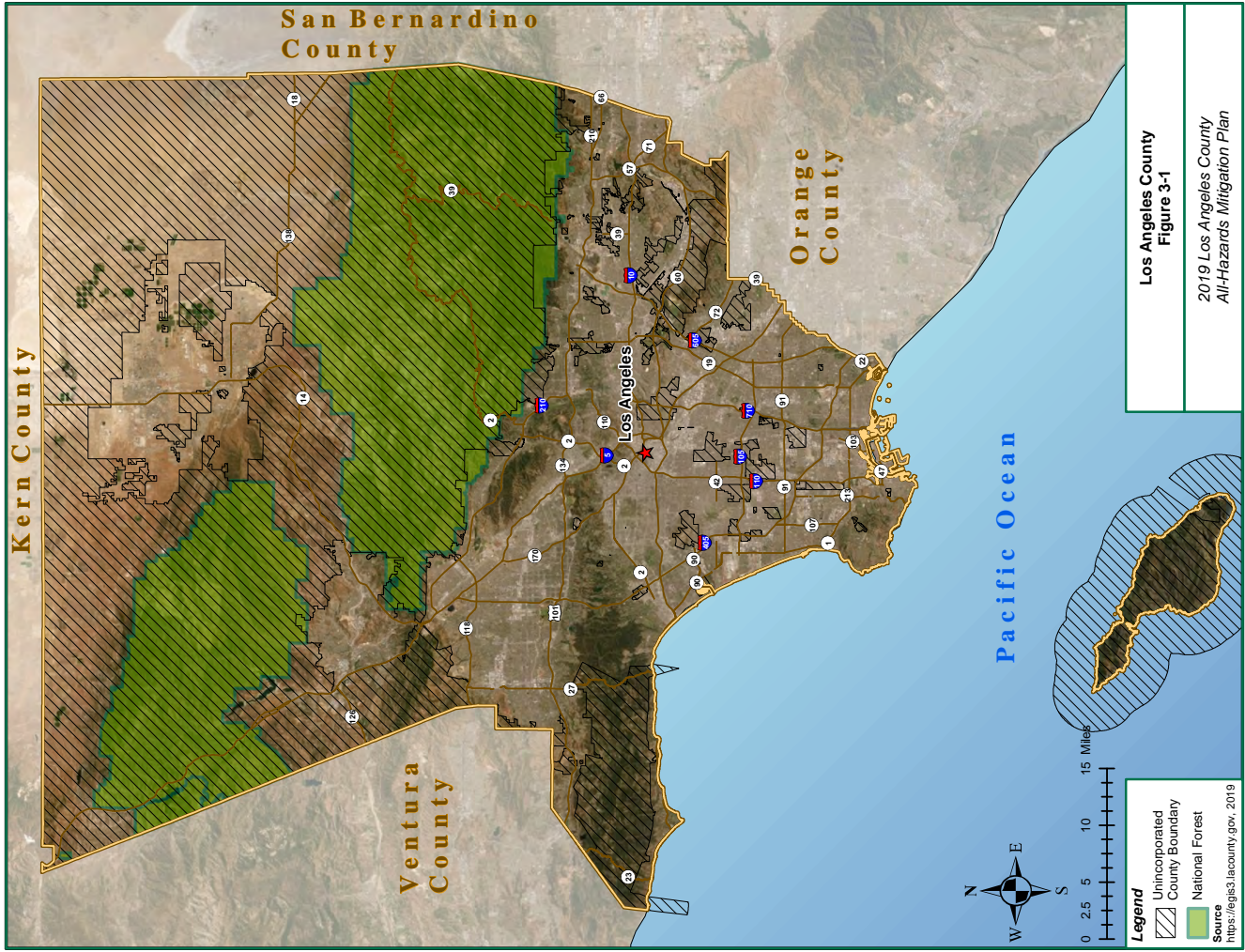
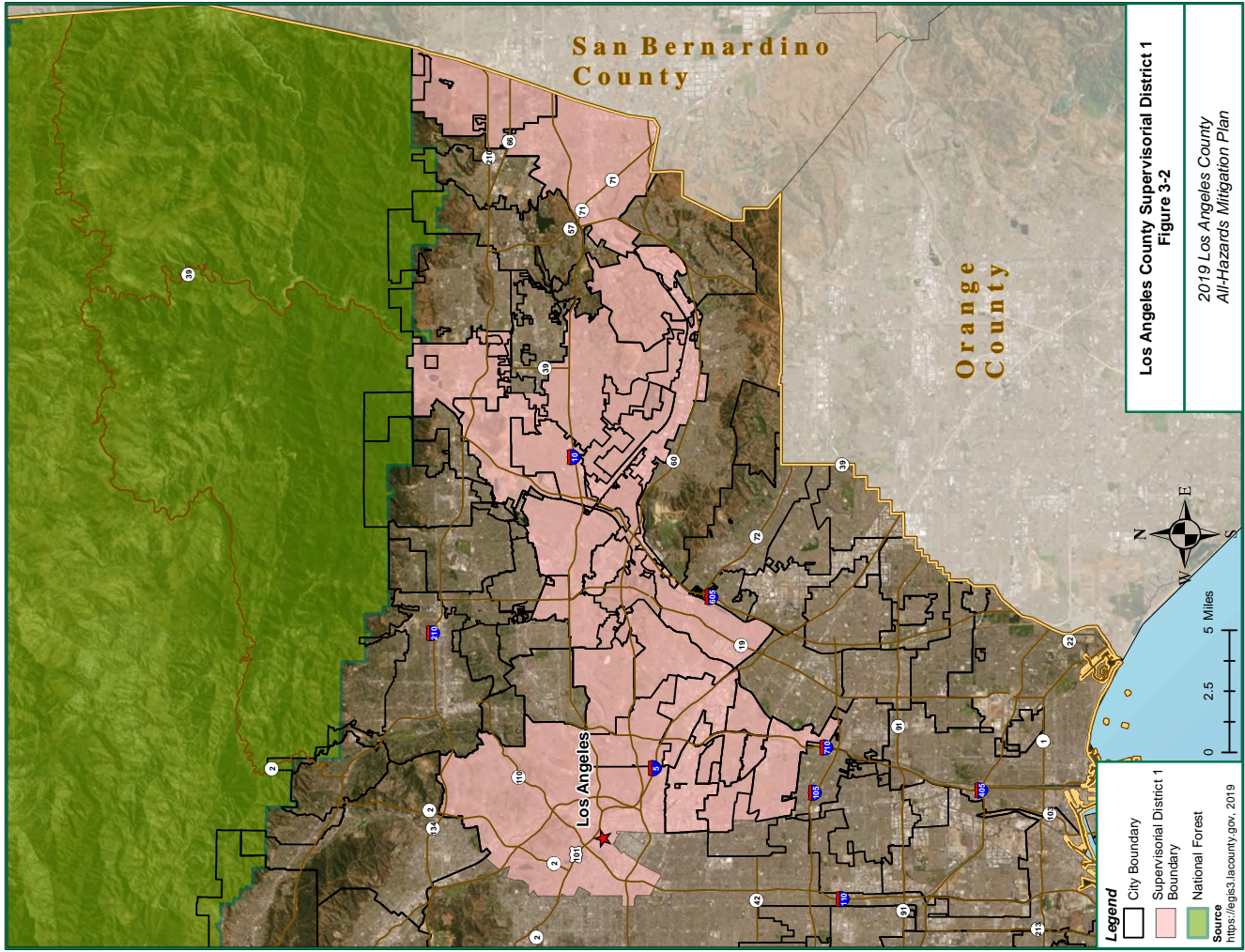
City	County-wide Statistical Area
Alhambra	Acton
Arcadia	Agua Dulce
Bradbury	Altadena
Covina	Anavende
Duarte	Angeles National Forest
Glendale	Arcadia
Glendora	Azusa
La Canada – Flintridge	Bouquet Canyon
La Verne	Bradbury
Lancaster	Canyon Country
Monrovia	Castaic
Palmdale	Claremont
Pasadena	Covina
San 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

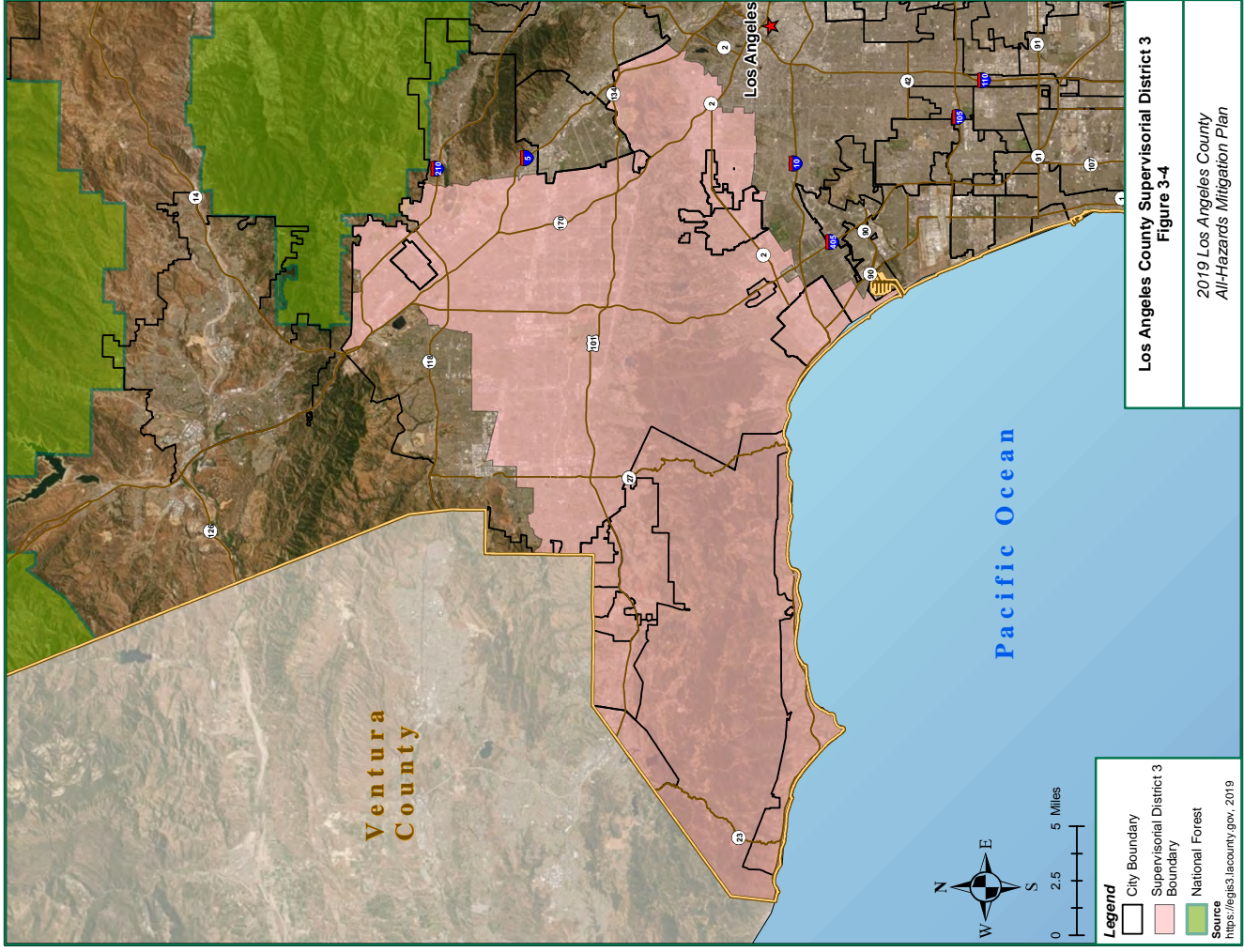
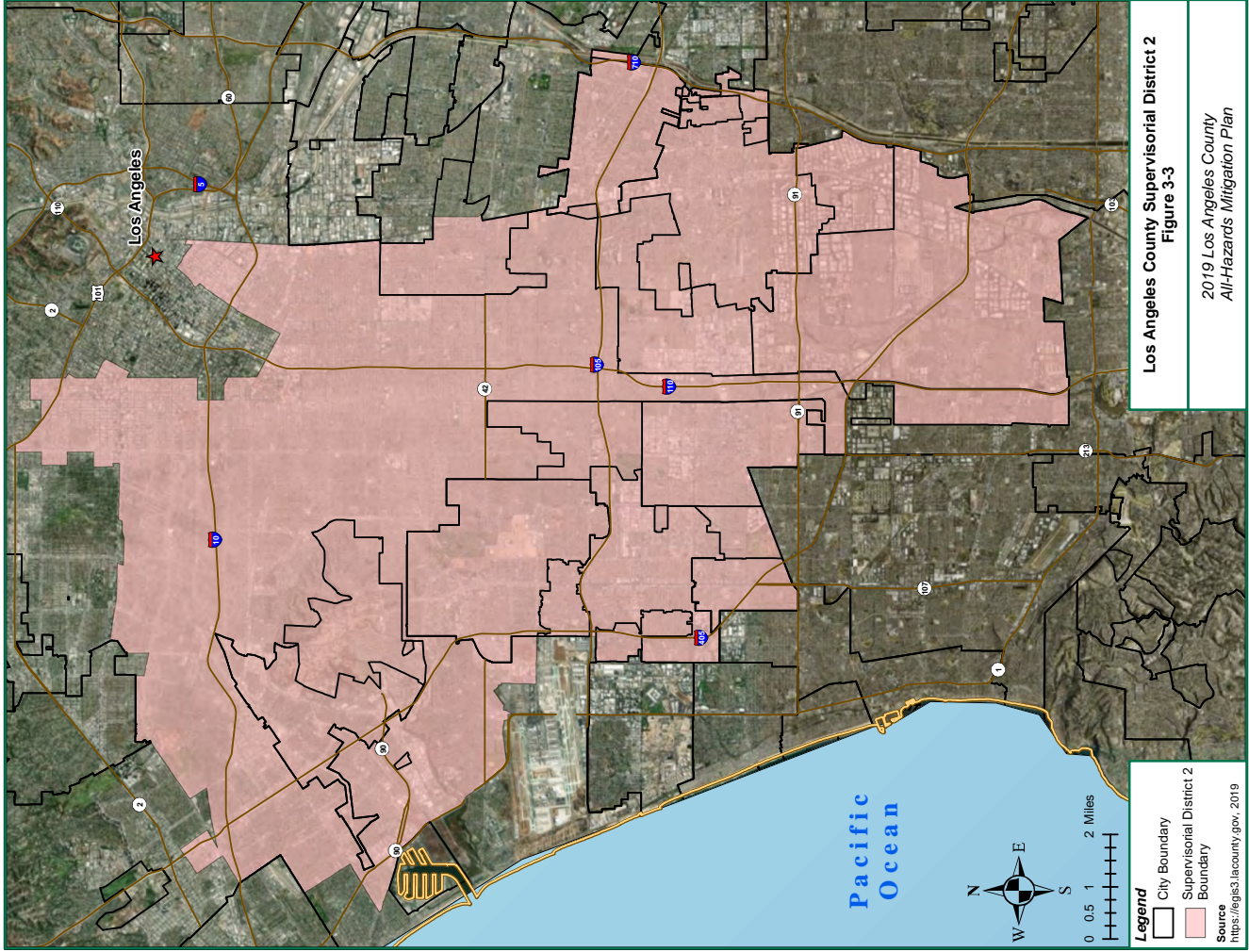
City	County-wide Statistical Area
Chatsworth (portion)	Hi Vista
Granada Hills (portion)	Kagel / Lopez Canyons
Hansen Dam (portion)	La Crescenta-Montrose
Lake View Terrace (portion)	La Verne
Mission Hills (portion)	Lake Hughes
Northridge (portion)	Lake Los Angeles
Olive View Hospital (Sylmar)	Lake Manor
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
	Rosevelt
	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

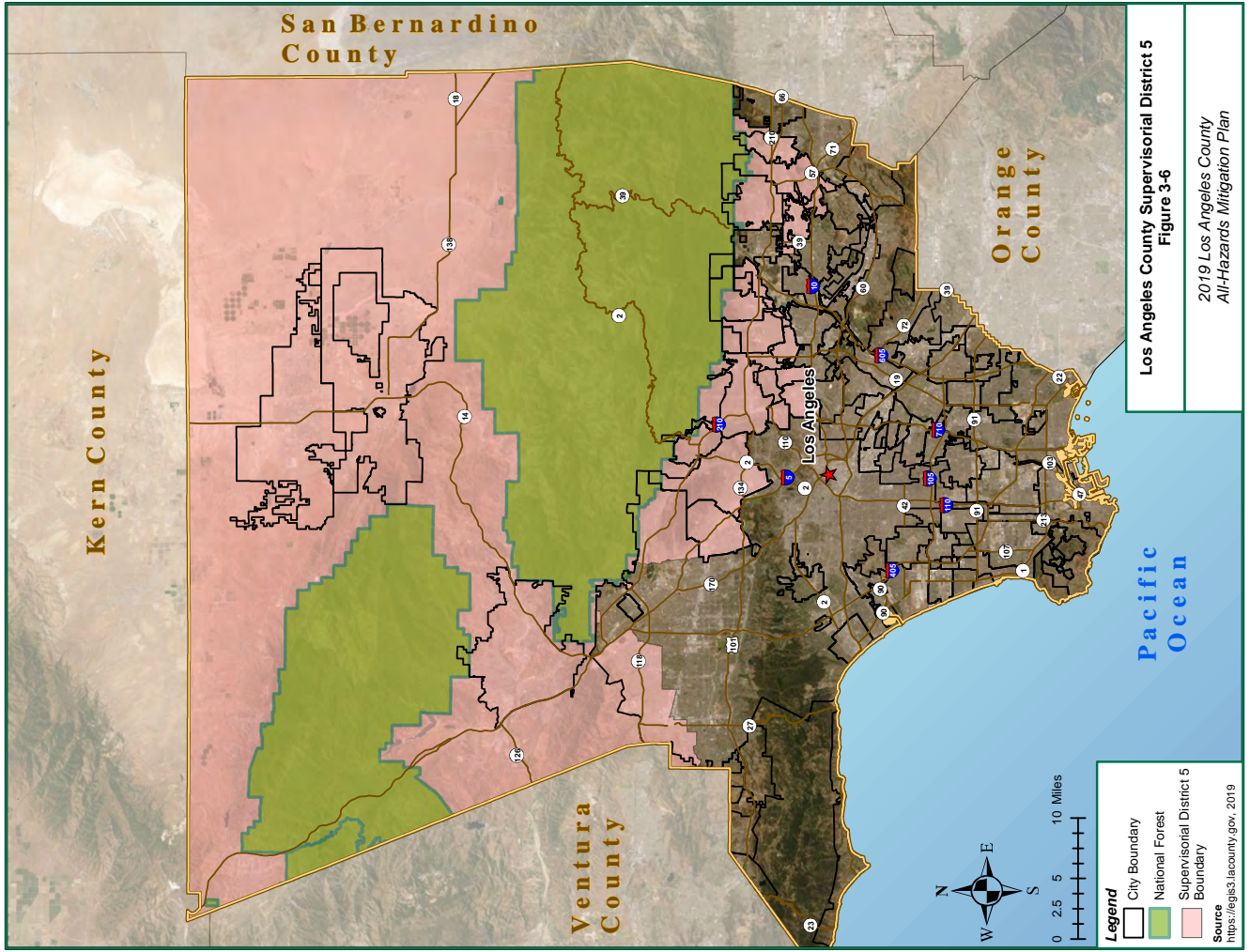
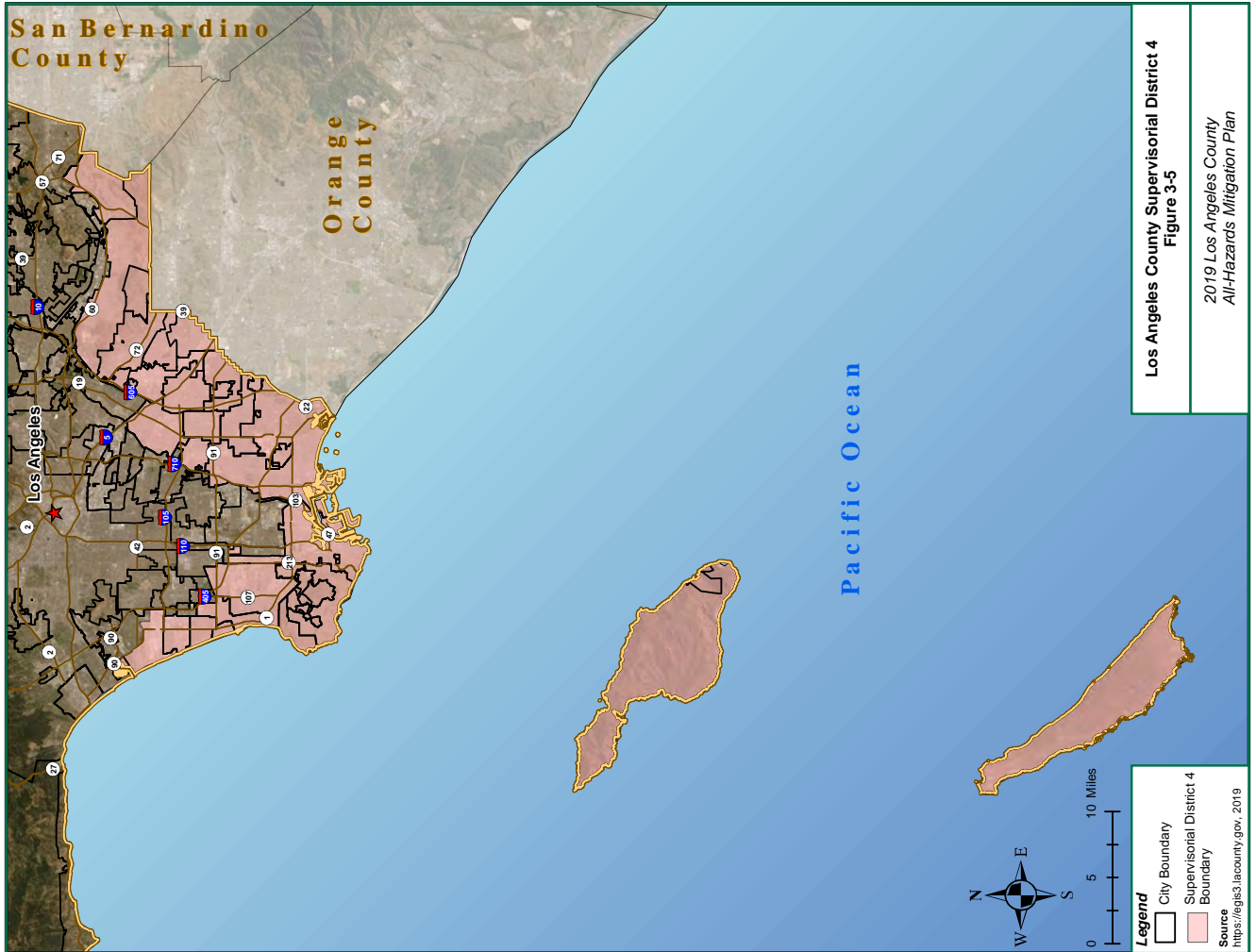
City	County-wide Statistical Area
	Val Verde
	Valencia
	West Antelope Valley
	West Chatsworth
	White Fence Farms













