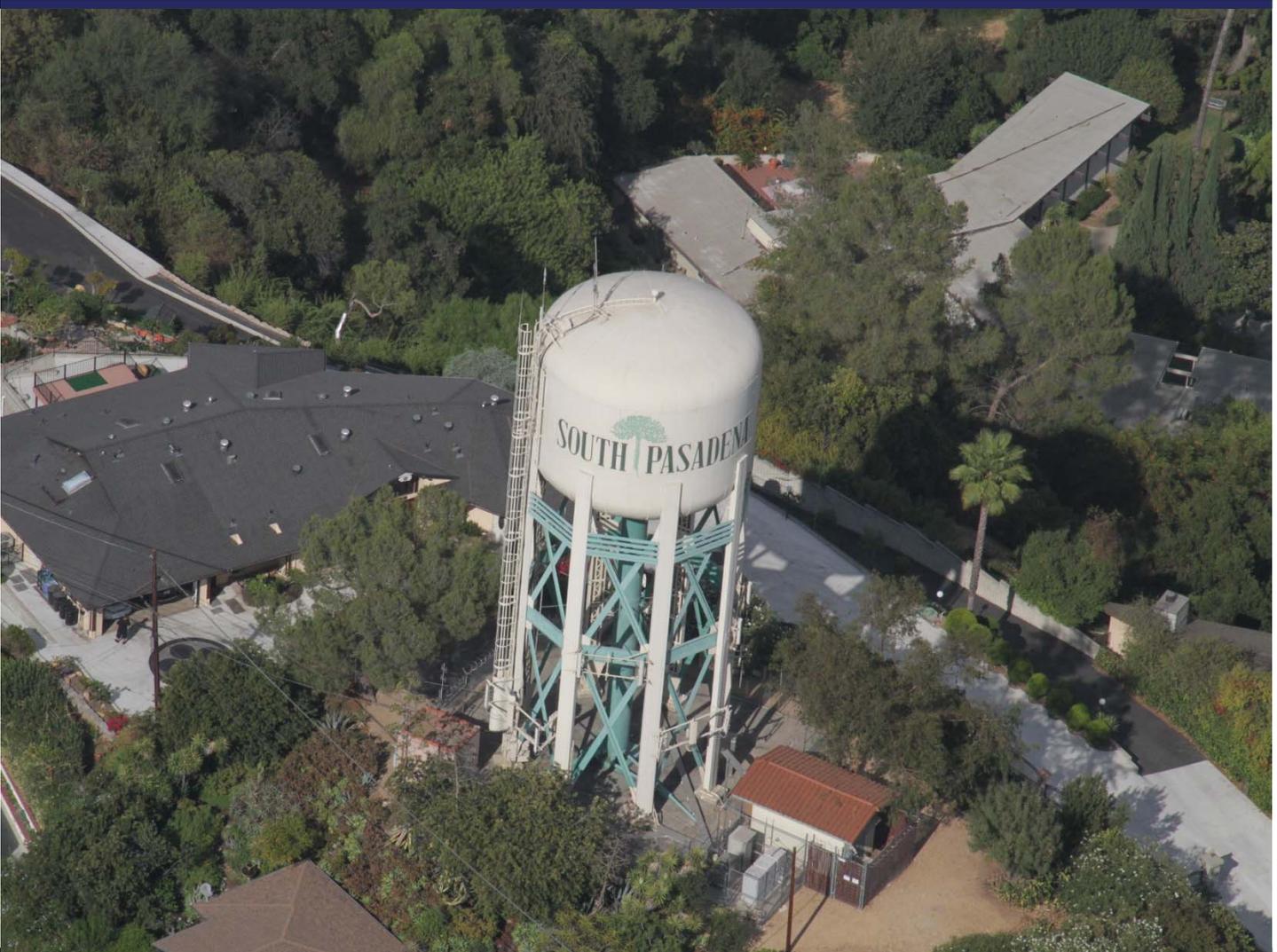


**FINAL DRAFT**

# City of South Pasadena

## 2015 Urban Water Management Plan

June 2016



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# TABLE OF CONTENTS

Page

<b>CHAPTER 1 .....</b>	<b>1-1</b>
<b>PLAN PREPARATION .....</b>	<b>1-1</b>
1.1 BACKGROUND AND PURPOSE .....	1-1
1.2 URBAN WATER MANAGEMENT PLANNING AND THE CALIFORNIA WATER CODE .....	1-2
1.2.1 URBAN WATER MANAGEMENT PLANNING ACT OF 1983 .....	1-2
1.2.2 APPLICABLE CHANGES TO THE WATER CODE SINCE 2010 .....	1-2
1.2.3 WATER CONSERVATION ACT OF 2009 (SB X7-7) .....	1-3
1.3 URBAN WATER MANAGEMENT PLANNING IN RELATION TO OTHER PLANNING EFFORTS .....	1-4
1.4 UWMP ORGANIZATION .....	1-4
1.5 UWMP AND GRANT OR LOAN ELIGIBILITY.....	1-5
1.6 TIPS FOR UWMP PREPARERS .....	1-6
<b>CHAPTER 2 .....</b>	<b>2-1</b>
<b>PLAN PREPARATION .....</b>	<b>2-1</b>
2.1 BASIS FOR PREPARING A PLAN .....	2-1
2.1.1 PUBLIC WATER SYSTEMS .....	2-3
2.1.2 AGENCIES SERVING MULTIPLE SERVICE AREAS / PUBLIC WATER SYSTEMS.....	2-4
2.2 REGIONAL PLANNING .....	2-4
2.3 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE .....	2-4
2.3.1 REGIONAL UWMP .....	2-5
2.3.2 REGIONAL ALLIANCE .....	2-5
2.4 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE.....	2-6
2.4.1 FISCAL OR CALENDAR YEAR .....	2-6
2.4.2 REPORTING COMPLETE 2015 DATA.....	2-6
2.4.3 UNITS OF MEASURE .....	2-6
2.5 COORDINATION AND OUTREACH .....	2-7
2.5.1 WHOLESALE AND RETAIL COORDINATION .....	2-7
2.5.2 COORDINATION WITH OTHER AGENCIES AND THE COMMUNITY .....	2-7
2.5.3 NOTICE TO CITIES AND COUNTIES .....	2-8
<b>CHAPTER 3 .....</b>	<b>3-1</b>
<b>SYSTEM DESCRIPTION .....</b>	<b>3-1</b>
3.1 GENERAL DESCRIPTION.....	3-1
3.2 SERVICE AREA BOUNDARY MAP .....	3-2
3.2.1 MAP FORMAT RECOMMENDATIONS .....	3-2
3.3 SERVICE AREA CLIMATE .....	3-2
3.3.1 CLIMATE CHANGE .....	3-4
3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS .....	3-4
3.4.1 OTHER DEMOGRAPHIC FACTORS .....	3-5