**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**

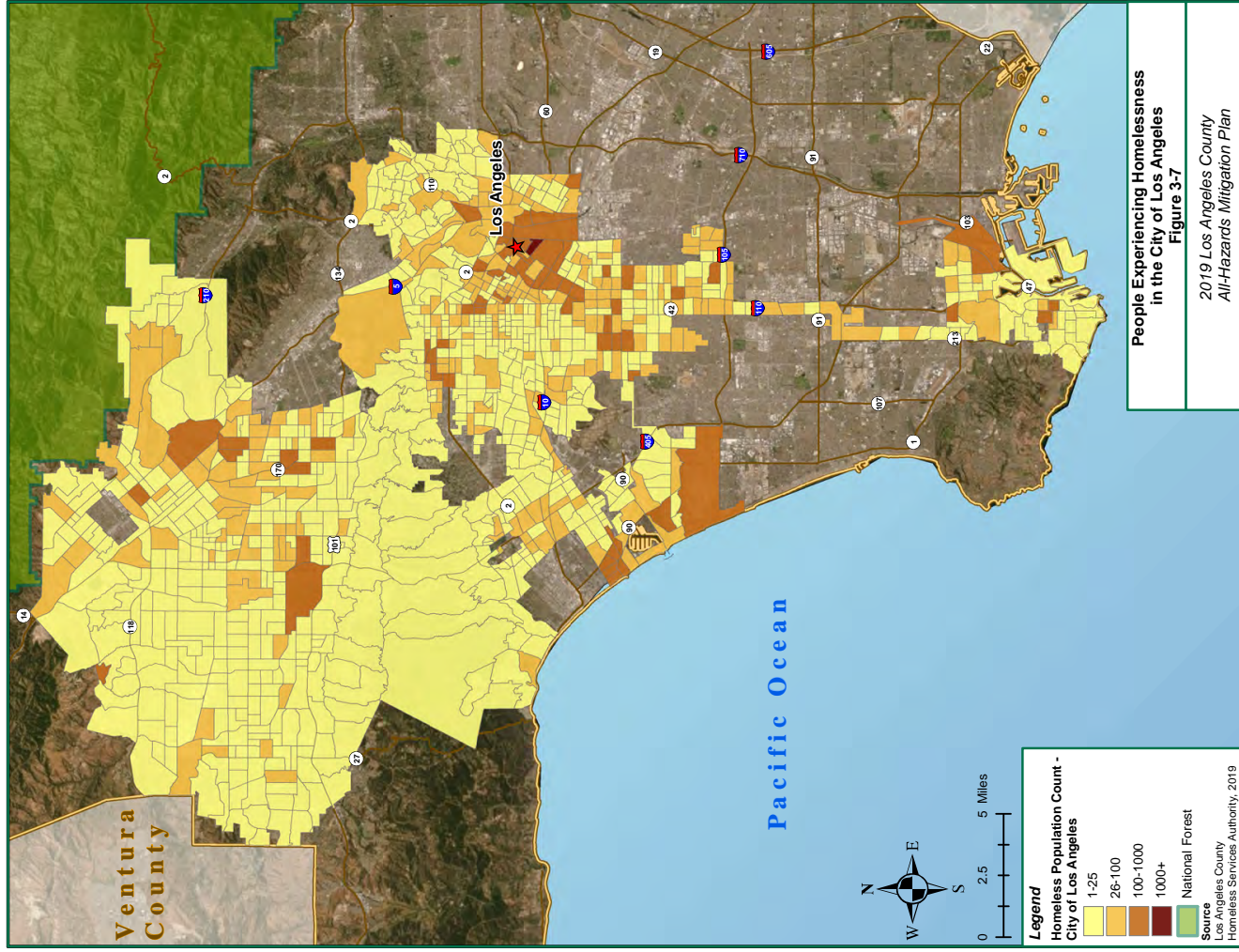
As noted by the Center for Disease Control (CDC), "Everyone must remain safe in an emergency. But for some, it's more difficult." Vulnerable or at-risk groups include people that may have difficulty communicating or accessing medical care, need help maintaining independence, require supervision, and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



**People Experiencing Homelessness in the City of Los Angeles**  
Figure 3-7

2019 Los Angeles County All-Hazards Mitigation Plan

### 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.

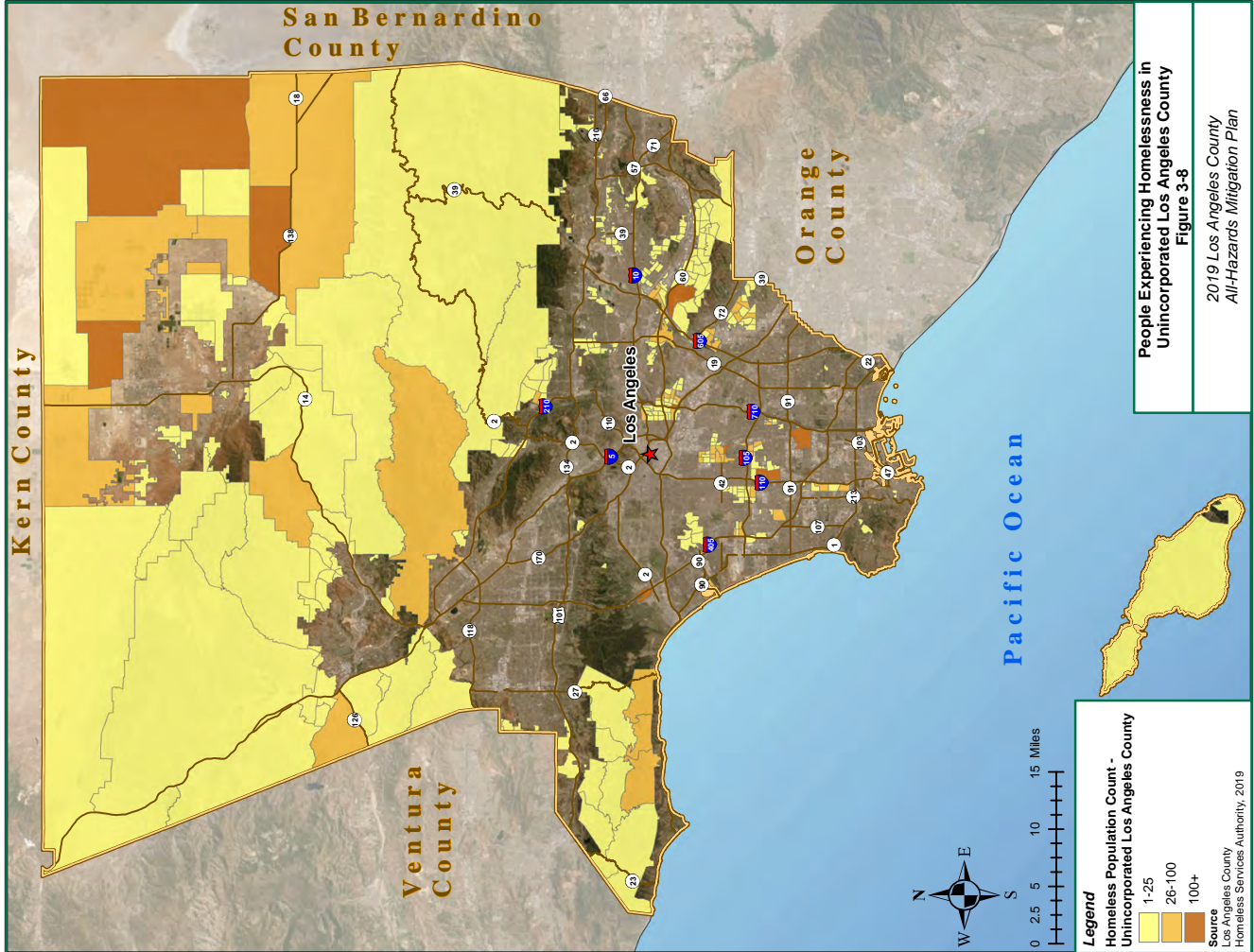
Los Angeles County does not currently maintain a centralized critical facilities database. For the 2019 AHMP, 915 major county-owned and county-related critical facilities were collected from various county department and agencies and also from the U.S. Department of Homeland Security's (DHS) Homeland 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.

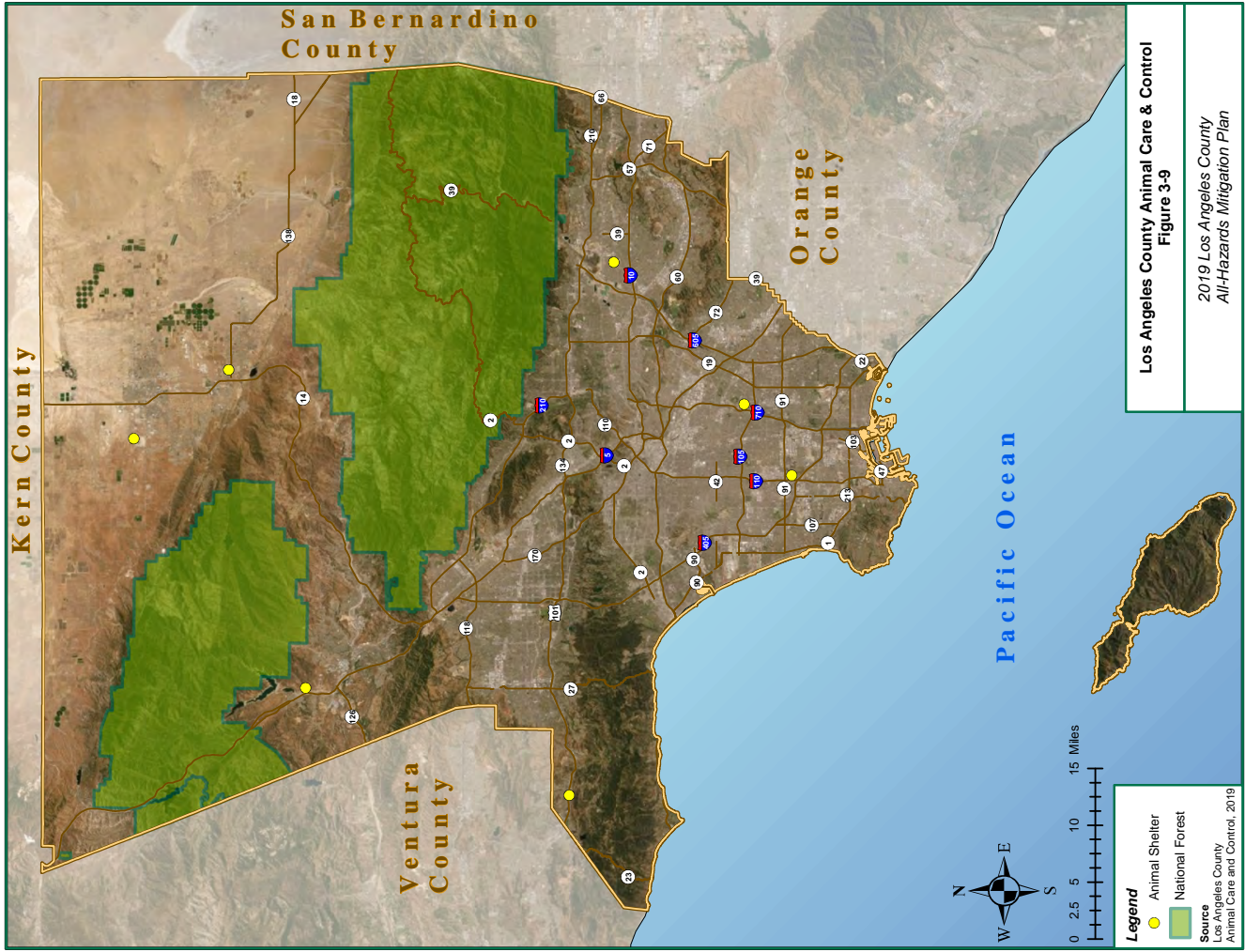
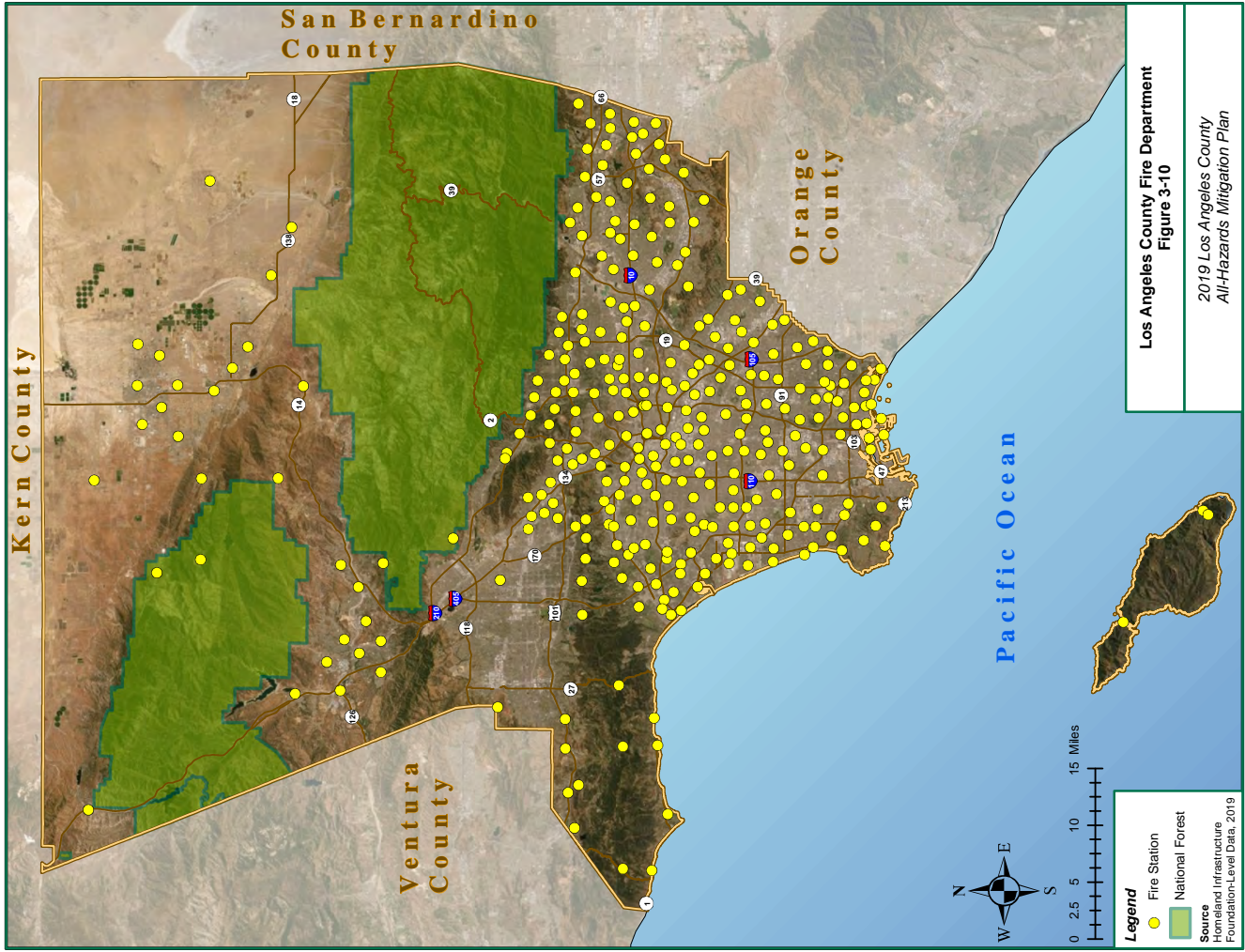
**Table 3-8. Los Angeles County-Owned and County-Related Critical Facilities**