**TABLE OF CONTENTS  
(Continued)**

	<u>Page</u>
<b>CHAPTER 4 .....</b>	<b>4-1</b>
<b>SYSTEM WATER USE .....</b>	<b>4-1</b>
4.1 RECYCLED VERSUS POTABLE AND RAW WATER DEMAND .....	4-1
4.2 WATER USES BY SECTOR .....	4-1
4.2.1 DEMAND SECTORS LISTED IN WATER CODE .....	4-2
4.2.2 DEMAND SECTORS IN ADDITION TO THOSE LISTED IN THE WATER CODE .....	4-3
4.3 DISTRIBUTION SYSTEM WATER LOSSES .....	4-4
4.4 ESTIMATED FUTURE WATER SAVINGS .....	4-5
4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS .....	4-6
4.6 CLIMATE CHANGE .....	4-7
<b>CHAPTER 5 .....</b>	<b>5-1</b>
<b>SB X7-7 BASELINE AND TARGETS .....</b>	<b>5-1</b>
5.1 GUIDANCE FOR WHOLESAL E AGENCIES .....	5-1
5.2 UPDATING CALCULATIONS FROM 2010 UWMP .....	5-2
5.2.1 TARGET METHOD .....	5-2
5.2.2 REQUIRED USE OF 2010 U.S. CENSUS DATA .....	5-3
5.2.3 SB X7-7 VERIFICATION FORM .....	5-3
5.3 BASELINE PERIODS .....	5-3
5.3.1 DETERMINATION OF THE 10-15 YEAR BASELINE PERIOD (BASELINE GPCD) .....	5-4
5.3.2 DETERMINATION OF THE 5 YEAR BASELINE PERIOD (TARGET CONFIRMATION) .....	5-5
5.4 SERVICE AREA POPULATION .....	5-6
5.4.1 POPULATION METHODOLOGY .....	5-7
5.5 GROSS WATER USE .....	5-7
5.5.1 GROSS WATER TABLES .....	5-8
5.6 BASELINE DAILY PER CAPITAL WATER USE .....	5-9
5.7 2015 AND 2020 TARGETS .....	5-9
5.7.1 SELECT AND APPLY A TARGET METHOD .....	5-10
5.7.2 5-YEAR BASELINE – 2020 TARGET CONFIRMATION .....	5-11
5.7.3 CALCULATE THE 2015 INTERIM URBAN WATER USE TARGET .....	5-12
5.7.4 BASELINE AND TARGETS SUMMARY .....	5-12
5.8 2015 COMPLIANCE DAILY PER CAPITA WATER USE (GPCD) .....	5-13
5.8.1 MEETING THE 2015 TARGET .....	5-13
5.8.2 2015 ADJUSTMENTS TO 2015 GROSS WATER USE .....	5-13
5.9 REGIONAL ALLIANCE .....	5-14
<b>CHAPTER 6 .....</b>	<b>6-1</b>
<b>SYSTEM SUPPLIES .....</b>	<b>6-1</b>
6.1 PURCHASED OR IMPORTED WATER .....	6-1

## TABLE OF CONTENTS (Continued)

	<u>Page</u>
6.2	GROUNDWATER.....6-2
6.2.1	BASIN DESCRIPTION.....6-3
6.2.2	GROUNDWATER MANAGEMENT.....6-10
6.2.3	OVERDRAFT CONDITIONS.....6-21
6.2.4	HISTORICAL GROUNDWATER PUMPING.....6-21
6.3	SURFACE WATER.....6-23
6.4	STORMWATER.....6-23
6.5	WASTEWATER AND RECYCLED WATER.....6-23
6.5.1	RECYCLED WATER COORDINATION.....6-23
6.5.2	WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL.....6-24
6.5.3	RECYCLED WATER SYSTEM.....6-26
6.5.4	RECYCLED WATER BENEFICIAL USES.....6-26
6.5.5	ACTIONS TO ENCOURAGE AND OPTIMIZE FUTURE RECYCLED WATER USE.....6-28
6.6	DESALINATED WATER OPPORTUNITIES.....6-29
6.7	TRANSFER OPPORTUNITIES.....6-29
6.7.1	EXCHANGES.....6-30
6.7.2	TRANSFERS.....6-30
6.7.3	EMERGENCY INTERTIES.....6-30
6.8	FUTURE WATER PROJECTS.....6-31
6.9	SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER.....6-32
6.10	CLIMATE CHANGE IMPACTS TO SUPPLY.....6-33
<b>CHAPTER 7</b>	<b>7-1</b>
<b>WATER SUPPLY RELIABILITY ASSESSMENT</b>	<b>7-1</b>
7.1	CONSTRAINTS ON WATER SOURCES.....7-1
7.1.1	GROUNDWATER.....7-2
7.1.2	IMPORTED WATER FROM METROPOLITAN.....7-2
7.2	RELIABILITY BY TYPE OF YEAR.....7-1
7.2.1	TYPES OF YEARS.....7-2
7.2.2	AGENCIES WITH MULTIPLE WATER SOURCES.....7-2
7.3	SUPPLY AND DEMAND ASSESSMENT.....7-2
7.4	REGIONAL SUPPLY RELIABILITY.....7-3
<b>CHAPTER 8</b>	<b>8-1</b>
<b>WATER SHORTAGE CONTINGENCY PLAN</b>	<b>8-1</b>
8.1	STAGES OF ACTION.....8-1
8.2	PROHIBITIONS ON END USES.....8-3
8.2.1	LANDSCAPE IRRIGATION.....8-4
8.2.2	COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL (CII).....8-5
8.2.3	SWIMMING POOLS AND SPAS.....8-6
8.2.4	DEFINING WATER FEATURES.....8-6