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

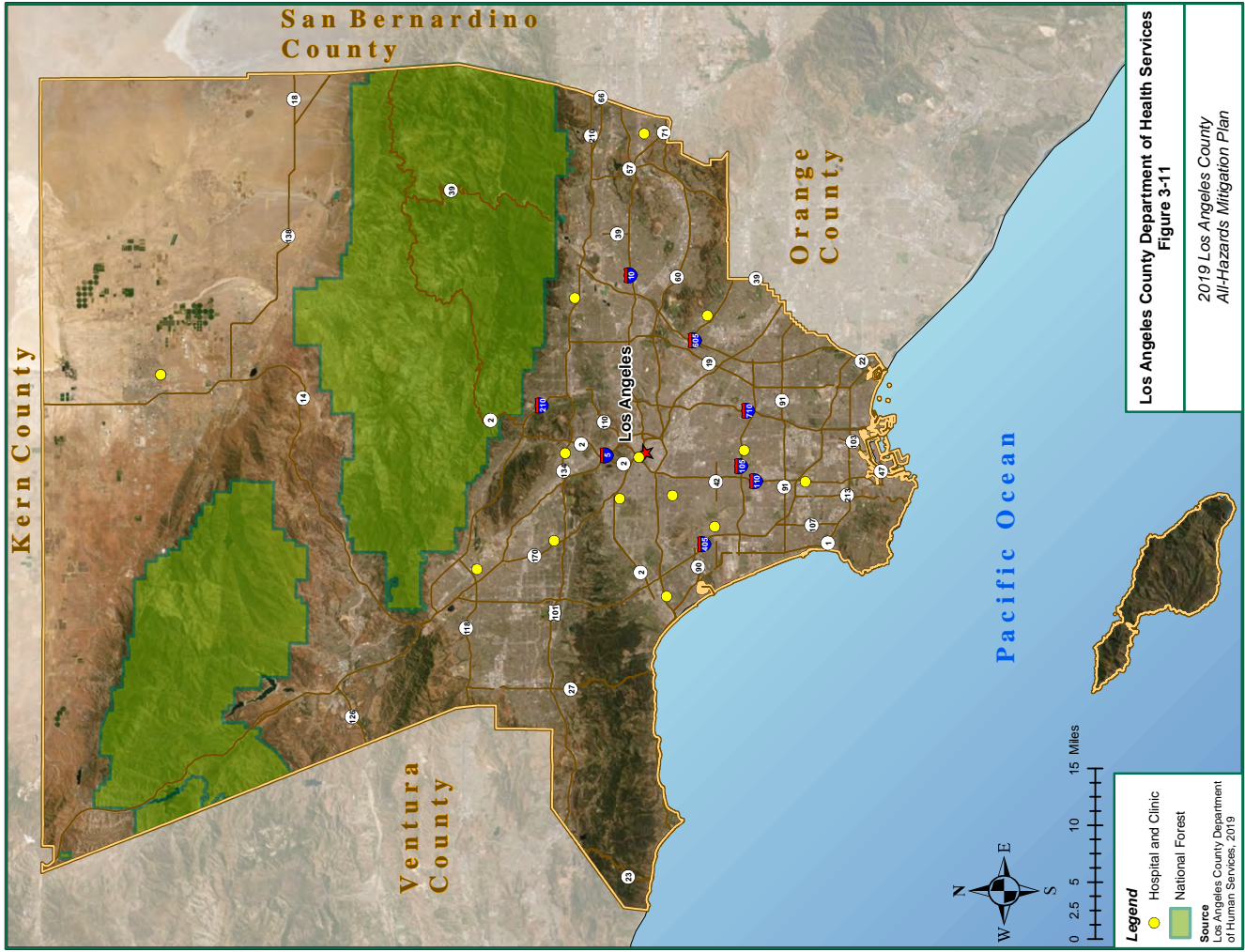
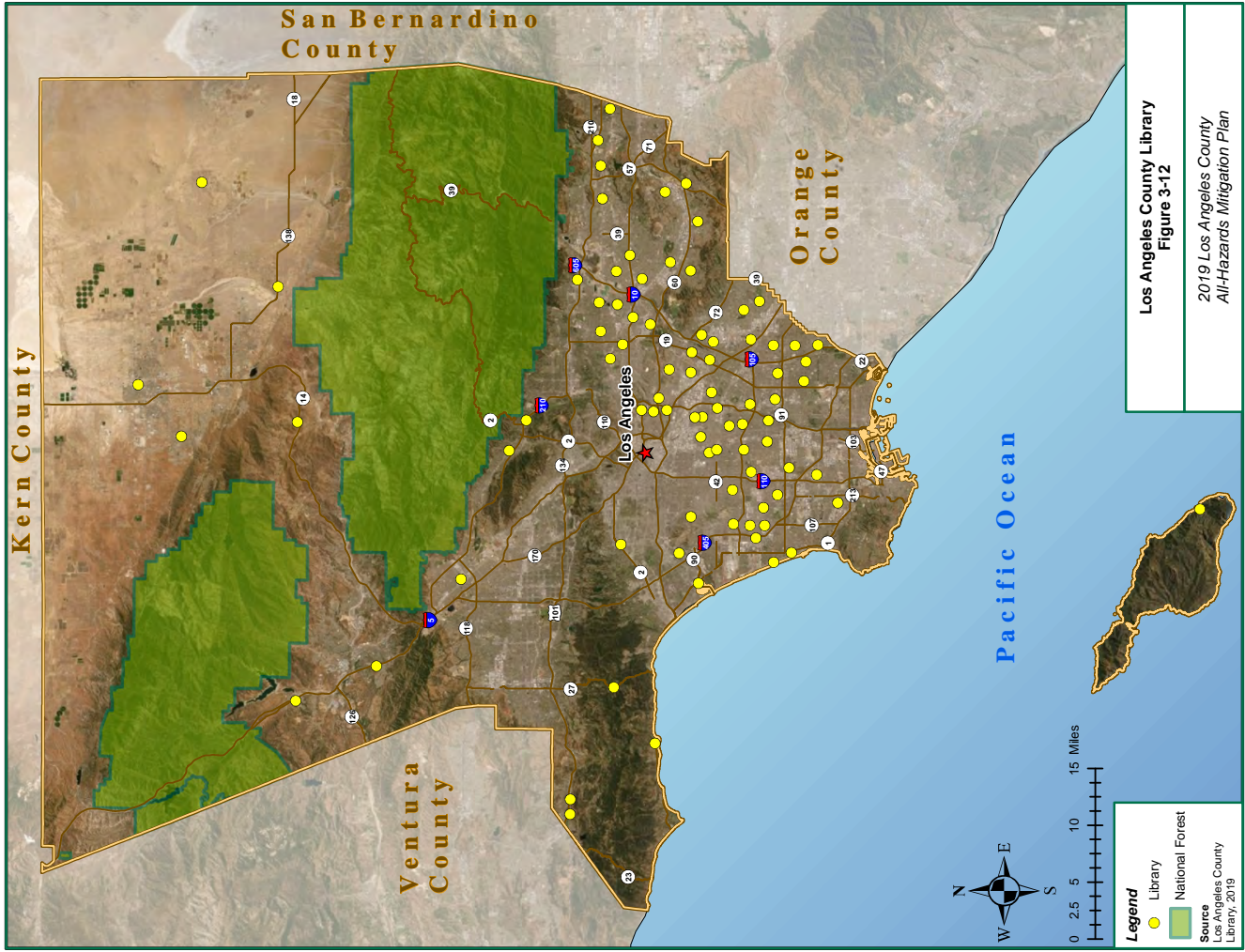
Note: The fire stations identified for this plan include those located within the 59 cities and all the unincorporated areas that the Los Angeles County Fire Department serves.



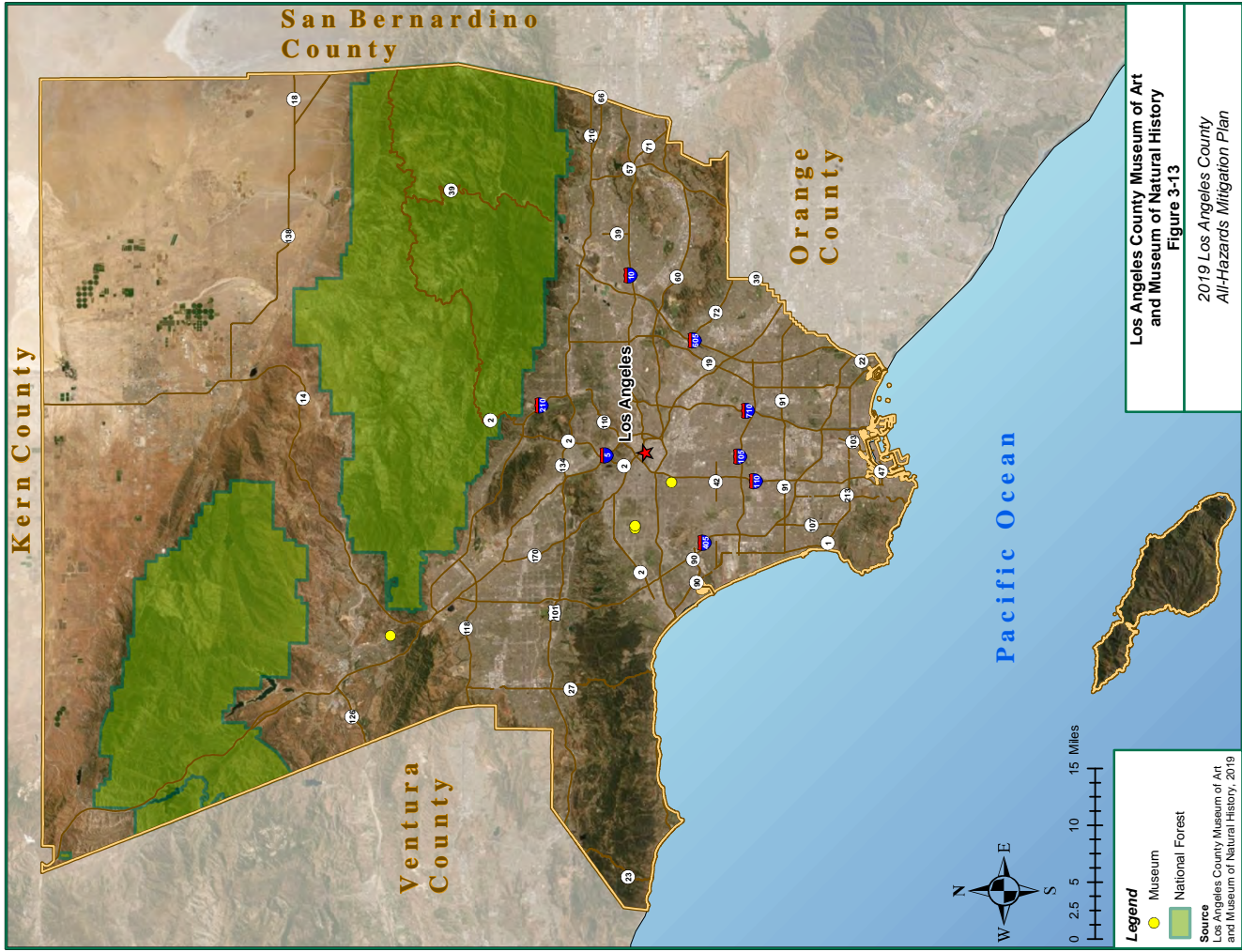
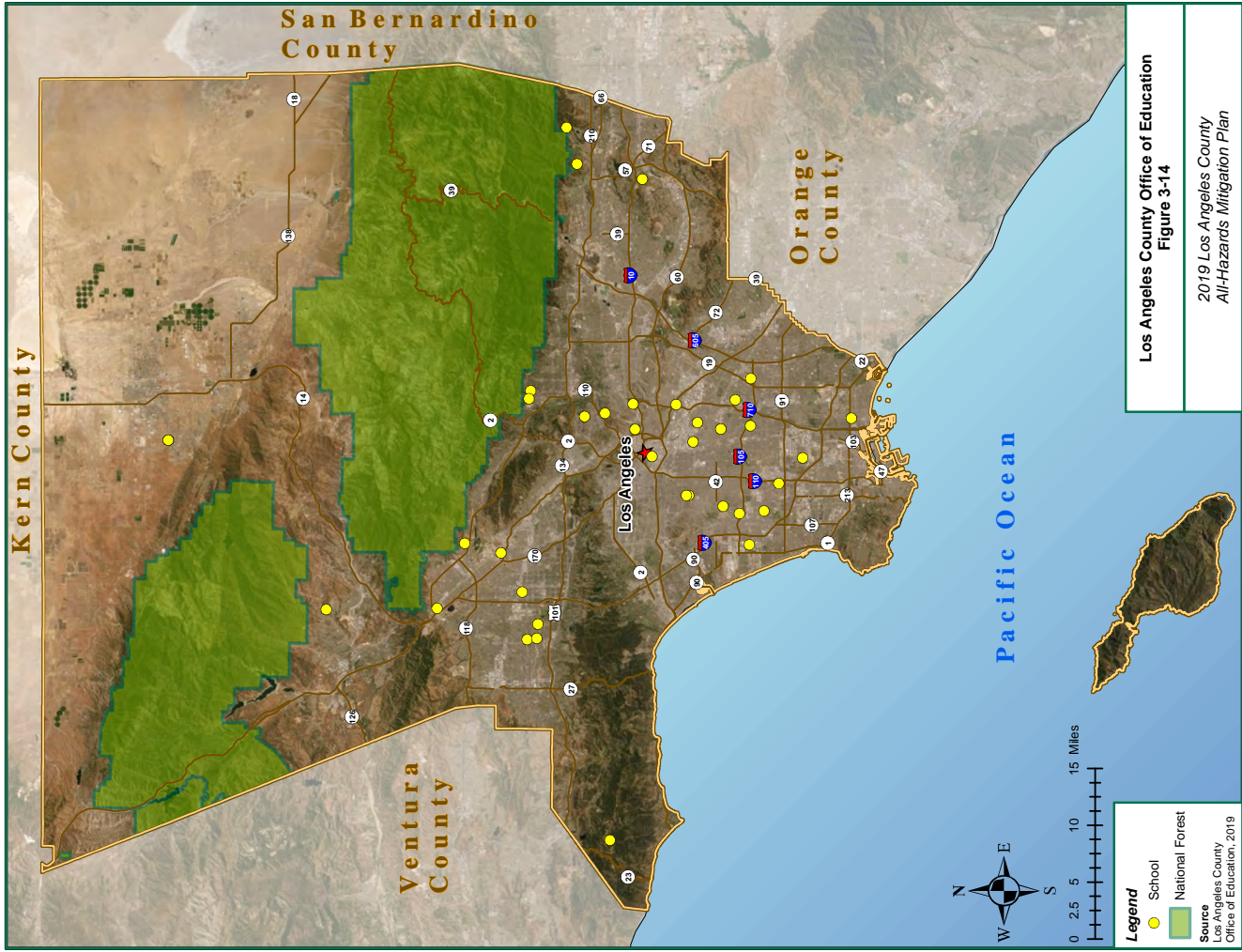




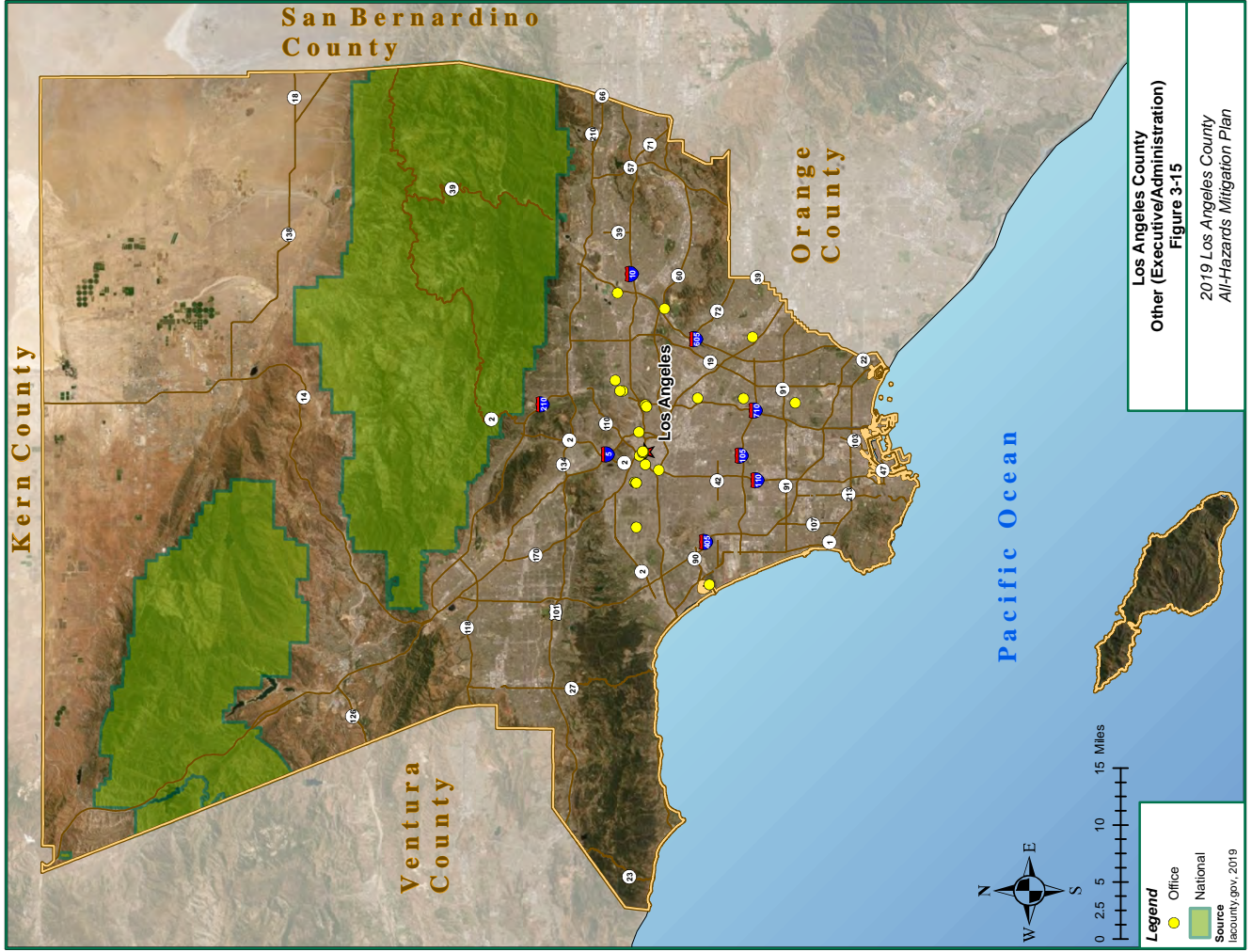
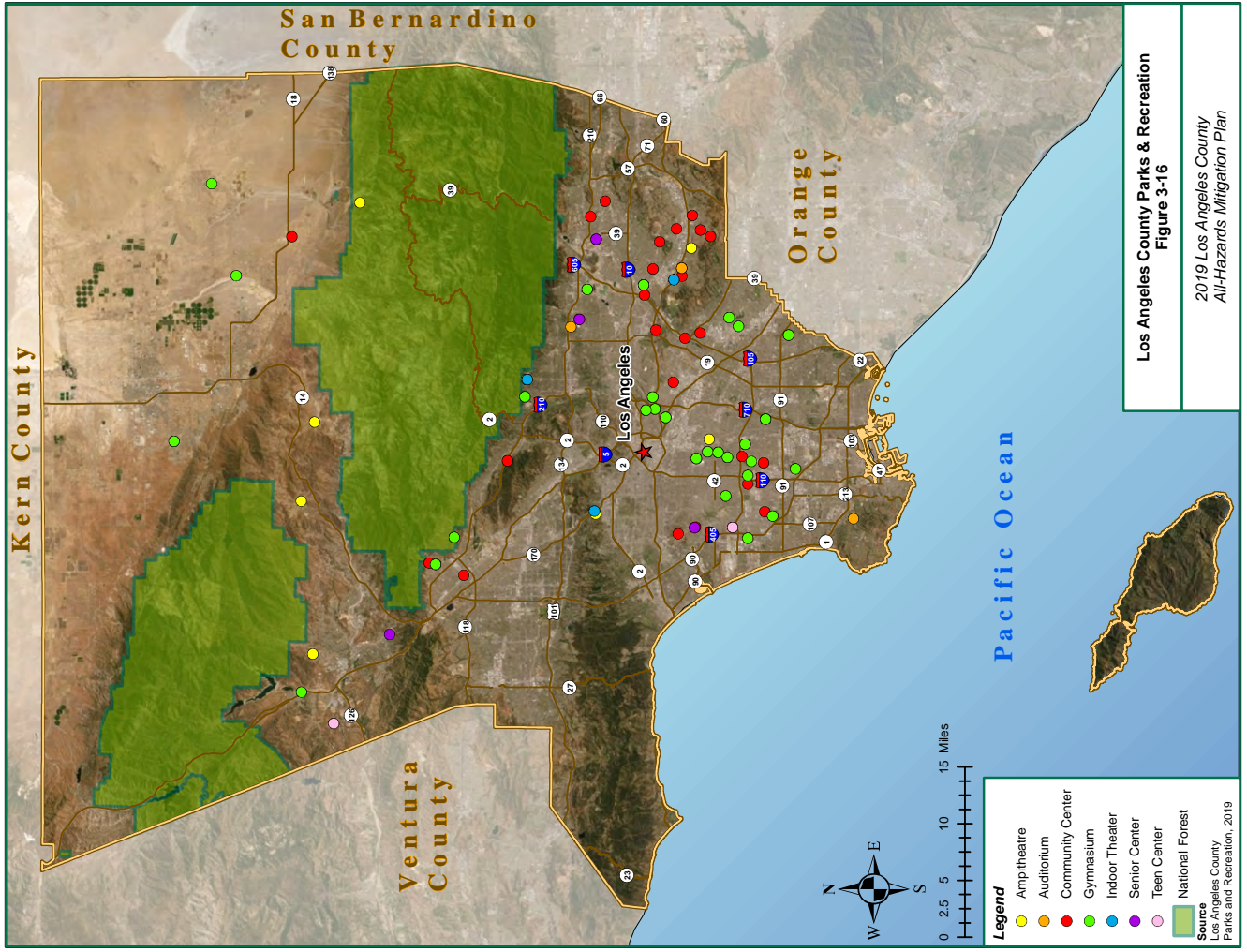




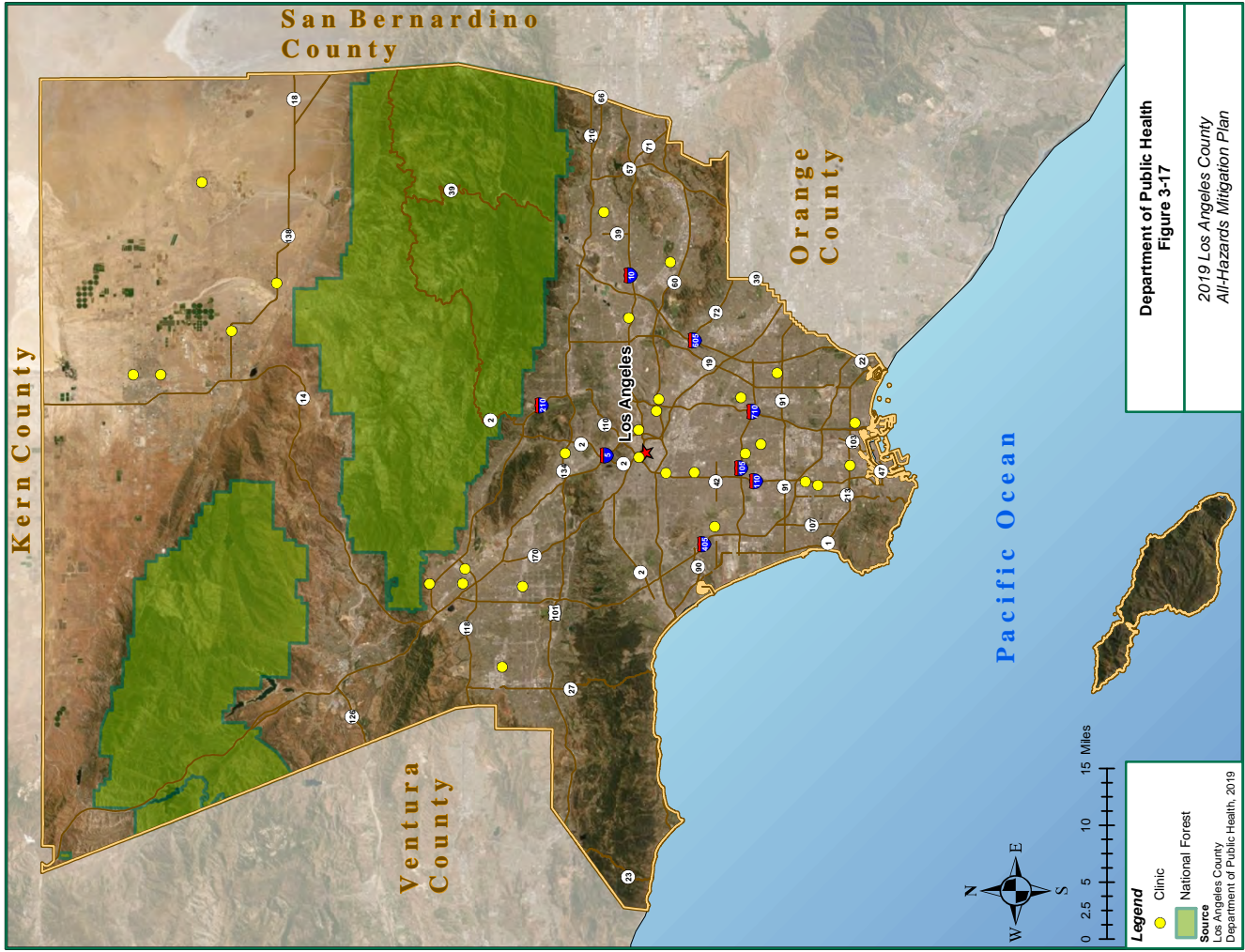
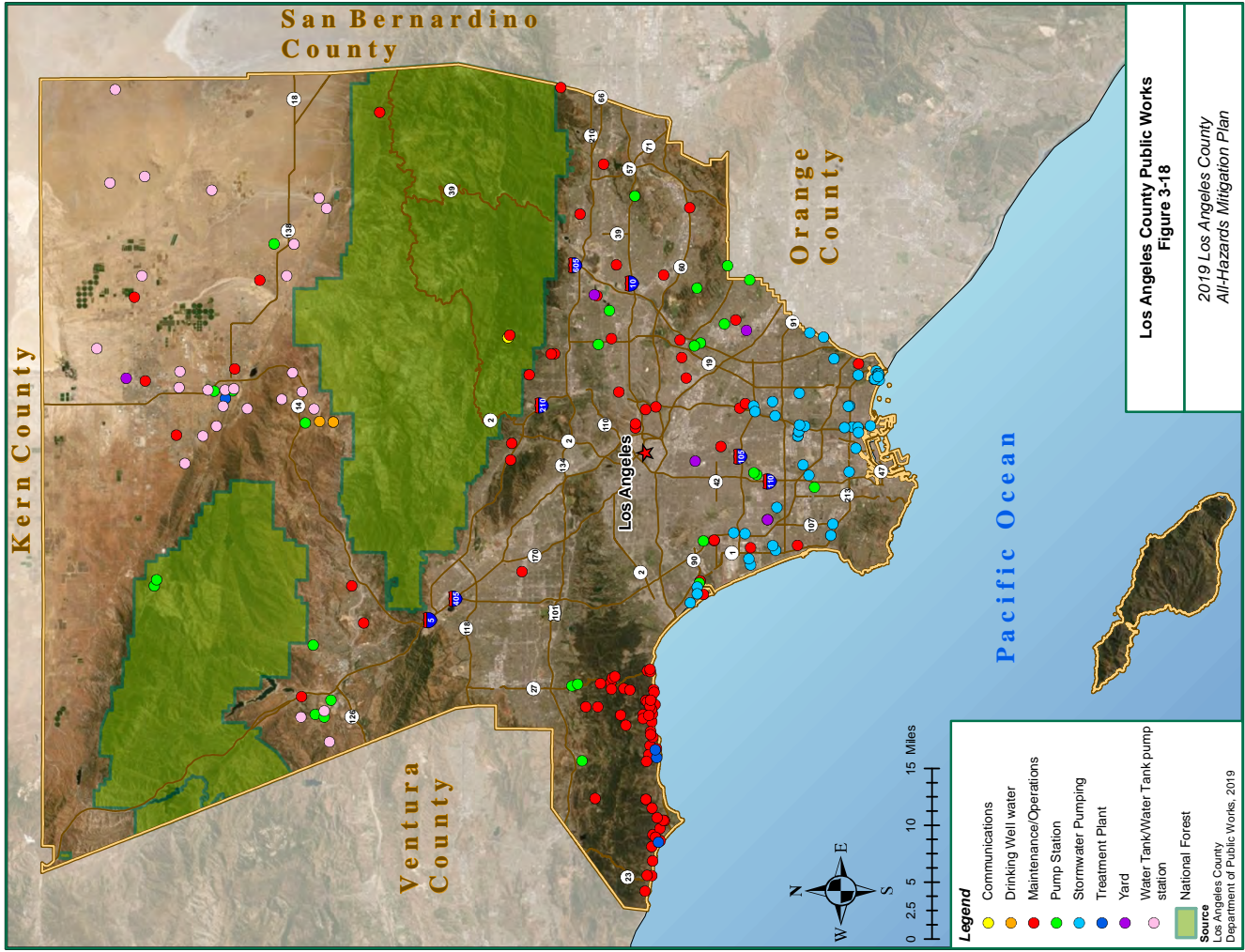














#### 4 HAZARD IDENTIFICATION AND RISK ASSESSMENT

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

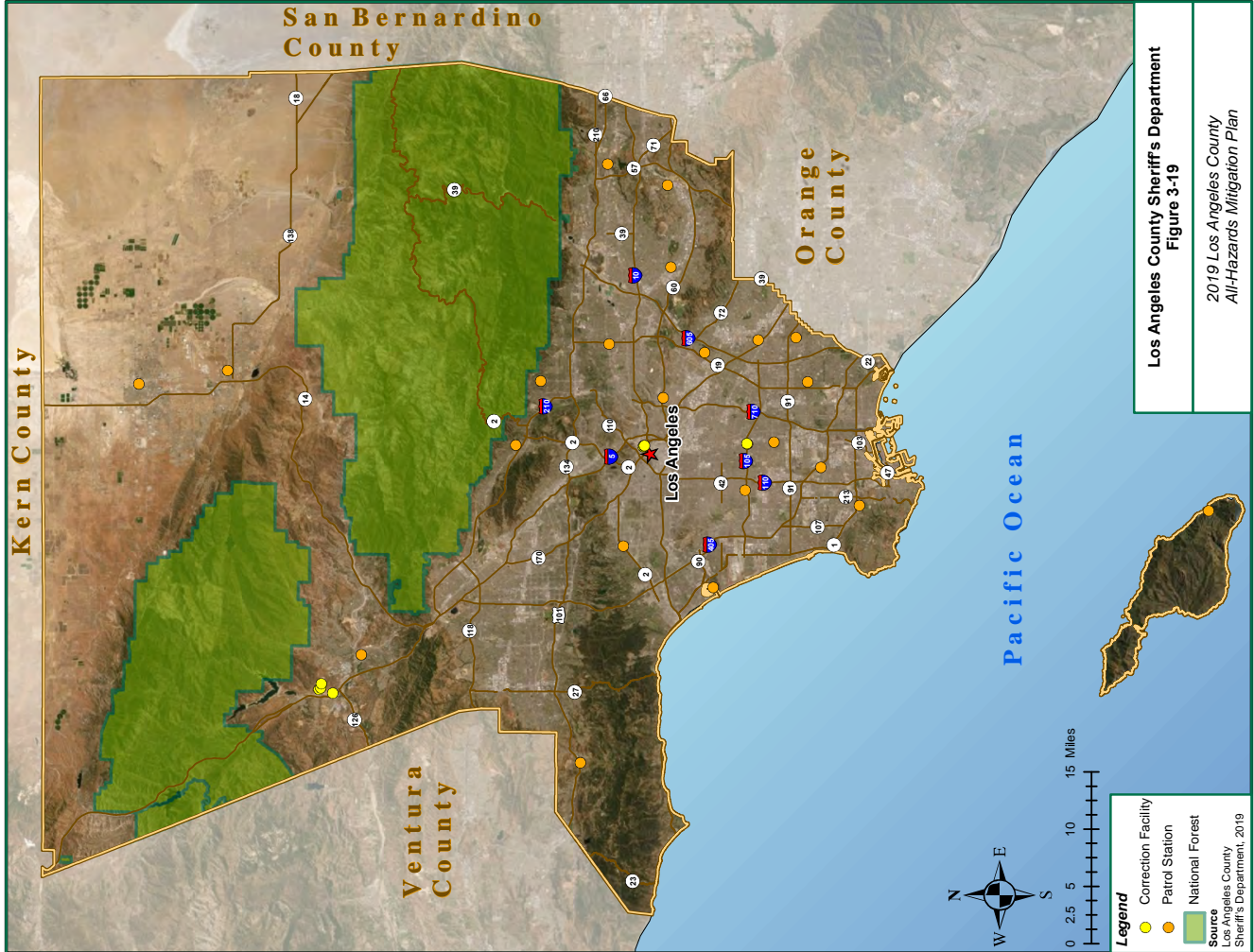
###### Element B: Hazard Identification and Risk Assessment

- 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	<p>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 (CO<sub>2</sub>) 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, CO<sub>2</sub> lasts about 100 years. If left unchecked, by the end of the century, CO<sub>2</sub> concentrations could reach levels three times higher than pre-industrial times.</p> <p>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.</p> <p>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.</p>
Location	<p>According to the National Climate Assessment, the entire Pacific coastal region, including Los Angeles County, has been affected by climate change.</p>
History	<p>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.</p> <p>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 changes are caused by factors that include oceanic processes (such as oceanic circulation), biotic processes, variations in solar radiation received by Earth, plate</p>

Table 4-1. Climate Change Identification Profile

Profile	Description
	<p>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.</p> <p>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.</p> <p>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.</p>
Extent / Severity	<p>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:</p> <p>...warming of the climate systems 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.</p>
Recurrence Probability	



**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

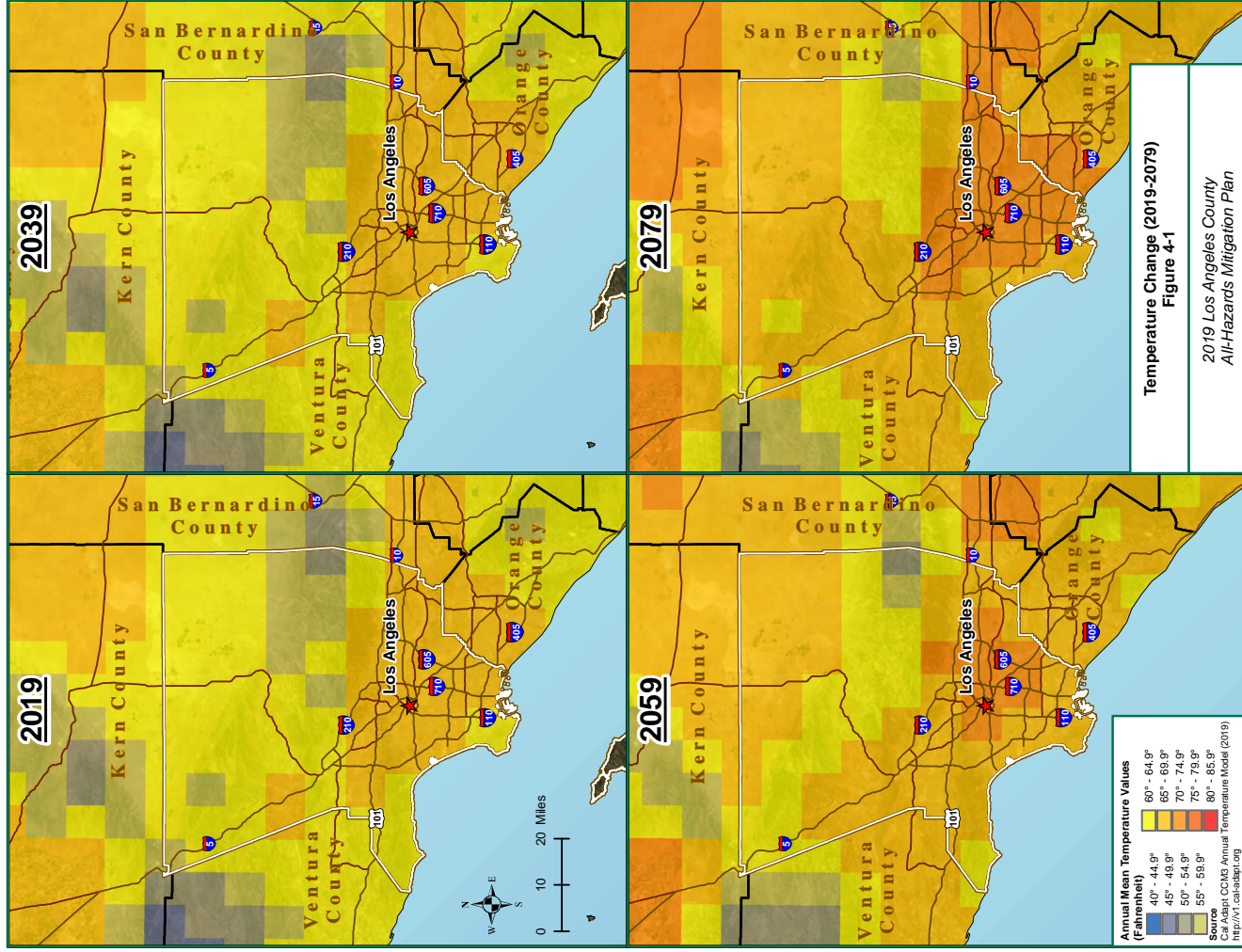
**Table 4-4. Climate Change Impact on County Critical Facilities**

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**

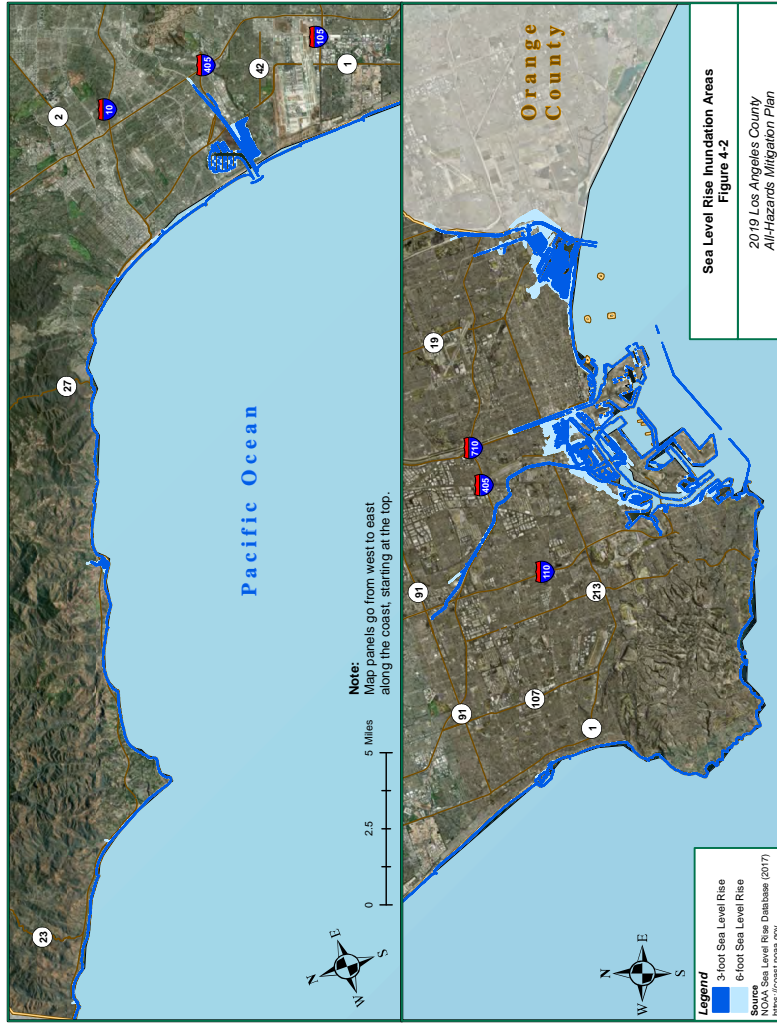
Climate Change	
Summary	<p>Climate change will affect every person and every area of Los Angeles County. As noted above, the number of extreme heat days will rise, and inland county areas will experience days with temperatures in excess of 100°F more frequently. Extreme heat can trigger a variety of 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.</p> <p>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.</p> <p>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."</p>