**TABLE OF CONTENTS  
(Continued)**

	<u>Page</u>
8.2.5 OTHER .....	8-7
8.3 PENALTIES, CHARGES, OTHER ENFORCEMENT OF PROHIBITIONS .....	8-8
8.4 CONSUMPTION REDUCTION METHODS .....	8-10
8.5 DETERMINING WATER SHORTAGE REDUCTIONS .....	8-10
8.6 REVENUE AND EXPENDITURE REPORTS.....	8-11
8.6.1 DROUGHT RATE STRUCTURE AND SURCHARGES .....	8-11
8.6.2 USES OF FINANCIAL RESERVES .....	8-12
8.7 RESOLUTION OR ORDINANCE .....	8-12
8.8 CATASTROPHIC SUPPLY INTERRUPTION .....	8-13
8.9 MINIMUM SUPPLY NEXT THREE YEARS .....	8-13
<b>CHAPTER 9 .....</b>	<b>9-1</b>
<b>DEMAND MANAGEMENT MEASURES .....</b>	<b>9-1</b>
9.1 DEMAND MANAGEMENT MEASURES FOR WHOLESALE AGENCIES.....	9-1
9.2 DEMAND MANAGEMENT MEASURES FOR RETAIL AGENCIES.....	9-2
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 .....	9-8
9.3 IMPLEMENTATION OVER THE PAST FIVE YEARS.....	9-8
9.3.1 WATER WASTE PREVENTION ORDINANCES .....	9-9
9.3.2 METERING.....	9-9
9.3.3 CONSERVATION PRICING .....	9-10
9.3.4 PUBLIC EDUCATION AND OUTREACH .....	9-10
9.3.5 PROGRAMS TO ASSESS AND MANAGE DISTRIBUTION SYSTEM REAL LOSS .....	9-11
9.3.6 WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT .....	9-11
9.3.7 OTHER DEMAND MANAGEMENT MEASURES .....	9-12
9.4 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS .....	9-12
9.5 MEMBERS OF THE CALIFORNIA URBAN WATER CONSERVATION COUNCIL .....	9-13
<b>CHAPTER 10 .....</b>	<b>10-1</b>
<b>PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION .....</b>	<b>10-1</b>
10.1 INCLUSION OF ALL 2015 DATA.....	10-1
10.2 NOTICE OF PUBLIC HEARING .....	10-1
10.2.1 NOTICE TO CITIES AND COUNTIES .....	10-1
10.2.2 NOTICE TO THE PUBLIC.....	10-2
10.3 PUBLIC HEARING AND ADOPTION .....	10-3

**TABLE OF CONTENTS  
(Continued)**

	<u>Page</u>
10.3.1 ADOPTION.....	10-4
10.4 PLAN SUBMITTAL.....	10-5
10.4.1 SUBMITTING A UWMP TO DWR .....	10-5
10.4.2 ELECTRONIC DATA SUBMITTAL.....	10-6
10.4.3 SUBMITTING A UWMP TO THE CALIFORNIA STATE LIBRARY .....	10-6
10.4.4 SUBMITTING A UWMP TO CITIES AND COUNTIES.....	10-7
10.5 PUBLIC AVAILABILITY .....	10-7
10.6 AMENDING AN ADOPTED UWMP.....	10-7

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

### **LIST OF TABLES**

Table 2-1	Public Water Systems
Table 2-2	Plan Identification
Table 2-3	Agency Identification
Table 2-4	Water Supplier Information Exchange
Table 3-1	Population – Current and Projected
Table 4-1	Demands for Potable Water - Actual
Table 4-2	Demands for Potable Water - Projected
Table 4-3	Total Water Demands
Table 4-4	12-Month Water Loss Audit Reporting
Table 4-5	Inclusion in Water Use Projections
Table 5-1	Baselines and Targets Summary
Table 5-2	2015 Compliance
Table 6-1	Groundwater Volume Pumped
Table 6-2	Wastewater Collected Within Service Area in 2015
Table 6-3	Wastewater Treatment and Discharge Within Service Area in 2015
Table 6-4	Current and Projected Recycled Water Direct Beneficial Uses Within Service Area
Table 6-5	2010 UWMP Recycled Water Use Projection Compared to 2015 Actual
Table 6-6	Methods to Expand Future Recycled Water Use
Table 6-7	Expected Future Water Supply Projects or Programs
Table 6-8	Water Supplies – Actual
Table 6-9	Water Supplies – Projected
Table 7-1	Basis of Water Year Data
Table 7-2	Normal Water Supply and Demand Comparison
Table 7-3	Single Dry Year Supply and Demand Comparison
Table 7-4	Multiple Dry Years Supply and Demand Comparison
Table 8-1	Stages of Water Shortage Contingency Plan
Table 8-2	Restrictions and Prohibitions on End Uses
Table 8-3	States of Water Shortage Contingency Plan – Consumption Reduction Methods
Table 8-4	Minimum Supply Next Three Years
Table 10-1	Notification to Cities and Counties

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

### **LIST OF FIGURES**

Figure 1	Water Service Area Boundary
Figure 2	Water Service Area and Municipal Boundaries
Figure 3	Vicinity Map
Figure 4	Municipal Water District Boundaries
Figure 5	Location of Sub-basins, Spreading Grounds, and Water Channels in Main Basin
Figure 6	Historical Baldwin Park Key Well Elevations and Rainfall
Figure 7	Groundwater Contours Map

### **LIST OF APPENDICES**

Appendix A	Urban Water Management Planning Act
Appendix B	Completed Plan Checklist
Appendix C	60-Day Notification Letters
Appendix D	Annual Rainfall from 1958-59 to 2014-15
Appendix E	AWWA Audit Worksheet
Appendix F	Water Conservation Act of 2009
Appendix G	Standardized Tables SB X7-7 Verification Form
Appendix H	Long Beach Judgment
Appendix I	Amended Main San Gabriel Basin Judgment
Appendix J	Main San Gabriel Basin Watermaster Rules and Regulations
Appendix K	Draft Main San Gabriel Basin Watermaster Five Year Water Quality and Supply Plan, 2015-16 to 2019-20
Appendix L	2014 Consumer Confidence Report
Appendix M	Ordinance No. 2268
Appendix N	Water Rate Schedule
Appendix O	Notice of Public Hearing
Appendix P	Resolution Adopting the 2015 Urban Water Management Plan



## CHAPTER 1

### PLAN PREPARATION

#### 1.1 BACKGROUND AND PURPOSE

The City of South Pasadena (City) is a water supplier and is required to prepare an Urban Water Management Plan (Plan) in accordance with the California Urban Water Management Planning Act (UWMP Act) which was established in 1983. The Act requires every “urban water supplier” to prepare and adopt a Plan, periodically review its Plan at least once every five years and make any amendments or changes which are indicated by the review. Pursuant to California Water Code Section 10617, 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 of water annually. The primary objective of the UWMP Act is to direct urban water suppliers to evaluate their existing water conservation efforts and, to the extent practicable, review and implement alternative and supplemental water conservation measures. The UWMP Act is directed primarily at retail water purveyors where programs can be immediately affected upon the consumer. The UWMP Act, originally known as Assembly Bill (AB) 797, is included in Appendix A.

Section 10621(a) of the California Water Code states, “Each water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.” However, due to recent changes in Urban Water Management Plan requirements, California State law has extended the deadline for the 2015 Plans to July 1, 2016. The City’s 2015 Plan is an update to the City’s 2010 Plan.



## **1.2 URBAN WATER MANAGEMENT PLANNING AND THE CALIFORNIA WATER CODE**

### **1.2.1 URBAN WATER MANAGEMENT PLANNING ACT OF 1983**

The City is a water supplier and is required to prepare a Plan in accordance with the UWMP Act established in 1983. The UWMP Act is included in the California Water Code (CWC) under Sections 10610 through 10656. A copy of the UWMP Act is provided in Appendix A. The UWMP Act requires water agencies develop UWMPs to provide a framework for long-term water planning as well as information regarding long-term resource planning to ensure sufficient water supplies are available to meet existing and future demands. Urban water suppliers are required to report, describe, and evaluate water deliveries and uses, water supply sources, efficient water uses, demand management measures, and water shortage contingency planning.

### **1.2.2 APPLICABLE CHANGES TO THE WATER CODE SINCE 2010**

In compliance with the UWMP Act, the City last updated its Urban Water Management Plan in 2010. There have been new amendments added and some reorganization of the California Water Code sections since the City's last update. The following tabulation is a summary of the new requirements which were incorporated in the City's 2015 Plan, as applicable:



Change Number	Topic	CWC Section	Legislative Bill	Summary	Guidebook Section
1	Demand Management Measures	10631 (f)(1) and (2)	AB 2067, 2014	Requires water suppliers to provide narratives describing their water demand management measures, as provided. Requires retail water suppliers to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets.	Chapter 9
2	Submittal Date	10621 (d)	AB 2067, 2014	Requires each urban water supplier to submit its 2015 plan to the Department of Water Resources by July 1, 2016.	Chapter 10
3	Electronic Submittal	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to be submitted electronically to the department.	Chapter 10
4	Standardized Forms	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by the department.	CH 1, Section 1.4
5	Water Loss	10631 (e) (1) (J) and (e) (3) (A) and (B)	SB 1420, 2014	Requires a plan to quantify and report on distribution system water loss.	Appendix L
6	Estimating Future Water Savings	10631 (e) (4)	SB 1420, 2014	Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.	Appendix K
7	Voluntary Reporting of Energy Intensity	10631.2 (a) and (b)	SB 1036, 2014	Provides for an urban water supplier to include certain energy-related information, including, but not limited to, an estimate of the amount of energy used to extract or divert water supplies.	Appendix O
8	Defining Water Features	10632	AB 2409, 2010	Requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	CH 8, Section 8.2.4

Source: Department of Water Resources' March 2016 Final "Guidebook for Urban Water Suppliers"

### 1.2.3 WATER CONSERVATION ACT OF 2009 (SB X7-7)

The Water Conservation Act of 2009 (SB X7-7) required retail urban water suppliers to report the following conservation goals in their 2010 Plans:

- Base Daily per Capita Water Use;
- 2015 Interim Urban Water Use Target;
- 2020 Urban Water Use Target; and
- Compliance Daily per Capita Water Use



A discussion addressing the requirements of the Water Conservation Act is found in Chapter 5 of the City's 2015 Plan.

### **1.3 URBAN WATER MANAGEMENT PLANNING IN RELATION TO OTHER PLANNING EFFORTS**

The City is a local water purveyor that serves retail customers within the City of South Pasadena. The City is a member agency of Upper San Gabriel Valley Municipal Water District (Upper District). The City has the legal right to pump groundwater from the Main San Gabriel Basin (Main Basin); can purchase imported water from the Metropolitan Water District of Southern California (Metropolitan) through Upper District; and can purchase water from the City of Pasadena to serve a small portion of its service area. Upper District prepared a 2015 Plan which is incorporated in the City's 2015 Plan by reference. In addition, the City provided its 2015 Plan to Upper District, which includes water use projections in five-year increments for normal, single dry, and multiple dry year conditions over the next 25 years.

### **1.4 UWMP ORGANIZATION**

The City's 2015 Plan was prepared consistent with the recommended organization provided in the Department of Water Resources' (DWR) Final "Guidebook for Urban Water Suppliers", dated March 2016. The City's 2015 Plan consists of the following Chapters:

Chapter 1 - Introduction and Overview



- Chapter 2 - Plan Preparation
- Chapter 3 - System Description
- Chapter 4 - System Water Use
- Chapter 5 - Baselines and Targets
- Chapter 6 - System Supplies
- Chapter 7 - Water Supply Reliability
- Chapter 8 - Water Shortage Contingency Planning
- Chapter 9 - Demand Management Measures
- Chapter 10 - Plan Adoption, Submittal, and Implementation

Pursuant to California Water Code requirements, the City's 2015 Plan incorporates DWR's standardized tables for the reporting and submittal of UWMP data. The standardized tables are provided at the end of this report. The City also submitted the UWMP data (standardized tables) electronically to DWR through DWR's Online Submittal Tool.

The City's 2015 Plan also provides supporting documents (appendices) including notification letters of the UWMP update, public notice of the UWMP hearing, adoption resolution from the City's governing body, and the City's Water Shortage Contingency Plan. Further discussions regarding these supporting documents are provided within the individual Chapters of the City's 2015 Plan.

## **1.5 UWMP AND GRANT OR LOAN ELIGIBILITY**

Pursuant to DWR's Final Draft "Guidebook for Urban Water Suppliers", "*In order for an urban water supplier to be eligible for any water management grant or loan administered by DWR, the agency must have a current UWMP on file that has been determined by DWR to address the requirements of the CWC. A current UWMP must*



*also be maintained by the water supplier throughout the term of any grant or loan administered by DWR... An 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.”* The City’s 2015 Plan has been prepared in order to meet eligibility requirements for grants and loans administered by the State and / or DWR.

## **1.6 TIPS FOR UWMP PREPARERS**

The City’s 2015 Plan is considered an update to the City’s 2010 Plan. However, the 2015 Plan is considered a stand-alone document. As discussed in Section 1.4, the City’s 2015 Plan was prepared consistent with the recommended organization provided in DWR’s Final “Guidebook for Urban Water Suppliers”, dated March 2016. A checklist of specific UWMP requirements is included in Appendix B. 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

### 2.1 BASIS FOR PREPARING A PLAN

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**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.*

**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 December 31, in years ending in five and zero, except as provided in subdivision (d).*

*(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.*

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This Urban Water Management Plan (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. The primary



objective of the UWMP Act is to direct urban water suppliers to prepare a plan that describes and evaluates sources of supply, reasonable and practical efficient uses, reclamation, and demand management activities. **The UWMP Act is directed primarily at retail water purveyors where programs can be immediately applied to the consumers.** Sections 10610 through 10656 of the California Water Code, Urban Water Management Planning Act, were enacted in 1983. The UWMP Act, originally known as Assembly Bill (AB) 797, is included in Appendix A.

Section 10621(a) of the California Water Code states, “Each water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.” However, because of recent changes in Urban Water Management Plan requirements, California State law has extended the deadline for the 2015 Plans to July 1, 2016.

The City of South Pasadena is an “urban water supplier” pursuant to Section 10617 of the California Water Code 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 does not provide water at wholesale for municipal purposes. This 2015 Plan is an update to the City’s 2010 Plan.