4.2 DAM FAILURE

Table 4-6. Dam Failure Identification Profile

Profile	Description
<p>Nature</p>	<p>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 channel banks and impact debris carried by the flow.</p> <p>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.</p> <p>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:</p> <ul style="list-style-type: none"> <li>• Castaic Lake Dam: an earthen dam with a storage capacity of 323,700 acre-feet in Warm Springs Mountain</li> <li>• Pyramid Dam: an earthen and rock dam with a storage capacity of 178,700 acre-feet in Black Mountain</li> <li>• Chevy Chase 1290: an earthen dam with a storage capacity 17 acre-feet of in Pasadena</li> <li>• Elysian Dam: and earthen dam with a storage capacity of 167 acre-feet in Los Angeles</li> <li>• Lower San Fernando Dam: hydraulic fill dam with a storage capacity of 9,843 acre-feet in San Fernando</li> <li>• Eagle Rock Dam: an earthen dam with a storage capacity of 254 acre-feet in Pasadena</li> <li>• Santa Ynez Canyon Dam: an earthen dam with a storage capacity 356 acre-feet in Topanga</li> <li>• Devils Gate Dam: a gravity dam with a storage capacity of 2,600 acre-feet Pasadena</li> <li>• Palos Verdes Reservoir: an earthen dam with a storage capacity of 1,100 acre-feet in Torrance</li> <li>• Littlerock – Palmdale Dam: a roller-compacted concrete dam with a storage capacity of 4,600 acre-feet in Pacifico Mountain</li> <li>• Harold Reservoir: an earthen dam with a storage capacity of 3,870 acre-feet in Palmdale</li> <li>• Westlake Reservoir: an earthen dam with a storage capacity of 9,200 acre-feet in Westlake Village</li> </ul>
<p>Location</p>	



**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 Francisco Canyon, approximately 40 miles north west 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 <b>Figure 4-3</b> , 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	# of Sq. Miles	Dam Breach Inundation % 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	# of Homeless	Dam Breach Inundation % 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	# of Facilities	Dam Breach Inundation % 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**

	<p style="text-align: center;"><b>Dam Failure</b></p> <p>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.</p> <p>As of June 2017, all dams except those classified as Low hazard are required by the DSDOD 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.</p> <p>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.</p> <p>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.</p>
<p>Summary</p>	

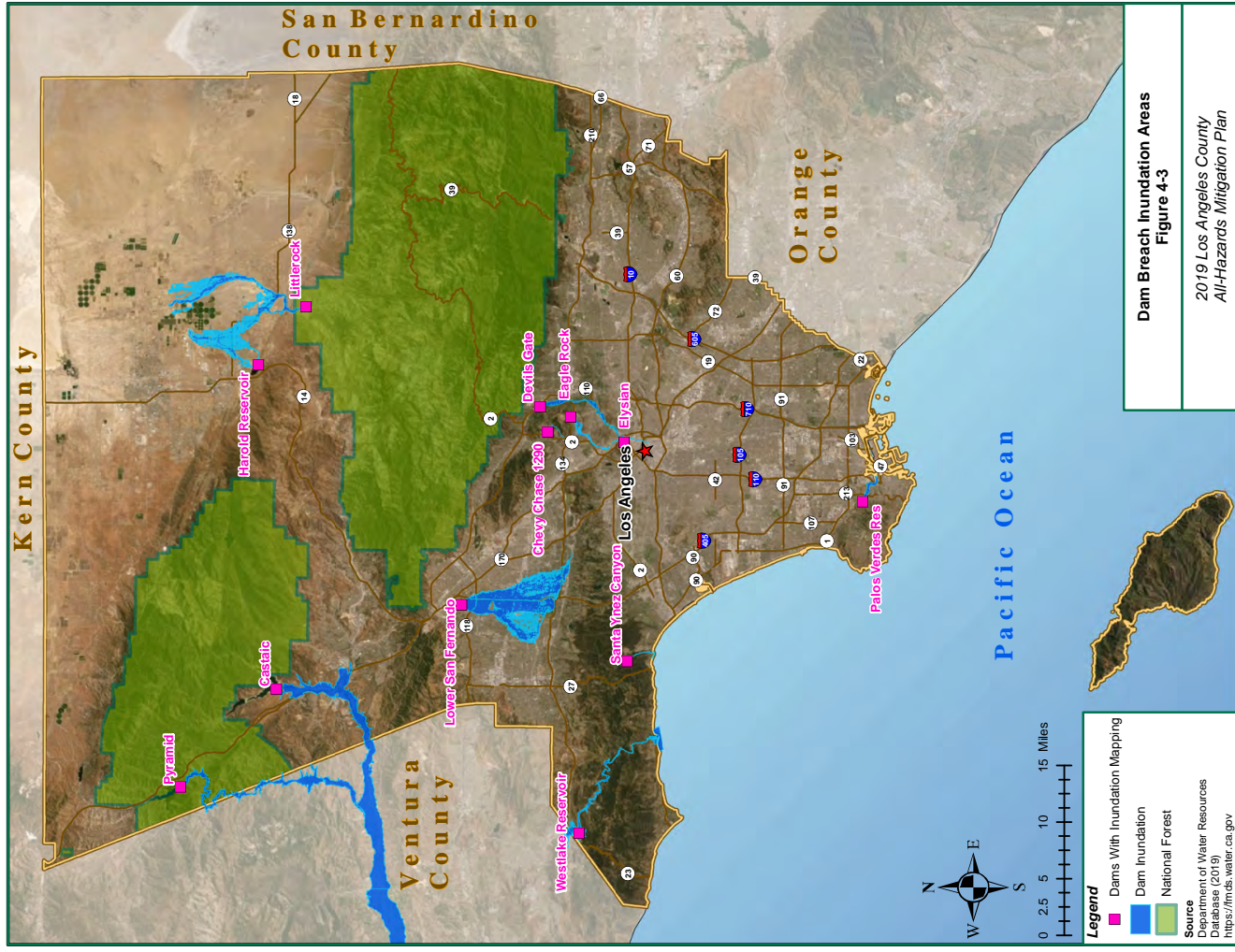


Table 4-11. Drought Identification Profile

Profile	Description
Nature	<p>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:</p> <ul style="list-style-type: none"> <li>• <b>Meteorological drought</b> 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.</li> <li>• <b>Hydrological drought</b> is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and ground water levels.</li> <li>• <b>Agricultural drought</b> is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.</li> <li>• <b>Socioeconomic drought</b> 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.</li> </ul> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <ul style="list-style-type: none"> <li>• 1917-1921, Statewide except for central Sierra Nevada and north coast</li> <li>• 1922-1926, Statewide except for central Sierra Nevada</li> <li>• 1928-1937, Statewide</li> <li>• 1943-1951, Statewide</li> <li>• 1959-1962, Statewide</li> <li>• 1976-1977, Statewide, except for southwestern deserts</li> <li>• 1987-1992, Statewide</li> <li>• 2007-2009, Statewide, particularly the central coast</li> <li>• 2011-2015, Statewide</li> </ul>
Location	
History	

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
<p>Nature</p>	<p>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.</p> <p>In addition to ground motion, several secondary natural hazards can occur from earthquakes, such as the following:</p> <ul style="list-style-type: none"> <li>• <b>Surface Faulting:</b> 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, high ways, pipelines, tunnels and dams.</li> <li>• <b>Liquefaction:</b> 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.</li> <li>• <b>Landslides/Debris Flows:</b> 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, rock slides, 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.</li> </ul> <p>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.</p>

Table 4-14. Earthquake Identification Profile

Profile	Description
<p>Location</p>	<p>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 <b>Figure 4-4</b>. Some of the more significant faults are described below:</p> <ul style="list-style-type: none"> <li>• <b>Malibu Coast fault system:</b> 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.</li> <li>• <b>Oak Ridge fault system:</b> 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.</li> <li>• <b>Pine Mountain thrust fault and Big Pine fault:</b> 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.</li> <li>• <b>San Andreas fault:</b> 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.</li> <li>• <b>San Cayetano-Red Mountain-Santa Susana fault system:</b> 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.</li> <li>• <b>Simi-Santa Rosa fault system:</b> 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.</li> <li>• <b>Ventura-Pitas Point fault:</b> 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.</li> </ul>



**Table 4-14. Earthquake Identification Profile**

Profile	Description
	<p>As shown in <b>Figure 4-5</b>, 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:</p> <ul style="list-style-type: none"> <li>San Juan Capistrano Earthquake (M 7.5), December 8, 1812</li> <li>Kern County Earthquake (M 7.5), July 21, 1952</li> <li>West Ventura Earthquake (M 7.1), December 21, 1812</li> <li>Ridgecrest, (M 7.1), July 6, 2019</li> <li>Los Angeles County, significant earthquakes over the past 50 years include:</li> <li>La Habra (M 5.1), March 28, 2014, resulting in a few injuries and \$10 million dollars in damages</li> <li>Chino Hills (M 5.5), July 29, 2008, resulting in 8 injuries and limited damages</li> <li>Northridge (M 6.7), January 17, 1994, resulting in 57 deaths, 8,700 injuries and up to \$40 billion dollars in damages.</li> <li>Sierra Madre (M 5.6), June 28, 199, resulting in 1 death, 100+ injuries and up to \$40 million dollars in damages.</li> <li>Upland (M 5.7), February 28, 1990, resulting in 30 injuries and \$12.7 million dollars in damages</li> <li>Whittier (M 5.9), October 1, 1987, resulting in 8 deaths, 200 injuries and \$358 million in damages</li> <li>San Fernando (M 6.6), February 9, 1971, resulting in 58 – 65 deaths, 200 – 2,000 injuries and up to \$553 million in damages</li> </ul>
History	

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, CCS 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
	<p>Ongoing field and laboratory studies suggest the likely maximum magnitudes and recurrence intervals for the major local faults are as follows:</p> <ul style="list-style-type: none"> <li>Chatsworth fault: M 6.0-6.8, unknown recurrence interval</li> <li>Hollywood fault: M 5.8-6.5, recurrence interval approximately every 1600 years</li> <li>Malibu Coast fault: M 6.7, recurrence interval 2,908 years</li> <li>Newport-Inglewood fault: M 6.0-7.4, unknown recurrence interval</li> <li>Oak Ridge fault: M 6.9, recurrence interval 299 years</li> <li>Palos Verdes fault: M 6.0-7.0 or greater, unknown recurrence interval</li> <li>Red Hill fault (aka Erivanda Avenue fault): M 6.0-7.0, unknown recurrence interval</li> <li>Raymond fault: M 6.0-7.0, recurrence interval approximately 4500 years</li> <li>San Andreas fault: M 6.8-8.0, recurrence interval of 140 years on Mojave segment to 300 years</li> <li>San Cayetano fault: M 6.5-7.3, unknown recurrence interval</li> <li>San Fernando fault: M 6.0-6.8, recurrence interval approximately every 200 years</li> <li>San Jose fault: M 6.0-6.5, unknown recurrence interval</li> <li>Santa Susana fault system: M 6.6, recurrence interval 138 years</li> <li>Santa Monica fault: M 6.0-7.0, unknown recurrence interval</li> <li>Sierra Madre fault: M 6.0-7.0, recurrence interval several thousand years</li> <li>Simi-Santa Rosa fault: M 6.7, recurrence interval 933 years</li> <li>Vertugro fault: M 6.0-6.8, unknown recurrence interval</li> <li>Whittier fault: M 6.0-7.2, unknown recurrence interval</li> </ul>
Recurrence Probability	

**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	31,087	94.25	1,827	5.55
Unincorporated Los Angeles County	5,328	90.60	361	6.14

EQ = earthquake

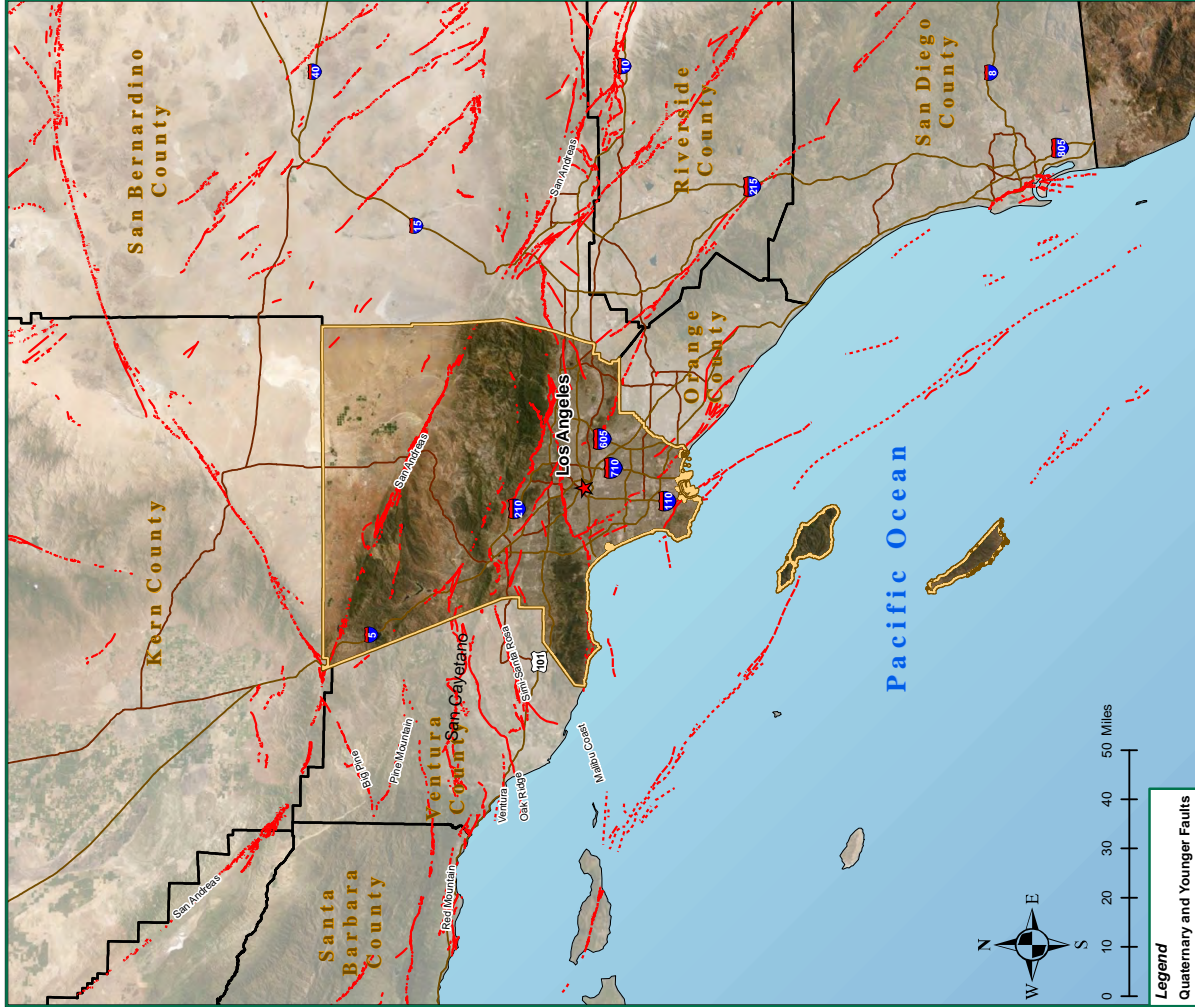
**Table 4-17. Seismic Hazard Impact on County Critical Facilities**

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

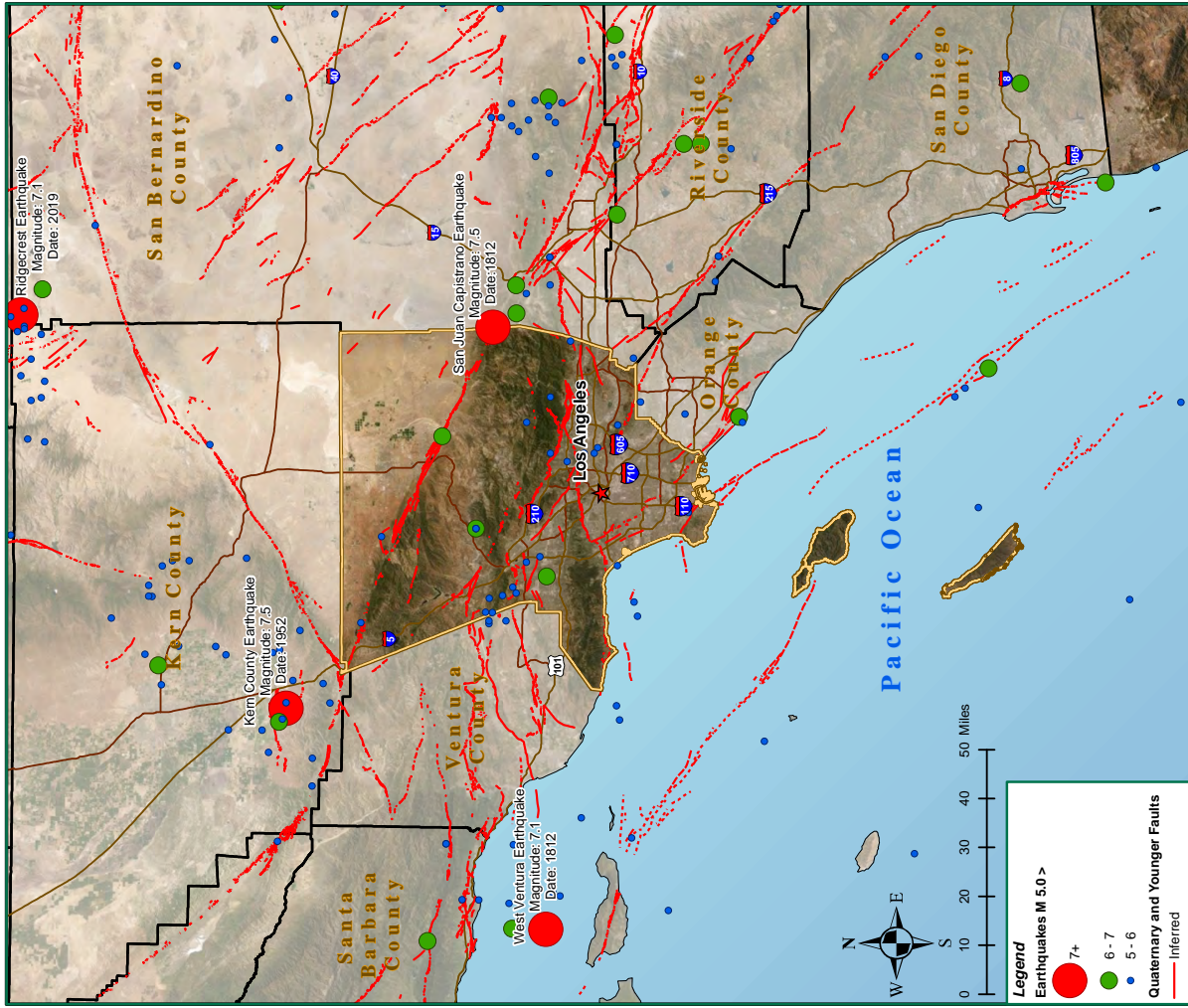
**Table 4-18. Overall Summary of Vulnerability to Earthquakes**

Earthquake	
Summary	<p>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.</p> <p>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.</p>



**Major Faults in Southern California**  
Figure 4-4

2019 Los Angeles County  
All-Hazards Mitigation Plan



**Historical Earthquakes (1769-2019)**  
Figure 4-5

2019 Los Angeles County  
All-Hazards Mitigation Plan

**Legend**  
Quaternary and Younger Faults  
— Inferred  
- - - Moderately Constrained  
. . . Well Constrained  
**Source**  
Quaternary Fault and Fold Database of the United States (2018)  
<https://earthquake.usgs.gov>

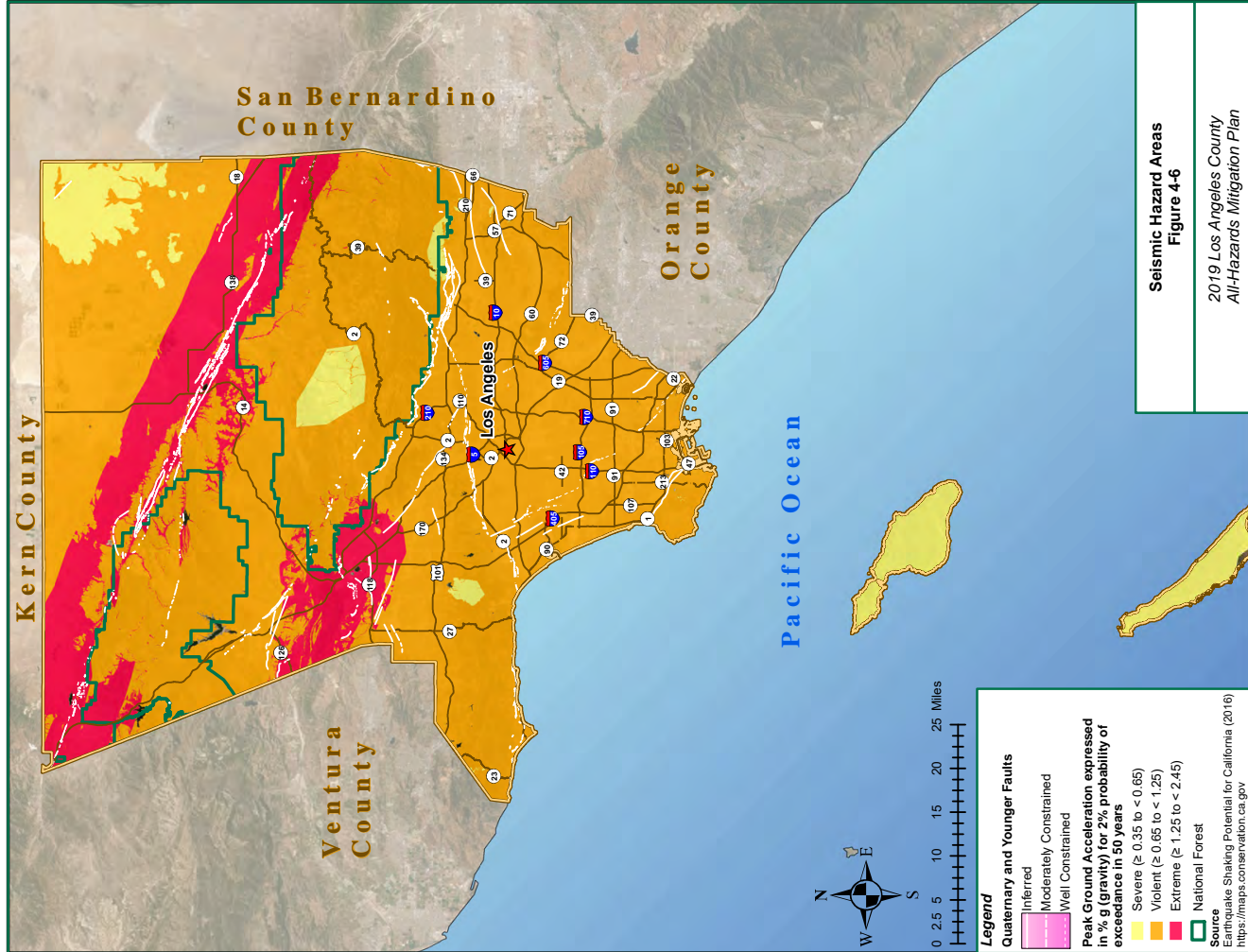
**Legend**  
Earthquakes M 5.0 >  
● 7+  
● 6 - 7  
● 5 - 6  
**Quaternary and Younger Faults**  
— Inferred  
- - - Moderately Constrained  
. . . Well Constrained  
**Source**  
Historic Earthquakes, 1769 to 2015 - California (Magnitude 5.0-plus) (2019)  
<https://hub.arcgis.com/>  
Earthquake Catalogs 1932-2019 (2019)  
<http://service.soedc.caltech.edu>



4.4 FLOOD

Table 4-19. Flood Identification Profile

Profile	Description
<p>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.</p> <p>Secondary hazards from floods can include:</p> <ul style="list-style-type: none"> <li>Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features.</li> <li>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.</li> <li>Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands.</li> <li>Release of sewage and hazardous or toxic materials when wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed.</li> </ul> <p>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 desert, and more in the foothills and mountains.</p>	<p>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.</p> <p>In the unincorporated areas of Los Angeles County, flooding sources include:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Antelope Valley: Flooding occurs when flows from the mountains reach the broad alluvial plain in the Antelope Valley, are northly 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.</li> <li>Foothills of Santa Clarita: Flooding and mudflows occur in the foothill areas during intense rainfall, usually following fires in the upstream watershed.</li> <li>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 runup and allow storm waves to reach higher than normal elevations along the coastline.</li> </ul>
<p>Nature</p>	<p>Location</p>



**Table 4-19. Flood Identification Profile**

Profile	Description
	<p>The federal government has declared 13 flooding emergencies affecting Los Angeles County, including:</p> <ul style="list-style-type: none"> <li>California Flood and Erosion (Disaster Declaration Number [DR]-15), February 5, 1954</li> <li>California Flooding (DR-47), December 23, 1955</li> <li>California Heavy Rainstorms, Flood (DR-82), April 4, 1958</li> <li>California Floods (DR-122), March 6, 1962</li> <li>California Severe Storms, Flooding (DR-138), October 24, 1962</li> <li>California Severe Storms, Heavy Rains, Flooding (DR-145), February 25, 1963</li> <li>California Flooding (DR-270), August 15, 1969</li> <li>California Winter Storms Flooding (DR-547), February 15, 1978</li> <li>Southern California Winter Storms (DR-615), February 7 and 21, 1980</li> <li>Coastal Storms (DR-812), December 21, 1988</li> <li>California Winter Storms (DR-935), February 12 and 19, 1992</li> <li>California Winter Storms (DR-979), January 7, 1993-February 19, 1993</li> <li>California Severe Winter Storms, Flooding, and Mudslides (DR-4305), January 18, 2017-January 23, 2017</li> </ul>
History	

Extent / Severity	<p>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.</p>
Recurrence Probability	<p>Floods can occur at any time but are most common with winter storms packed with subtropical moisture.</p>

**Table 4-20. Flood Impact on Land Area**

Entity	# 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	# 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

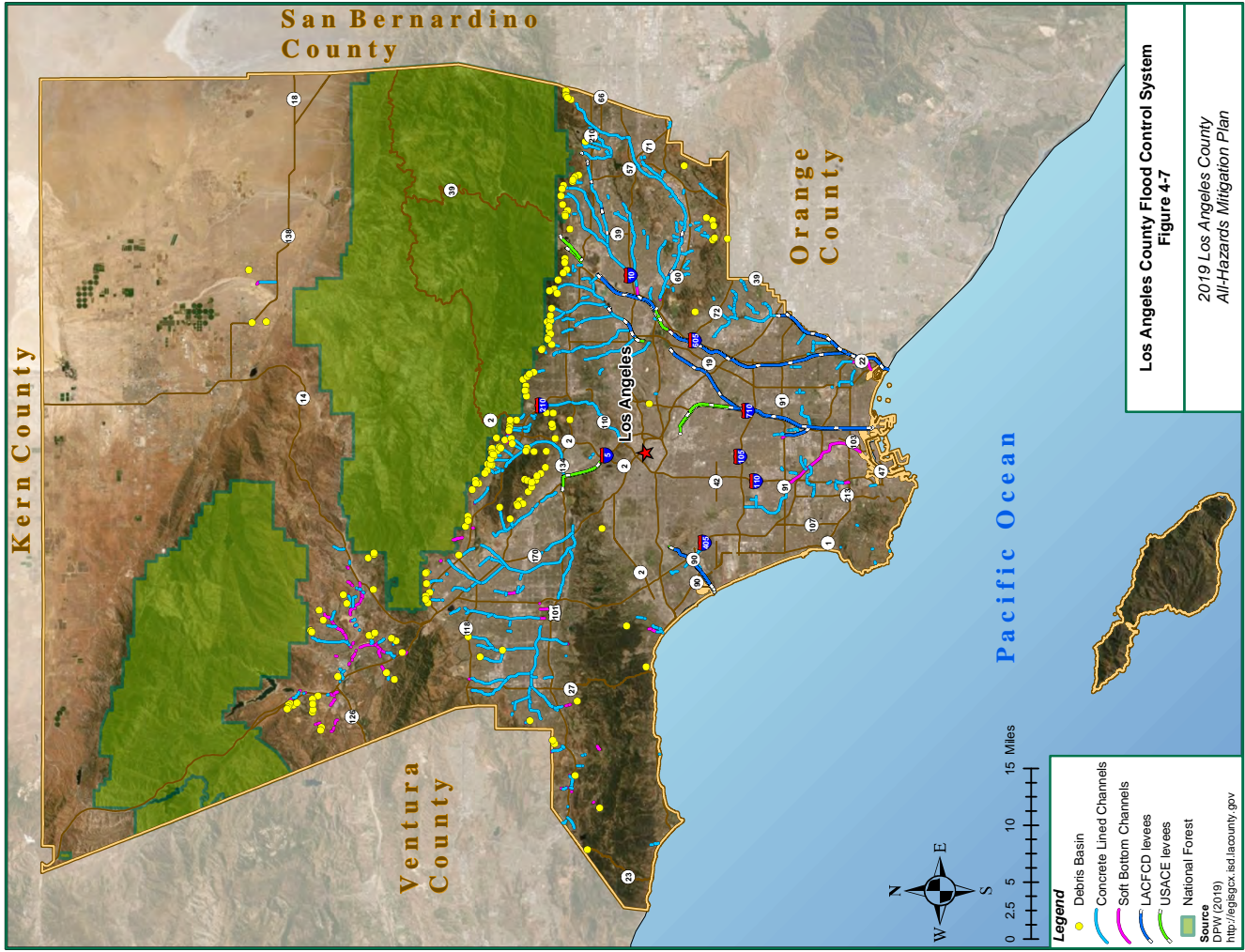
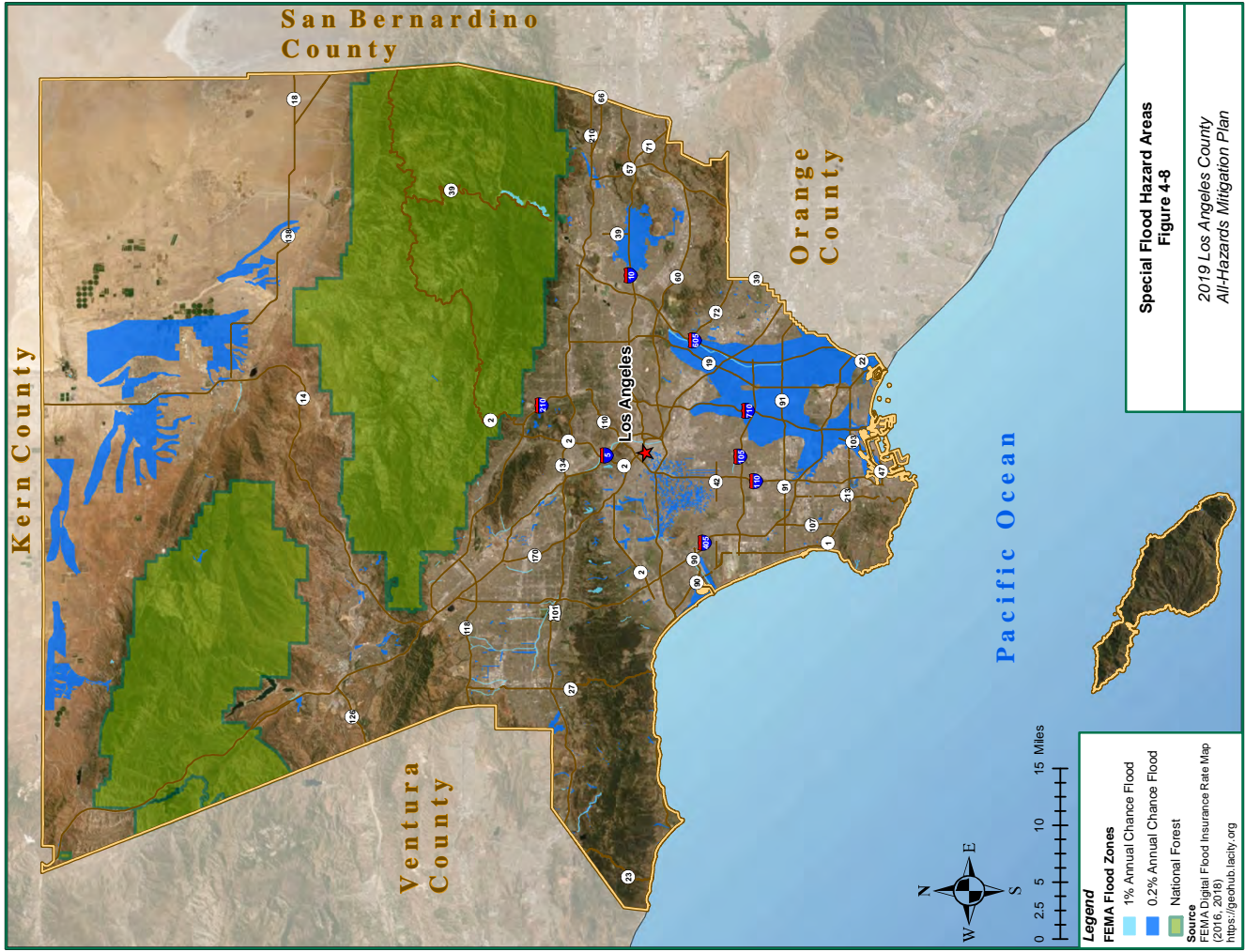
**Table 4-22. Flood Impact on County Critical Facilities**

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 Department	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	<p>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.</p> <p>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.</p>







4.5 LANDSLIDE

Table 4-24. Landslide Identification Profile

Profile	Description
	<p>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.</p> <p>Additionally, landslides often occur together with other natural hazards, thereby exacerbating conditions, as described below:</p> <ul style="list-style-type: none"> <li>• Shaking due to earthquakes can trigger events ranging from rock falls and topples to massive slides.</li> <li>• Intense or prolonged precipitation that causes flooding can also saturate slopes and cause failures leading to landslides.</li> <li>• Wildfires can remove vegetation from hillsides, significantly increasing runoff and landslide potential.</li> <li>• Landslides into a reservoir can indirectly compromise dam safety; a landslide can even affect the dam itself.</li> <li>• 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.</li> </ul>
Location	<p>In 2011, CCS 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 <b>Figure 4-9</b>, 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.</p>

Table 4-24. Landslide Identification Profile

Profile	Description
History	<p>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:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• March 2005, a slide near Sunset Mesa caused 20,000 cubic yards of debris to cover the Pacific Coast Highway.</li> <li>• January 2018, a hillside in Malibu gave way leaving a house uninhabitable.</li> <li>• December 2018, heavy rain on the Woolsey Fire burned hillsides created debris flows and mudslides in and around Malibu causing several road closures.</li> <li>• January 2019, sections of the Pacific Coast Highway near the Ventura County line were closed due to mudslides.</li> </ul>
Extent / Severity	<p><b>Figure 4-9</b> shows deep-seated landslide susceptibility areas in Los Angeles County. According to the Susceptibility to Deep-Seated Landslides grip 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.</p>
Recurrence Probability	<p>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.</p>

**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	75002	15.75
Unincorporated Los Angeles County	57763	18.99
Supervisory District 1	1729	7.02
Supervisory District 2	273	1.68
Supervisory District 3	11461	26.58
Supervisory District 4	10512	23.89
Supervisory District 5	50931	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

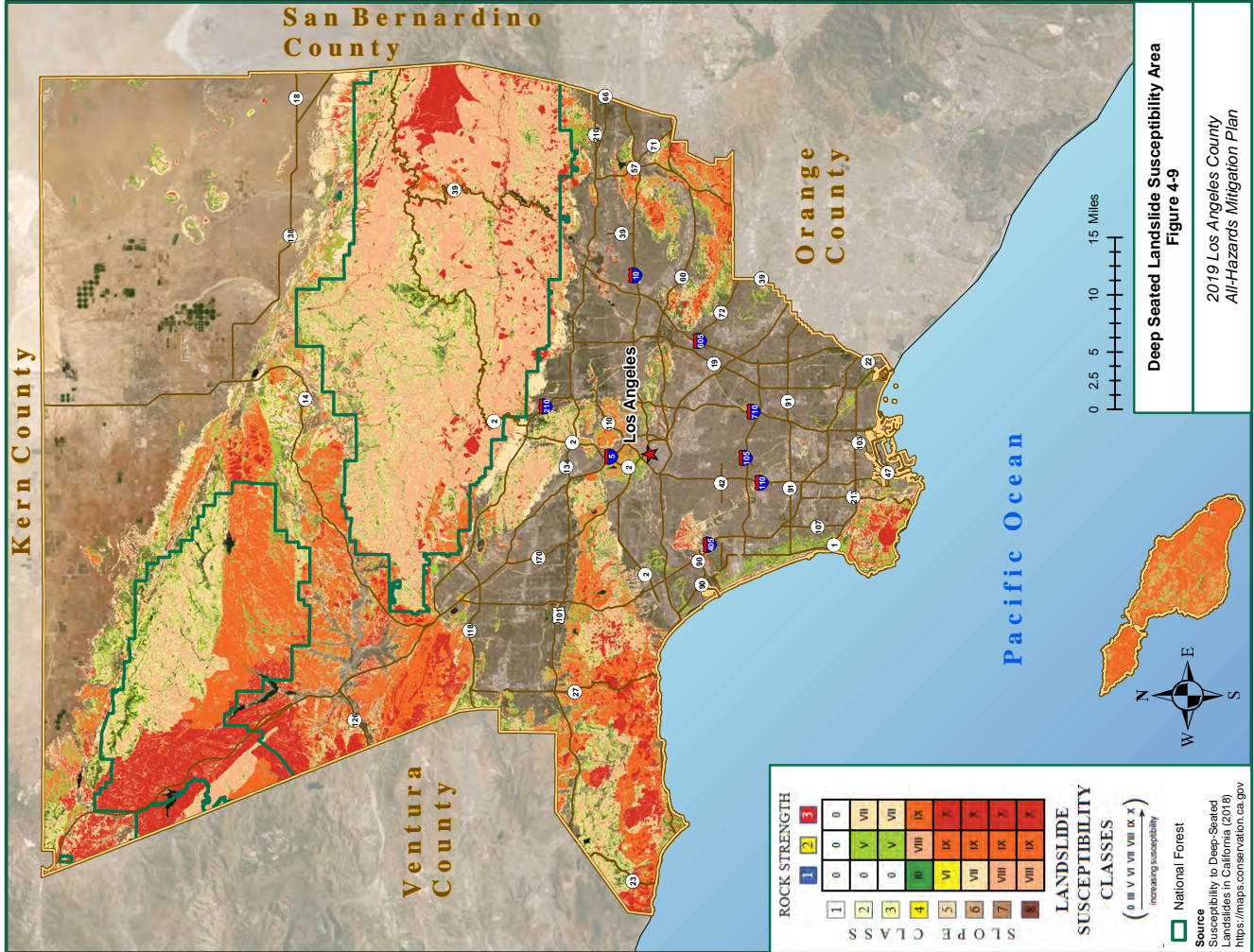
**Table 4-28. Overall Summary of Vulnerability to Landslides**