## 2.1.1 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.*

### CWC 10608.52.

*(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28. (b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24... The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.*

### 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 California Water Code requirements, the City's 2015 Plan incorporates DWR's standardized tables for the reporting and submittal of UWMP data. The standardized tables are provided at the end of the 2015 Plan text. The City also submitted the UWMP data (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 that water agencies report 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.

### **2.1.2 AGENCIES SERVING MULTIPLE SERVICE AREAS / PUBLIC WATER SYSTEMS**

The City serves only a single Public Water System. Table 2-1 provides the City's Public Water System name and number.

## **2.2 REGIONAL PLANNING**

The City has developed its 2015 Plan reporting solely on its service area to address all requirements of the California Water Code. The City's 2015 Plan was not developed as a Regional Plan.

## **2.3 INDIVIDUAL OR REGIONAL PLANNING AND COMPLIANCE**

As shown in Table 2-2, the City's 2015 Plan is an "Individual UWMP". The City has developed its 2015 Plan reporting solely on its service area to address all requirements of the California Water Code. The City notified and coordinated with appropriate regional agencies and constituents (See Section 2.5).



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### 2.3.1 REGIONAL UWMP

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**CWC 10620.**

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

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As indicated in Table 2-2, the City's 2015 Plan was developed as an "Individual UWMP" and not part of a Regional Plan.

### 2.3.2 REGIONAL ALLIANCE

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**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.*

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As indicated in Table 2-2, the City's 2015 Plan was developed as an "Individual UWMP" and not part of a Regional Alliance.

## 2.4 FISCAL OR CALENDAR YEAR AND UNITS OF MEASURE

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### CWC 10608.20.

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

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### 2.4.1 FISCAL OR CALENDAR YEAR

The data provided in the City's 2015 Plan is reported on a fiscal year (FY) basis, unless noted otherwise, as shown in Table 2-3. A fiscal year begins on July 1st of every year.

### 2.4.2 REPORTING COMPLETE 2015 DATA

The data provided in the City's 2015 Plan is provided on a fiscal year basis through June 30, 2015.

### 2.4.3 UNITS OF MEASURE

As shown in Table 2-3, the data provided in the City's 2015 Plan is reported in units of acre-feet (AF), unless noted otherwise.



## 2.5 COORDINATION AND OUTREACH

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### CWC 10631.

*(j) 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 (c). 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 (c).*

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### 2.5.1 WHOLESALE AND RETAIL COORDINATION

The City is a member agency of Upper District, a wholesale agency. As indicated in Table 2-4, the City has provided its 2015 Plan to Upper District which includes water use projections in five-year increments for normal, single dry, and multiple dry year conditions over the next 25 years.

### 2.5.2 COORDINATION WITH OTHER AGENCIES AND THE COMMUNITY

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### CWC 10620.

*(d)(2) 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 the plan.*

The City of South Pasadena is a retail water supplier that serves the majority of the residents within the City of South Pasadena. 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 the Urban Water Management Plan with the City of South Pasadena, County of Los Angeles, Main San Gabriel Basin Watermaster (Main Basin Watermaster), California American Water Company, San Gabriel River Watermaster and Upper San Gabriel Valley Municipal Water District (Upper District). As discussed in Section 10.2, the City notified these agencies, as well as to 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 2015 Plan and invited them to participate in the development of the Plan.

### **2.5.3 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.*



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 2010 Plan, and as a result prepare the 2015 Plan Update. Notification was provided at least 60 days prior to the public hearing (see Appendix C).



## CHAPTER 3

### SYSTEM DESCRIPTION

#### 3.1 GENERAL DESCRIPTION

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CWC 10631.

*(a) Describe the service area of the supplier.*

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The City of South Pasadena is located on the westerly edge of the San Gabriel Valley in Los Angeles County. The City occupies an area of about 3.4 square miles (2,200 acres). Incorporation of the City of South Pasadena occurred on March 2, 1888. The City provides water service to all residential, commercial, industrial, and municipal customers, and for environmental and fire protection uses. The location of the City of South Pasadena service area boundary is shown on Figure 1.

The City provides water service to a majority of the City of South Pasadena and encompasses an area of approximately 3.4 square miles, as shown in Figure 2. The City currently derives its water supply from groundwater wells that produce water from the Main San Gabriel Basin. The location of the City's service area and the Main San Gabriel Basin are shown in Figure 3.

The City is also a member agency of Upper District, a wholesale water agency. A discussion of the City's sources of water supply is provided in Chapter 6. The locations of the City's service area and Upper District are shown in Figure 4.



## 3.2 SERVICE AREA BOUNDARY MAP

As discussed in Section 3.1, the City's current service area covers approximately 3.4 square miles encompassing the majority of the city. A service area boundary map is provided in Figure 1. The location of the City's service relative to the City's municipal boundary is provided in Figure 2.

### 3.2.1 MAP FORMAT RECOMMENDATIONS

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

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CWC 10631.

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

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The monthly historical average temperatures (including minimum and maximum), monthly historical average rainfall, and monthly evapotranspiration (ET<sub>o</sub>) 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 Min. Temperature (F)	Average Max. Temperature (F)	Average Total Precipitation (Inches)	ETo (Inches)
January	54.7	42.6	66.5	4.39	2.20
February	56.1	44.1	67.8	4.54	2.41
March	58.2	45.9	69.9	3.39	3.71
April	61.2	48.8	73.4	1.39	4.36
May	64.4	52.2	76.3	0.43	5.29
June	68.9	55.7	81.7	0.13	5.78
July	74.3	59.9	88.4	0.03	6.55
August	74.9	60.3	89.2	0.08	6.02
September	73.1	58.5	87.1	0.36	4.87
October	67.2	53.4	80.6	0.70	3.40
November	60.6	47.2	73.8	1.67	2.38
December	55.3	43.2	67.2	3.14	1.90
Annual	64.1	51.0	76.8	20.24	48.87

**Source:**

Historical average monthly precipitation and temperature information was obtained from the Western Regional Climate Center (<http://www.wrcc.dri.edu/>) and is based on data collected from Station 046719 (Pasadena, CA) from 1893 through 2015. 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 159 (Monrovia).

The historical average rainfall in the vicinity of the City's service area is about 20.2 inches. Annual rainfall in the vicinity of the City from 1958-59 to 2014-15 is provided as Appendix D. The City's service area in the San Gabriel Valley has a dry climate and summers can reach average daily temperatures into the high 80s. Although



changes in climatic conditions will have an impact, the projected water supply demands will be based on average year, single dry year and multiple-dry years.

### 3.3.1 CLIMATE CHANGE

The California Water Code does not require the City to address climate change. However, a discussion on single-dry year and multiple dry years is provided in Section 7.2 and a discussion on potential impacts to basin management practices is provided in Section 6.2. A discussion regarding the regional impacts of climate change on demand and supply are provided in Metropolitan's 2015 Plan, which is incorporated by reference.