Summary	Landslide
	<p>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.</p> <p>In Los Angeles County, landslide risks are mitigated through the Hillside Management Area Ordinance &amp; Hillside Design Guidelines (Table 5-3).</p>

4.6 TSUNAMI

Table 4-29. Tsunami Identification Profile

Profile	Description
Nature	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
Location	<p><b>Figure 4-10</b> 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:</p> <ul style="list-style-type: none"> <li>• Distance of shoreline from the tsunami-generating event</li> <li>• Magnitude of the earthquake causing the event; duration and period of waves</li> <li>• Run-up elevations</li> <li>• Tidal level at time of occurrence</li> <li>• Location along shore and direction of shore in respect to propagated waves</li> <li>• Topography of the seabed</li> </ul> <p>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, Del Rey, Santa Catalina Island, Santa Monica Mountains, San Clemente Island, and Ballona Wetlands Area A) are subject to inundation.</p>



**Table 4-29. Tsunami Identification Profile**

Profile	Description
	<p>Between 1923 and 2011, 11 major tsunami events occurred in Los Angeles County, including:</p> <ul style="list-style-type: none"> <li>• April 13, 1923, a M 7.2 earthquake in Kamchatka caused a tsunami in Los Angeles.</li> <li>• August 30, 1930, a probable meteoric tsunami (i.e., a tsunami of meteorological origin) with a 10-foot run-up amplitude hit Santa Monica.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• September 29, 2009, a M 8.0 earthquake in Samoa caused a tsunami with a 1-foot run-up amplitude in Los Angeles.</li> <li>• 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.</li> <li>• 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.</li> </ul>
Extent / Severity	<p><b>Figure 4-10</b> 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.</p>
Recurrence Probability	<p>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.</p>

**Table 4-30. Tsunami Impact on Land Area**

Entity	# of Sq. Miles	Maximum Tsunami Inundation Area % 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**

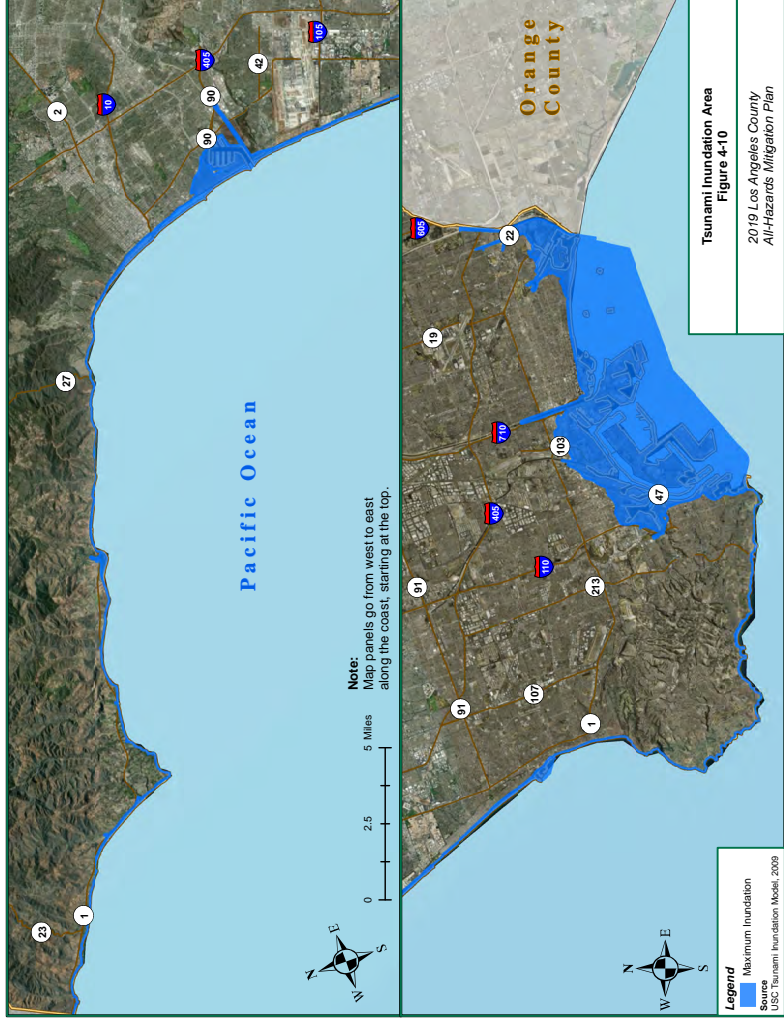
Entity	# of Homeless	Maximum Tsunami Inundation Area % of Homeless
City of Los Angeles	622	1.89
Unincorporated Los Angeles County	20	0.34

**Table 4-32. Tsunami Impact on County Critical Facilities**

Department / Agency	# of Facilities	Maximum Tsunami Inundation Area % 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	<p>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.</p> <p>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.</p> <p>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.</p>





4.7 WILDFIRE

Table 4-34. Wildfire Identification Profile

Profile	Description
	<p>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 mufflers) or by natural events such as lightning.</p> <p>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.</p> <p>The following three factors contribute significantly to wildfire behavior and can be used to identify wildfire hazard areas:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul> <p>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.</p> <p>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.</p>
Location	<p>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</p>

Table 4-34. Wildfire Identification Profile

Profile	Description
	<p>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.</p> <p>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.</p> <p>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:</p> <ul style="list-style-type: none"> <li>• 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."</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul>
Extent / Severity	<p>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.</p>
Recurrence Probability	<p>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</p>

**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 # of Sq. Miles	% of Sq. Miles	High SRA FHSZ # of Sq. Miles	% of Sq. Miles	Very High SRA FHSZ # 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 # of Homeless	% of Homeless	High SRA FHSZ # of Homeless	% of Homeless	Very High SRA FHSZ # 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

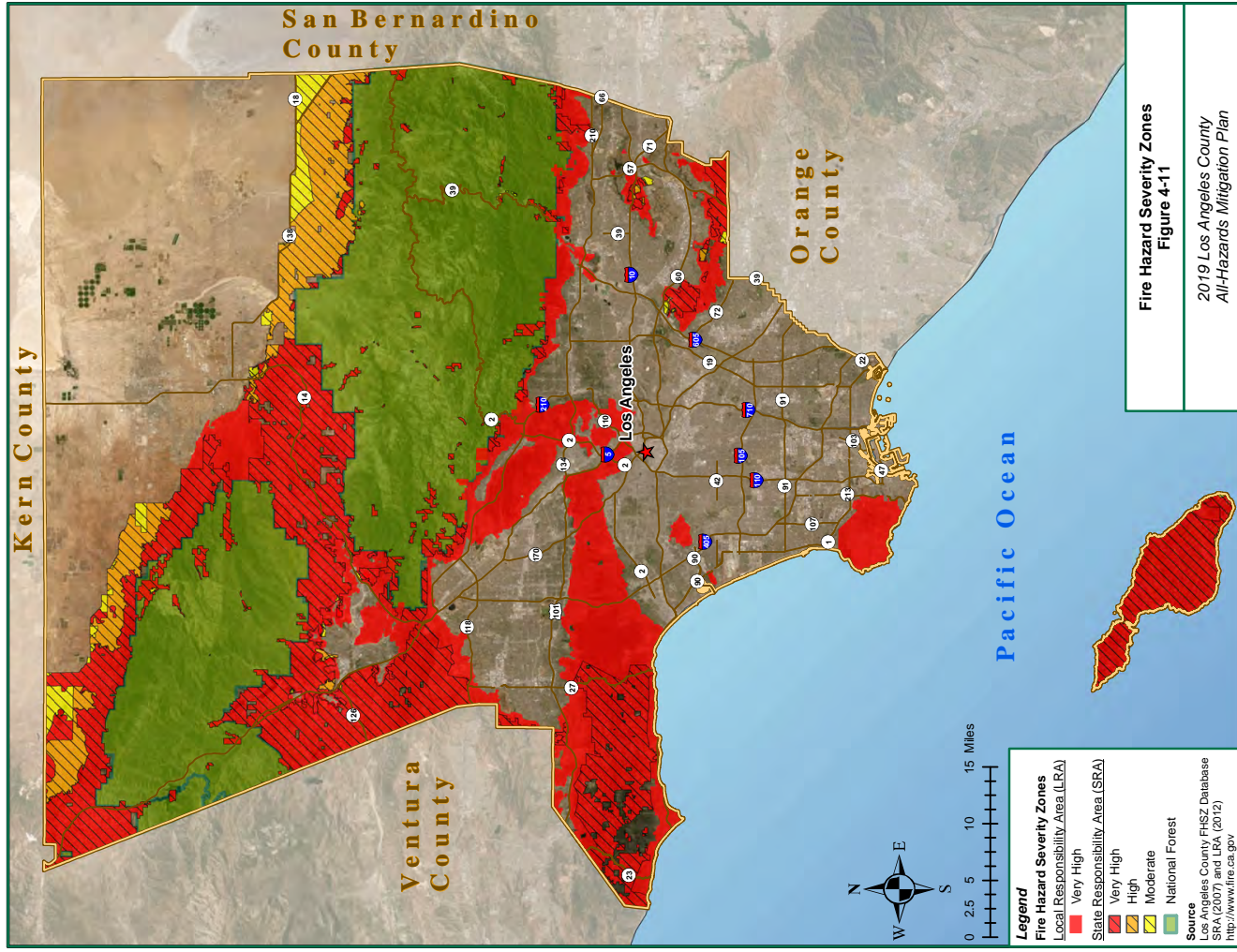
**Table 4-37. Wildfire Impact on County Critical Facilities**

Department / Agency	Very High LRA FHSZ # of Facilities	% of Facilities	High SRA FHSZ # of Facilities	% of Facilities	Very High SRA FHSZ # 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	
<b>Summary</b>	<p>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.</p> <p>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.</p> <p>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.</p>



**Fire Hazard Severity Zones  
Figure 4-11**

2019 Los Angeles County  
All-Hazards Mitigation Plan

## 5 MITIGATION STRATEGY

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

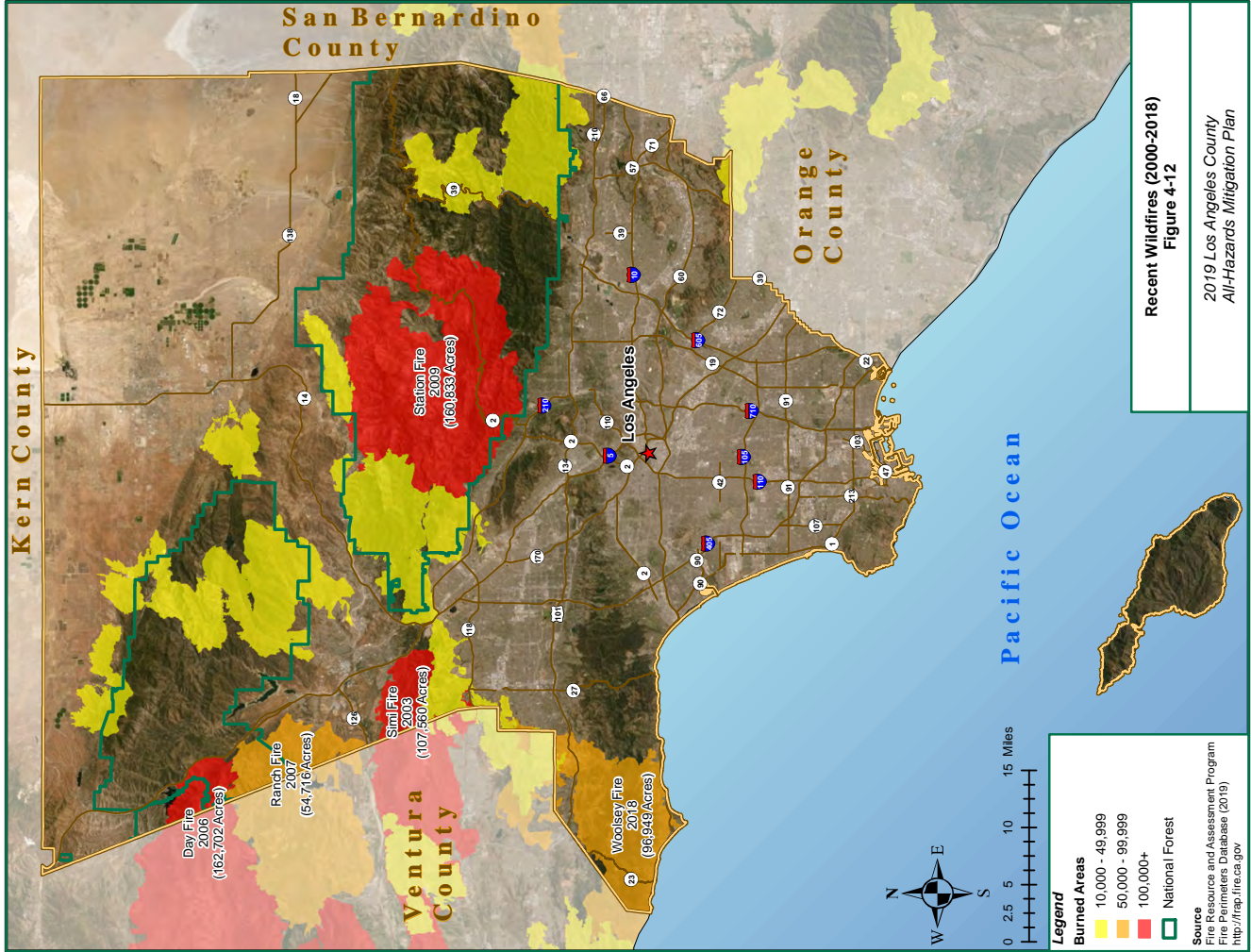
### Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans

#### 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
Planners (engineers) 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.
Engineers (Building Inspectors/Code Enforcement Officers or other professionals), 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 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 development is sited and 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
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 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
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
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



**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 5-3. 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

**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 build rapport with county agencies
Cons	Maybe difficult to reach some target groups
<b>Vegetation Management Program</b>	
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
<b>Fireproof Coating of Critical Assets</b>	
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
<b>Auxiliary Power for Critical Facilities</b>	
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
<b>Earthquake-Resistant Ductile Iron Pipes Replacement</b>	
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
<b>Watershed Ecosystem Restoration</b>	
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 Los 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
<b>Green Streets</b>	
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**

	<p>Replenishes groundwater supplies</p> <p>Absorbs carbon</p> <p>Improves air quality and neighborhood aesthetics</p> <p>Improves pedestrian and bicycle safety</p> <p>Requires selected site suitability to do utility conflicts, and geotechnical and environmental characteristics</p>
Cons	
<b>Coordinated Data Collection and Database Systems</b>	
Project Description	<p>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.</p>
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
<b>Brush Clearance Program</b>	
Project Description	<p>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.</p>
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
<b>Wildland Urban-Interface Ordinance</b>	
Project Description	<p>Codifying development standards to guide development in the WUI areas that face a severe threat of wildfires.</p>
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**

<b>Urban Forest Management Plan</b>	
Project Description	<p>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.</p>
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	<p>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.</p>
Cons	<p>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.</p>
<b>Community Wildfire Protection Plans</b>	
Project Description	<p>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.</p>
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; Erivanda Avenue from Roscoe to Strathern; Cantara Street from Reseda to Erivanda; and Strathern Street from Reseda to Erivanda.
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.

<b>Element E: Plan Adoption</b>
<b>Regulation Checklist – 44 CFR 201.6 Local Mitigation Plans</b>
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@sboem.org; XXX@mono.ca.gov; XXX@lcf.ca.gov; XXX@sa.ocgov.com; XXX@rivco.org; XXX@cbctv.org; XXX@inyocounty.us; XXX@cityofbishop.com; XXX@sandiego.gov; XXX@rivco.org; XXX@octa.net; XXX@sbcscd.org; XXX@sandiego.gov; XXX@octa.net; XXX@rooe.us; XXX@dgs.ca.gov; XXX@sbcscd.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@sbccd.edu; XXX@morongo-nsn.gov; XXX@noaa.gov; XXX@cityofredlands.org; XXX@morongo-nsn.gov; XXX@coachella.org; XXX@ocsd.org; XXX@sbcscd.org; XXX@cityofemecula.org; XXX@santabarbara.gov; XXX@imwdh2o.com; XXX@sbcscd.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](mailto: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](http://lacounty.gov/emergency) or our Twitter account @ReadyLACounty.



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# 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 repararemos 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, tsunami 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 / o participar en nuestro proceso de planificación, visite nuestro sitio web [lacounty.gov/emergency](http://lacounty.gov/emergency) o nuestra cuenta de Twitter @ReadyLACounty.



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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...](http://fema.gov/hazard-mitigat...)



**Local Mitigation Planning Handbook**  
 March 2013

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 Email:	
Contact Number:	
Grant/Finance Administrator:	
Total Project Cost:	
Anticipated Cost Overrun/Underrun:	
Date of Project Approval:	
Project Start Date:	
Anticipated Completion Date:	
<b>Summary of Progress of Project for this Reporting Period</b>	
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

Department / Agency	Facility Name
Fire Department	Los Angeles County Fire Department Station 62
Fire Department	Los Angeles County Fire Department Station 63
Fire Department	Los Angeles County Fire Department Station 64
Fire Department	Los Angeles County Fire Department Station 65
Fire Department	Los Angeles County Fire Department Station 66
Fire Department	Los Angeles County Fire Department Station 67
Fire Department	Los Angeles County Fire Department Station 68
Fire Department	Los Angeles County Fire Department Station 69
Fire Department	Los Angeles County Fire Department Station 70
Fire Department	Los Angeles County Fire Department Station 71
Fire Department	Los Angeles County Fire Department Station 72
Fire Department	Los Angeles County Fire Department Station 73
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Fire Department	Los Angeles County Fire Department Station 75
Fire Department	Los Angeles County Fire Department Station 76
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Fire Department	Los Angeles County Fire Department Station 89
Fire Department	Los Angeles County Fire Department Station 90
Fire Department	Los Angeles County Fire Department Station 91
Fire Department	Los Angeles County Fire Department Station 92
Fire Department	Los Angeles County Fire Department Station 94
Fire Department	Los Angeles County Fire Department Station 95
Fire Department	Los Angeles County Fire Department Station 96
Fire Department	Los Angeles County Fire Department Station 97
Fire Department	Los Angeles County Fire Department Station 98
Fire Department	Los Angeles County Fire Department Station 99
Fire Department	Manhattan Beach Fire Department Station 1 - Headquarters
Fire Department	Manhattan Beach Fire Department Station 2
Fire Department	Montebello Fire Department Station 1 - Headquarters
Fire Department	Montebello Fire Department Station 2
Fire Department	Montebello Fire Department Station 3
Fire Department	Montebello Fire Department Station 31
Fire Department	Pasadena Fire Department Station 32
Fire Department	Pasadena Fire Department Station 33
Fire Department	Pasadena Fire Department Station 34
Fire Department	Pasadena Fire Department Station 36
Fire Department	Pasadena Fire Department Station 37
Fire Department	Pasadena Fire Department Station 38
Fire Department	Pasadena Fire Department Station 39
Fire Department	Redondo Beach Fire Department Station 1 - Headquarters
Fire Department	Redondo Beach Fire Department Station 2
Fire Department	Redondo Beach Fire Department Station 3

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. Tuckler 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 Piente 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	Aroura Hills Library
Library	Alondra Library
Library	Angelo M. Iacoboni Library
Library	Anthony Quinn Library
Library	Artesia Library
Library	Avon 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	Cienmont 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	Holladay 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	Leiland 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	Masato 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	Stunkist 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
Library	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	Aflerbaugh-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 Olin 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	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	Valente 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	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	Alhens Park
Parks & Recreation	Alhens 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	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 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	Loma Alta Park
Parks & Recreation	Los Angeles County Arboretum and Botanic Garden
Parks & Recreation	Los Angeles County Arboretum and Botanic Garden
Parks & Recreation	Mianzanita 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	Pacifica 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 Tuleung 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	Pacoma 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. #1417/241 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. #339/529 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. #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 - Capitellero
Public Works	PW SMD - Central
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 - Surety Drive
Public Works	PW SMD - Trancas WWTP
Public Works	PW SMD - TYLER
Public Works	PW SMD - Ulinus
Public Works	PW SMD - Viewridge
Public Works	PW SMD - 120th St. Pump Station
Public Works	PW SMD - 17th St Pump Station
Public Works	PW SMD - 83rd St. Maintenance Yard
Public Works	PW SMD - Alameda Street 3B Pump Station
Public Works	PW SMD - Alameda Street 3C Pump Station
Public Works	PW SMD - Alumitros Bay Pump Station
Public Works	PW SMD - Atlantitos Maintenance Yard
Public Works	PW SMD - Alondra Pump Station
Public Works	PW SMD - Anahaim St. Pump Station
Public Works	PW SMD - Appian Way Pump Station
Public Works	PW SMD - Arena Pump Station
Public Works	PW SMD - Avalon Pump Station
Public Works	PW SMD - Belmont Pump Station
Public Works	PW SMD - Boone Olive Pump Station
Public Works	PW SMD - Century Frwy Pump Station
Public Works	PW SMD - Cerritos Pump Station
Public Works	PW SMD - Claretta Pump Station
Public Works	PW SMD - Compton Creek Pump Station #1
Public Works	PW SMD - Compton Creek Pump Station #2
Public Works	PW SMD - Cordova Walk Pump Station
Public Works	PW SMD - Dominguez Pump Station
Public Works	PW SMD - Dominguez Pump Station
Public Works	PW SMD - Doris Pump Station
Public Works	PW SMD - East Toledo Pump Station
Public Works	PW SMD - Eaton Maintenance Yard
Public Works	PW SMD - El Dorado Pump Station
Public Works	PW SMD - El Segundo Pump Station
Public Works	PW SMD - El Segundo Yard
Public Works	PW SMD - Electric Ave Pump Station
Public Works	PW SMD - Garner Avenue Pump Station
Public Works	PW SMD - Hamilton Bowl South Pump Station
Public Works	PW SMD - Hamilton Bowl West Pump Station
Public Works	PW SMD - Hill St. Pump Station
Public Works	PW SMD - Imperial Yard
Public Works	PW SMD - Johnson Pump Station
Public Works	PW SMD - Lakewood Pump Station
Public Works	PW SMD - Lennox Blvd Pump Station

Table B-1. County Critical Facilities

Department / Agency	Facility Name
Public Works	PW SMD - Longden Yard
Public Works	PW SMD - Los Altos Pump Station
Public Works	PW SMD - Lynwood Pump Station
Public Works	PW SMD - Manhattan Beach Pump Station
Public Works	PW SMD - Market St. Pump Station
Public Works	PW SMD - Naples Pump Station
Public Works	PW SMD - Oxford Pump Station
Public Works	PW SMD - Paramount Pump Station
Public Works	PW SMD - Pickens Yard
Public Works	PW SMD - Redondo Beach Blvd Pump Station
Public Works	PW SMD - Redondo Yard Office
Public Works	PW SMD - Rio Hondo Yard
Public Works	PW SMD - Riverview Maintenance Yard
Public Works	PW SMD - Rubio Yard
Public Works	PW SMD - San Dimas Maintenance Yard
Public Works	PW SMD - Santa Clara Flood Maintenance Yard
Public Works	PW SMD - Saucoy Yard
Public Works	PW SMD - Seaside Pump Station
Public Works	PW SMD - Walteria Lake Pump Station
Public Works	PW SMD - West Long Beach Pump Station
Public Works	PW SMD - West Neapolitan Pump Station
Public Works	PW SMD - West Toledo Pump Station
Public Works	PW SMD - 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 - 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 - McCanery Tank
Public Works	PW WWD - North Tank
Public Works	PW WWD - Old finers 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/5c 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 - Luigo 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 - Peppertine 545 Pump Station
Public Works	PW WWD #29 - Peppertine 812 Tank
Public Works	PW WWD #29 - Peppertine 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 - Portside 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 - Trancus 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	Corrios 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	Pichess Detention Center East Facility
Sheriff's Department	Pichess Detention Center North Facility
Sheriff's Department	Pichess 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 Coseismic & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
		Rise	Loss	Rise	Loss										
Avocado Heights	1						1				1				
Baldwin Hills	1						1				1				
Bassett	1						1		1		1				
Chater Oak	1						1		1		1				1
East Los Angeles	1						1				1				
El Monte	1						1				1				
North Whittier	1						1				1				
Palms Hills	1						1				1				1
Pellissier Village	1						1				1				
San Jose Hills	1						1		1		1				
South El Monte	1						1				1				
South San Gabriel	1						1				1				
Valinda	1						1		1		1				
Walnut	1						1				1				
West Puente Valley	1						1		1		1				
Whittier Narrows	1						1		1		1				
Atlanta Village	2						1				1				
Atlanta-Westmont	2						1				1				
Del Rey	2	1	1				1		1		1				
Hawthorne	2						1				1				
Ladera Heights	2						1		1		1				1
Rosewood	2						1				1				
Rosewood East	2						1				1				
Gardena	2						1				1				
Rosewood West	2						1				1				
Rancho Dominguez	2						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 Slides Cliffs & X	Max Tsunami Inundation	Very High Wildfire LEA	High Wildfire SRA	Very High Wildfire SRA
Agua Dulce	5				1	1			1		1	1	1
Altadena					1	1			1		1	1	1
Alhambra	5			1	1	1			1		1	1	1
Alhambra	5				1	1			1		1	1	1
Bonquet Canyon	5				1	1			1		1	1	1
Bradbury	5				1	1			1		1	1	1
Canyon Country	5			1	1	1			1		1	1	1
Castaic	5			1	1	1			1		1	1	1
Del Sur	5			1	1	1			1		1	1	1
Desert View Highlands	5				1	1			1		1	1	1
East Covina					1	1			1		1	1	1
East Lancaster	5			1	1	1			1		1	1	1
East Pasadena	5				1	1			1		1	1	1
Elizabeth Lake	5				1	1			1		1	1	1
El Vista	5				1	1			1		1	1	1
La Crescenta/Montrose	5				1	1			1		1	1	1
Lake Hughes	5				1	1			1		1	1	1
Lake Los Angeles	5				1	1			1		1	1	1
Lake Monro	5				1	1			1		1	1	1
Leona Valley	5				1	1			1		1	1	1
Littlerock	5			1	1	1			1		1	1	1
Littlerock/Jumper Hills	5			1	1	1			1		1	1	1
Littlerock/Pearblossom	5			1	1	1			1		1	1	1
Llano	5				1	1			1		1	1	1
Monrovia	5				1	1			1		1	1	1
Newhall	5				1	1			1		1	1	1
North Lancaster	5				1	1			1		1	1	1
Northeast San Gabriel	5				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 Slides Cliffs & X	Max Tsunami Inundation	Very High Wildfire LEA	High Wildfire SRA	Very High Wildfire SRA
View Park/Windsor Hills	2				1	1			1		1		
West Rambo Dominguez	2				1	1			1		1		
Willowbrook	2				1	1			1		1		
Wishburn	2				1	1			1		1		
Franklin Canyon	3				1	1			1		1		
Miracle Mile	3				1	1			1		1		
Santa Monica Mountains	3			1	1	1			1		1		1
Universal City	3				1	1			1		1		
West LA	3				1	1			1		1		
West Hills	3				1	1			1		1		1
Cerritos	4				1	1			1		1		
East La Mirada	4				1	1			1		1		
East Whittier	4				1	1			1		1		
Harbor Gateway	4				1	1			1		1		
La Habra Heights	4				1	1			1		1		
La Rambla	4				1	1			1		1		
Lakewood	4				1	1			1		1		
Long Beach	4				1	1			1		1		
Palos Verdes Peninsula	4				1	1			1		1		
San Clemente Island	4				1	1			1		1		
Santa Catalina Island	4				1	1			1		1		
South Whittier	4				1	1			1		1		
Westfield/Academy Hills	4				1	1			1		1		
Action	5				1	1			1		1		1







Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 FI Sea Level Rise	6 FI 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 TEA	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								
City of Long Beach Fire Department Station 12				1								

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 FI Sea Level Rise	6 FI 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 TEA	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								
City of Compton Fire Department Station 1 - Headquarters				1		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 TERA	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			
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 TERA	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			
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 TERA	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 69				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 TERA	High Wildfire SRA	Very High Wildfire SRA
Los Angeles County Fire Department Station 40				1		1						
Los Angeles County Fire Department Station 41				1								
Los Angeles County Fire Department Station 42				1								
Los Angeles County Fire Department Station 43				1								
Los Angeles County Fire Department Station 44				1								
Los Angeles County Fire Department Station 45				1		1						
Los Angeles County Fire Department Station 47				1								
Los Angeles County Fire Department Station 48				1								
Los Angeles County Fire Department Station 49				1								
Los Angeles County Fire Department Station 5				1								
Los Angeles County Fire Department Station 50				1								
Los Angeles County Fire Department Station 51				1						1		
Los Angeles County Fire Department Station 53				1								
Los Angeles County Fire Department Station 54				1		1						
Los Angeles County Fire Department Station 55				1						1		



Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 FI Sea Level Rise	6 FI 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 TERA	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 Station 1 - Headquarters				1							
Torrance Fire Department Station 2				1							
Torrance Fire Department Station 3				1							

Table C-3: Fire Department Facility Hazard Impacts

Facility Name	3 FI Sea Level Rise	6 FI 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 TERA	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-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 Scated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Point and Tank				1						1		
PW WWD #29 - Porthole 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 - Tonanga Beach Pump Station				1				1				1
PW WWD #29 - Tonanga Beach Tank				1						1		
PW WWD #29 - Tonanga Forks Tank				1				1				1
PW WWD #29 - Tonanga Oaks Tank				1				1				1
PW WWD #29 - Tonanga 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 Scated 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 - Saddle Peak Beach 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 - Peperupine 545 Pump Station				1						1		
PW WWD #29 - Peperupine 812 Tank				1								1
PW WWD #29 - Peperupine 907 Tank				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 Scated 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						1		
PW RMD - Div. #519 Maintenance Yard				1						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 - Fairdale Maintenance Dist. No. 2 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 Scated Landslide Class IX & X	Max Tsunami Inundation	Very High Wildfire LRA	High Wildfire SRA	Very High Wildfire SRA
PW WWD #29 - Trancec Tank				1						1		
PW WWD #29 - Upper Big Rock 730 Pump Station				1				1		1		
PW WWD #29 - Upper Enclmt. 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				1		1						
PW SWMD - Alaminos Maintenance Yard						1						
PW SWMD - Redondo Yard Office						1						
PW WWD #29 - LADWP Agency Maintenance Construction				1		1			1			
PW WWD #29 - LADWP Agency Maintenance Construction				1								
PW OSD - Eaton Yard Maintenance Office								1				













**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX O**

**WATER RATES STRUCTURE**

# CITY OF CERRITOS

## WATER METER RATE INFORMATION - FY 2019-20

### Water Size and Base Consumption Charges - FY 2019-20

Meter Code	Meter Size	Base Unit Minimum	Base Minimum Rate	Over Minimum
01	5/8 x 3/4	10	\$ 34.19	\$ 2.50
02	1"	25	\$ 115.93	\$ 2.50
03	1 1/2"	50	\$ 231.88	\$ 2.50
04	2"	100	\$ 463.76	\$ 2.50
05	3"	150	\$ 695.62	\$ 2.50
06	4"	175	\$ 811.57	\$ 2.50
07	6"	200	\$ 927.50	\$ 2.50
*	CITY*	By Meter Size *	By Meter Size*	\$ 2.50
09	8"	225	\$ 972.16	\$ 2.50
10	10"	250	\$ 1,080.72	\$ 2.50

\*Commencing June 2015 City Water Billing Use (Jan-Jun2015), Rate was changed to charge by meter size - the Change was done by MIS staff in CIS per Management's direction. City Reads billing are done every May and November starting FY 15-16.

11/30/16 - No adjustment needed for zero usage on Landscape. Water use restrictions on drought have been lifted in May 2016.

### Fire Service Rates - FY 2019-20

*(Based on \$ 37.10 per inch of service diameter)*

Service Diameter	60 Day / Rate
4"	\$ 148.40
6"	\$ 222.60
8"	\$ 297.52
10"	\$ 371.00
12"	\$ 445.21

### Reclaimed Water Service Charges - FY 2019-20

Reclaimed	\$ .75 per Unit
City Reclaimed	\$ .75 per Unit
**Lakewood- FY19-20	\$ 2.00 per Unit**
***Forest Lawn-Bill to GSWC (Golden State Water Co)	FY 19-20 \$ 1.400 per Unit***

\*\*Lakewood - per Ryan Carey's June 2, 2015 letter to City of Lakewood (10% Increase until FY 20-21)

\*\*\* Forest Lawn - per Vince Brar's Sep 14, 2017 Memo to GSW (10% Increase until FY 20-21)

### Construction Water Charges - FY 2019-20

Each 100 cubic Feet \$ 2.78

### Sewer Charges - FY 2019-20

Each 100 cubic feet \$0.0292

Last Updated on: 5/16/19 By: Nella Zipagang ( Reflective of FY 2019-20 Approved Water Rates)

File Path: F: USERS\IA\FINANCE\WATER\Water Rates\Water Rate Cheat Sheets\0\_Water Rate Cheat Sheet\_FY19-20

# CITY OF CERRITOS

## WATER METER RATE INFORMATION - FY 2020-21

### Water Size and Base Consumption Charges - FY 2020-21

Meter Code	Meter Size	Base Unit Minimum	Base Minimum Rate	Over Minimum
01	5/8 x 3/4	10	\$ 37.61	\$ 2.75
02	1"	25	\$ 127.52	\$ 2.75
03	1 1/2"	50	\$ 255.07	\$ 2.75
04	2"	100	\$ 510.14	\$ 2.75
05	3"	150	\$ 765.18	\$ 2.75
06	4"	175	\$ 892.73	\$ 2.75
07	6"	200	\$ 1,020.25	\$ 2.75
*	CITY*	By Meter Size *	By Meter Size*	\$ 2.75
09	8"	225	\$ 1,069.38	\$ 2.75
10	10"	250	\$ 1,188.80	\$ 2.75

*\*\*Commencing June 2015 City Water Billing Use (Jan-Jun2015), Rate was changed to charge by meter size - the Change was done by MIS staff in CIS per Management's direction. City Reads billing are done every May and November starting FY 15-16.*

**11/30/16 - No adjustment needed for zero usage on Landscape. Water use restrictions on drought have been lifted in May 2016.**

### Fire Service Rates - FY 2020-21

*(Based on \$ 40.81 per inch of service diameter)*

Service Diameter	60 Day / Rate
4"	\$ 163.24
6"	\$ 244.86
8"	\$ 327.27
10"	\$ 408.10
12"	\$ 489.73

### Reclaimed Water Service Charges - FY 2020-21

Reclaimed	\$ .75 per Unit
City Reclaimed	\$ .75 per Unit
**Lakewood- FY20-21	\$ 2.20 per Unit**
***Forest Lawn-Bill to GSWC (Golden State Water Co)	FY 20-21 \$ 1.540 per Unit***

**\*\*Lakewood - per Ryan Carey's June 2, 2015 letter to City of Lakewood (10% Increase until FY 20-21)**

**\*\*\* Forest Lawn - per Vince Brar's Sep 14, 2017 Memo to GSW (10% Increase until FY 20-21)**

### Construction Water Charges - FY 2020-21

Each 100 cubic Feet **\$ 3.06**

### Sewer Charges - FY 2020-21

Each 100 cubic feet **\$0.0322**

**Last Updated on: 5/22/20 By: Nella Zipagang ( Reflective of FY 2020-21 Approved Water Rates)**

**File Path: F: USERS\IA\FINANCE\WATER\Water Rates\Water Rate Cheat Sheets\0\_Water Rate Cheat Sheet\_FY20-21**



**2020 URBAN WATER MANAGEMENT PLAN**

**APPENDIX P**

**RESOLUTION ADOPTING 2020 UWMP AND WSCP**

**CITY OF CERRITOS**

**RESOLUTION NO. 2022-02**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CERRITOS  
ADOPTING THE 2020 URBAN WATER MANAGEMENT PLAN AND WATER  
SHORTAGE CONTINGENCY PLAN PURSUANT TO CALIFORNIA WATER  
CODE SECTIONS 10610 THROUGH 10657**

WHEREAS, Government Code Sections 10610 through 10657 requires the development of an Urban Water Management Plan for a water supplier providing more than 3,000 acre-feet of water annually; and

WHEREAS, the City of Cerritos provides water service to approximately 16,000 individual connections; and

WHEREAS, the City of Cerritos has updated its 2020 Urban Water Management Plan pursuant to the requirements of the Urban Water Management Planning Act of 1983; and

WHEREAS, the 2020 UWMP includes the City's Water Shortage Contingency Plan; and

WHEREAS, the 2020 UWMP is a general information document and complements other regional water planning documents, including the Central Basin Municipal Water District 2020 Regional Urban Water Management Plan; and

WHEREAS, the purpose of the 2020 UWMP is to provide a local perspective and analysis of the current and alternative water demand, supplies and conservation activities of the City; and

WHEREAS, the 2020 UWMP also addressed the effects and measures of coping with short-term and chronic water shortages within the City boundaries; and

WHEREAS, the 2020 UWMP will be periodically updated, no less than every five years, to reflect changes in water supply trends and conservation policies within the boundaries of the City.

**NOW, THEREFORE, THE CITY OF CERRITOS CITY COUNCIL DOES FIND,  
DETERMINE AND DECLARE AS FOLLOWS:**

**Section 1.** The City Council, pursuant to California Water Code Sections 10610 through 10657, approves the 2020 Urban Water Management Plan and Water Shortage Contingency Plan.

**PASSED, APPROVED and ADOPTED this 13th day of January, 2022.**

  
\_\_\_\_\_  
Grace Hu, Mayor

ATTEST:

  
\_\_\_\_\_  
Vida Barone, City Clerk

Vida Barone, City Clerk

STATE OF CALIFORNIA        )  
COUNTY OF LOS ANGELES    ) ss.  
CITY OF CERRITOS            )

I, Vida Barone, City Clerk of the City of Cerritos, California, DO HEREBY CERTIFY that the foregoing **Resolution No. 2022-02** was duly approved and adopted by the City Council of the City of Cerritos at a Regular Meeting held on the 13th day of January, 2022, and that it was so adopted as follows:

AYES:            Councilmembers – Barrows, Solanki, Yokoyama, Vo, Hu  
NOES:            Councilmembers – None  
ABSENT:          Councilmembers – None  
ABSTAIN:         Councilmembers – None

DATED: January 13, 2022



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Vida Barone, City Clerk