### 3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

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#### 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 about 24,040. Table 3-1 presents the current and projected population of the area encompassed by the City from 2015 to 2040. The City is projected to have a population of approximately 24,656 by 2040. Projected populations in the City's service area were based on projections obtained from the Southern California Association of Governments



(SCAG). The SCAG data incorporates demographic trends, existing land use, general plan land use policies, and input and projections from the Department of Finance (DOF) and the US Census Bureau. The population estimate for 2015 in Table 3-1 is consistent with DWR requirements discussed in Section 5.4.1.

### 3.4.1 OTHER DEMOGRAPHIC FACTORS

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**CWC 10631.**

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

---

No other demographic factors affect the City's water management planning. However, increased population may have an impact on water demand.



## CHAPTER 4

### SYSTEM WATER USE

#### 4.1 RECYCLED VERSUS POTABLE AND RAW WATER DEMAND

Chapter 4 addresses the City's potable water demands. Recycled water demands are addressed separately in Section 6.5; however, a summary is provided in Table 4-3. Raw water is not served by the City and is not applicable.

#### 4.2 WATER USES BY SECTOR

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CWC 10631(e).

(1) 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, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

- (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.

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

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The City's current, and projected water demands are provided in five-year increments through 2040 in Tables 4-1 and 4-2. Water demand sectors are also identified (see Section 4.2.1). The City's total water demand projections are based on the SB X7-7 calculations prepared in Section 5.7. The water demands for each individual water demand sector were projected based on the percentage breakdown of water demands from each individual water demands sector in 2015 (the percentages were then applied to the projected total water demands).

#### **4.2.1 DEMAND SECTORS LISTED IN WATER CODE**

As shown in Table 4-1, the City's service area includes the following water demand sectors listed in the California Water Code:

- 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  
(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. Commercial water demands are included in retail demands.)

- 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. Institutional water demands are included in retail demands.)

- 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 are discussed in Section 4.3 and Appendix E.)

#### **4.2.2 DEMAND SECTORS IN ADDITION TO THOSE LISTED IN THE WATER CODE**

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



### 4.3 DISTRIBUTION SYSTEM WATER LOSSES

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CWC 10631(e)(1).

*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, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:...*

*(J) Distribution system water loss*

CWC 10631(e)(3).

*(A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.*

*(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.*

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The City has reviewed its distribution system water losses by using the American Water Works Association's (AWWA) water audit software which is a spreadsheet-based water audit tool. The City has submitted the reporting worksheet from the AWWA water audit in an Excel format through DWR's Online Submittal Tool. The City's distribution system water loss over the most recent 12-month period available, from January 2015 to December 2015, was 47.57 acre-feet, as shown in Table 4-4. This is about a 1 percent water loss from water supplied. In addition, a copy of the reporting worksheet from the AWWA water audit is provided in Appendix E.



#### 4.4 ESTIMATED FUTURE WATER SAVINGS

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CWC 10631(e)(4).

*(A) If available and applicable to an urban water supplier, water use projections may 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 water demand projections are provided in Chapter 7 and are based on the water use targets identified in Section 5.7 pursuant to the Water Conservation Act of 2009 (or SB X7-7). The 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 Water Conservation Ordinance (Ordinance No. 2268) includes methods for current and ongoing reduction in water use and water waste. Prior to adoption of Ordinance No. 2268, the City's water use averaged about 188 gallons per capita day (from FY 1994-95 through FY 2003-04). As identified in Section 5.8, the City's actual water use during FY 2014-15 was 144 gallons per capita day which is a decrease of about 44 gallons per capita day from the recent historical average and is the result of passive savings. The City's projected water use targets identified in Section 5.7, including a water use target of 150 gallons per capita day in 2020, 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.

#### 4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

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##### 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 use projections (See Section 7.3) through 2040 include projected water demands for lower income single-family and multi-family households. 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 the City's General Plan, and a review of GIS maps of Disadvantaged Communities<sup>1</sup> (DACs), including block groups, tracts, and places, provided by DWR. The City's projections in Tables 4-2 and 4-3 includes lower income households. During fiscal year 2014-15, the City's records indicate that the City currently provides service to approximately 76 lower

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<sup>1</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)



income households. Based on a 4.24 persons per connections factor (based on DWR's Population Tool) and 169 GPCD (calculated and discussed in Section 5.8.1), the estimated demand is about 61 acre-feet for 2015. Assuming lower income households will increase 1 percent per year and 150 GPCD (calculated and discussed in Section 5.7.2) by 2040, the projected water demand for lower income households is about 69 acre-feet per year by the year 2040.

#### **4.6 CLIMATE CHANGE**

DWR had deemed Section 4.6 as optional. The City is not required by DWR to complete this section. However, a discussion on single-dry year and multiple dry years is provided in Section 7.2 and a discussion on potential impacts to basin management practices is provided in Section 6.2. A discussion regarding the regional impacts of climate change on demand and supply are provided in Metropolitan's 2015 Plan, which is incorporated by reference.



## CHAPTER 5

### SB X7-7 BASELINE AND TARGETS

The Water Conservation Act of 2009 (or SB X7-7) required retail urban water suppliers to determine target water use for the years 2015 and 2020 in order to help the State achieve a 20 percent reduction in urban water use by the year 2020. Methodologies for calculating baseline and compliance daily urban per capita water use for the consistent implementation of the Water Conservation Act of 2009 were previously published by DWR's "Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use", dated October 1, 2010. DWR provided updated methodologies in its "Guidebook for Urban Water Suppliers," dated March 2016. DWR's guidance documents were used by the City to determine the required water use parameters which are discussed below. The City developed the baselines and targets individually and not regionally. A copy of the Water Conservation Act of 2009 is provided in Appendix F.

#### 5.1 GUIDANCE FOR WHOLESALE AGENCIES

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**CWC 10608.12(r).**

*"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.*

**CWC 10608.36.**

*Urban wholesale water suppliers shall include in the urban water management plans... an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.*



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

## 5.2 UPDATING CALCULATIONS FROM 2010 UWMP

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### CWC 10608.20.

*(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).*

### Methodologies DWR 2010, Methodology 2 Service Area Population.

*Page 27 - Water suppliers may revise population estimates for baseline years between 2000 and 2010 when 2010 census information becomes available. DWR will examine discrepancy between the actual population estimate and DOF's projections for 2010; if significant discrepancies are discovered, DWR may require some or all suppliers to update their baseline population estimates.*

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### 5.2.1 TARGET METHOD

The methodology selected in the City's 2010 Plan to determine the City's 2015 and 2020 urban water use targets was:

- "Method 1" and was based on eighty percent of the urban water supplier's baseline water use over a specific 10-year period.



- “Method 3” and was based on ninety-five percent of the applicable state hydrologic region target as stated in the State’s April 30, 2009, draft 20x2020 Water Conservation Plan.

Because 2010 U.S. Census data was not available during the preparation of the City’s 2010 Plan, the City is required to recalculate its “baseline population” (See Section 5.2.2) as well as its target water use for the 2015 Plan (See Section 5.7.1). However, “Target Method 1” (as discussed in Section 5.7.1) is incorporated in this 2015 Plan.

### **5.2.2 REQUIRED USE OF 2010 U.S. CENSUS DATA**

The City has incorporated 2010 U.S. Census data into baseline population calculations in this 2015 Plan (See Section 5.4). As a result, the City updated its baseline population as well as its water use targets (See Section 5.7).

### **5.2.3 SB X7-7 VERIFICATION FORM**

The City has updated its baseline and water use target calculations from 2010 (See Section 5.7). The required standardized tables in the SB X7-7 Verification Form are provided in Appendix G.

## **5.3 BASELINE PERIODS**

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CWC 10608.20.



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

*(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).*

The Baseline Daily Per Capita Water Use is defined as the average water use, expressed in gallons per capita per day (GPCD), for a continuous, multi-year baseline period. There were two different baseline periods (including a 10-year baseline period<sup>2</sup> and a 5-year baseline period<sup>3</sup>) for calculating Baseline Daily Per Capita Water Use in the City's 2010 Plan. The baseline periods applicable for the City's 2015 Plan have been reviewed and are presented below.

### **5.3.1 DETERMINATION OF THE 10-15 YEAR BASELINE PERIOD (BASELINE GPCD)**

#### **CWC 10608.12.**

*(b) "Base daily per capita water use" means any of the following:*

*(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*

*(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the*

<sup>2</sup> Pursuant to CWC 10608.12(b)(1), the 10-year baseline period is based on "a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010"

<sup>3</sup> Pursuant to CWC 10608.12(b)(3), the 5-year baseline period is based on "a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010"



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*urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*

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The California Water Code 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 did not receive any recycled water deliveries during FY 2007-08. Consequently, a 10-year baseline period water use of 188 GPCD for the City was determined and incorporated into this 2015 Plan and is based on a continuous 10-year period between FY 1994-95 through FY 2003-04 (See SB X7-7 Table 1, Appendix G). A further discussion of determining water use targets based on the 10-year baseline period water use is discussed further in Section 5.7.

### **5.3.2 DETERMINATION OF THE 5 YEAR BASELINE PERIOD (TARGET CONFIRMATION)**

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**CWC 10608.12.**

*(b)(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.*

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According to Section 10608.22 of the California Water Code, if an urban retail water supplier's 5-year baseline period water use is greater than 100 GPCD, the calculated 2020 water use target (See Section 5.7) must be greater than or equal to 95 percent of the 5-year baseline period water use. A 5-year baseline period water use of



181 GPCD for the City was determined and incorporated into this 2015 Plan and is based on a continuous 5-year period between FY 2002-03 through FY 2006-07 (See SB X7-7 Table 1, Appendix G). A further discussion of the 2020 water use target confirmation based on the 5-year baseline period water use is discussed further in Section 5.7.2.

#### 5.4 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...the baseline 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.*

---

For the purposes of projecting water use targets (See Section 5.7), agencies must determine the population that they served for each baseline year in both of the baseline periods (identified in Section 5.3) and for the 2015 compliance year (fiscal year 2014-15). The City has incorporated U.S. Census data through 2010 into baseline population calculations in this 2015 Plan (See Section 5.4.1). According to DWR, the full 2010 U.S. Census data was not available until 2012. As a result, the City updated its baseline population as well as its water use targets (See Section 5.7), previously calculated in its 2010 Plan.



### 5.4.1 POPULATION METHODOLOGY

The annual populations within the City's service area for each year during the baseline periods (identified in Section 5.3) and for the 2015 compliance year (fiscal year 2014-15) were estimated by DWR's online Population Tool (See SB X7-7 Table 2, Appendix G). As discussed in Section 3.2.1, the City's service area boundary was submitted to the Population Tool in a "KML" file format (i.e. Google Earth format). The submitted KML file represents the City's service area boundary from 1990 to present (2015). The 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 1990, 2000, and 2010. The annual amounts of residential service connections<sup>4</sup> within the City's service area for each year from 1990 through 2015 were also entered into the Population Tool. Based on the actual population data (1990, 2000, and 2010) as well as the annual residential service connections (from 1990 through 2015), DWR's Population Tool estimated the annual population within the City's service area for each year from 1990 to 2015. The City's estimated populations during the baseline periods are provided in SB X7-7 Table 3, Appendix G.

### 5.5 GROSS WATER USE

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CWC 10608.12.

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<sup>4</sup> The annual number of residential service connections was based on information provided by the City. The number of residential service connections is a total of single family and multi-family connections.



(g) "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.

Annual gross water use amounts within the City for each year of the 10-year baseline year (FY 1994-95 to FY 2003-04) identified in Section 5.3.1, for each year of the 5-year baseline year (FY 2002-03 to FY 2006-07) identified in Section 5.3.2, and for calendar year 2015, are provided in SB X7-7 Table 4 (Appendix G) and are based on the total amount of water entering the City's distribution system from its water supply sources (groundwater production wells, treated imported water and purchased water).

### **5.5.1 GROSS WATER TABLES**

Annual gross water use amounts within the City for each for each year of the 10-year baseline year (FY 1994-95 to FY 2003-04), identified in Section 5.3, and for calendar year 2015, are provided in SB X7-7 Table 4 (Appendix G).

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 Table 4-B.



Industrial process water is not included in the City's gross water use provided in SB X7-7 Table 4 (Appendix G). The City is not required by DWR to complete SB X7-7 Table 4-C.1, SB X7-7 Table 4-C.2, SB X7-7 Table 4-C.3, SB X7-7 Table 4-C.4, and SB X7-7 Table 4-D.

## 5.6 BASELINE DAILY PER CAPITAL WATER USE

The "daily per capita water use" is based on the water used per person per day (GPCD) within the City. The daily per capita water use is estimated by dividing gross water use (See Section 5.5 and Appendix G, SB X7-7 Table 4) by the service area population (See Section 5.4 and Appendix G, SBX 7-7 Table 3). The City's baseline daily per capita water uses were determined for each baseline year (FY 2002-03 to FY 2006-07) for FY 2014-15 and are provided in SB X7-7 Table 5 (Appendix G).

## 5.7 2015 AND 2020 TARGETS

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### CWC 10608.20.

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

*(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan....*

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As discussed in Section 5.2.1, “Target Method 1” has been incorporated in the City’s 2015 Plan to determine the City’s 2015 and 2020 urban water use targets. A further discussion regarding the selected target method is provided below.

### 5.7.1 SELECT AND APPLY A TARGET METHOD

Calculation of the 2020 Urban Water Use Target includes adoption of one of four available methods (pursuant to California Water Code Section 10608.20(b)). The City reviewed the following available methods.

*Target Method 1: Eighty percent of the urban retail water supplier’s Baseline Per Capita Daily Water Use.*

Using this target method, the Urban Water Use Target for the City was calculated as **150 GPCD**, based on 80 percent of the City’s Baseline Per Capita Daily Water Use of 188 GPCD (See SB X7-7 Table 7-A, Appendix G).

*Target Method 2: Estimate using the sum of the specified three performance standards specified in California Water Code Section 10608.20(b)(2).*

Due to insufficient data, this target method was not considered.

*Target Method 3: Ninety-five percent of the applicable state hydrologic region target, as set forth in the state’s 20x2020 Water Conservation Plan.<sup>5</sup>*

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<sup>5</sup> California Department of Water Resources, State Water Resources Control Board, California Bay-Delta



The City's service area lies entirely within the "South Coast" Hydrologic Region. According to SB X7-7 Table 7-E (Appendix G), the 2020 regional water use target for the South Coast Hydrologic Region is 149 GPCD. The Target Method 3 regional use target for the South Coast Hydrologic Region (or 95 percent of the 2020 regional water use target) is 142 GPCD.

Target Method 4: *Water Savings (DWR Provisional Method 4)*

Due to insufficient data, this target method was not considered.

The City's Urban Water Use Target was initially determined to be **150 GPCD** for 2020 and is based on Target Method 1 above, as indicated in SBX7-7 Table 7 (Appendix G).

## 5.7.2 5-YEAR BASELINE – 2020 TARGET CONFIRMATION

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CWC 10608.22.

*Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.*

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Authority, California Energy Commission, California Department of Public Health, California Public Utilities Commission, and California Air Resources Board. *20x2020 Water Conservation Plan*. February 2010.



As discussed in Section 5.3.2, , if an urban retail water supplier's 5-year baseline period water use is greater than 100 GPCD, the calculated 2020 Urban Water Use Target (See Section 5.7.1) must be greater than or equal to 95 percent of the 5-year baseline period water use. The City's calculated 5-year baseline period water use was 181 GPCD (See Section 5.3.2). The value calculated for 95 percent of the 5-year baseline period water use is **172 GPCD**. The City's 2020 Urban Water Use Target was initially determined using Target Method 1 above to be 150 GPCD, which is less than the value calculated in this step (172 GPCD). Therefore, no adjustment is needed to the City's 2020 Urban Water Use Target of **150 GPCD** (See SB X7-7 Table 7-F, Appendix G).

### 5.7.3 CALCULATE THE 2015 INTERIM URBAN WATER USE TARGET

The City's 2015 Interim Target is based on the value mid-point between the 10-year baseline period water (188 GPCD, See Section 5.3.1 and SB X7-7 Table 5, Appendix G,) and the confirmed 2020 Urban Water Use Target (150 GPCD, See Section 5.7.2 and SB X7-7 Table 7, Appendix G). The City's 2015 Interim Target is **169 GPCD** as indicated in SB X7-7 Table 8 (Appendix G).

### 5.7.4 BASELINE AND TARGETS SUMMARY

A summary of the City's baseline water use and targets is provided in Table 5-1.



## 5.8 2015 COMPLIANCE DAILY PER CAPITA WATER USE (GPCD)

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### CWC 10608.12.

*(e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period...*

### CWC 10608.24.

*(a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.*

### 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.*

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### 5.8.1 MEETING THE 2015 TARGET

As discussed in Section 5.7.3, the City's 2015 Interim Target is **169 GPCD**. The City's actual water use during FY 2014-15 was **144 GPCD**. The City is currently in compliance with the 2015 Interim Target, as show in SB X7-7 Table 9 (Appendix G).

### 5.8.2 2015 ADJUSTMENTS TO 2015 GROSS WATER USE

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#### 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.*

As discussed in Section 5.8.1, the City is currently in compliance with its 2015 Interim Target. As a result, adjustments to the City's 2015 gross water use were not incorporated into the City's 2015 Plan (See Table 5-2).

## 5.9 REGIONAL ALLIANCE

As discussed in Section 2.3.2, the City's 2015 Plan was not developed as part of a Regional Alliance. Information from the City's 2015 Plan is not required to be reported in a Regional Alliance report.



## CHAPTER 6

### SYSTEM SUPPLIES

The City has three sources of water supply: groundwater, treated imported water, and purchased water from the City of Pasadena. The City's main source of water supply is groundwater pumped from the Main Basin.

#### 6.1 PURCHASED OR IMPORTED WATER

The City purchases water from the City of Pasadena through any of three interconnections to serve a small portion of the City's service area. The three interconnections have a total capacity of approximately 2,000 gallons per minute (gpm). The City regularly uses one of the three interconnections located at the northeastern corner of the City's distribution system and receives an average of 20 AFY from the City of Pasadena as a source of the City's supply which is less than one percent of the City's total water demands. The size and capacity of each interconnection are listed below:

- 8-inch metered interconnection with a capacity of 500 to 600 gpm.
- 8-inch metered interconnection with a capacity of about 1,000 gpm.
- 8-inch metered interconnection with a capacity of about 500 to 600 gpm.

In addition, the City can purchase imported water supplies from Metropolitan through Upper District. The City can receive direct deliveries of treated imported water through its Metropolitan connection, USG-2, which has a capacity of 4,500 gpm. In FY 2010-11 to FY 2014-15, treated import water accounted for less than 5 percent of the City's total water demands.



The City's 2015 and projected volumes of purchased water are provided in Tables 6-8 and 6-9.

## 6.2 GROUNDWATER

The City has four wells located within the Main Basin: Graves Well No. 2, Wilson Well No. 2, Wilson Well No. 3 and Wilson Well No. 4 with approximate pumping capacities of 705 gpm, 750 gpm, 1,960 gpm and 1,100 gpm, respectively, although Wilson Well No. 2 is inactive. The collective capacity is about 5,000 gpm.

Groundwater from Graves Well No. 2 is pumped into the Graves reservoir and groundwater from the Wilson Wells is pumped into the Wilson reservoir. The Graves reservoir has a capacity of 1.0 million gallons (MG) and the Wilson reservoir has a capacity of 1.3 MG. A booster station at each well site pumps water through a transmission main that leads to the Garfield reservoir, which is currently under construction, with a total capacity of 6.5 MG located within the City's service area. The Garfield reservoir provides water to two distribution reservoirs, the Grand and Westside Reservoirs, and two elevated steel tanks, the Raymond Hill Tank and Bilicke Tank, within the City's service area.

The City's distribution system contains four pressure zones: the Raymond Zone, the Central Zone, the Bilicke Zone and the Pasadena Zone. The Raymond Zone, the Central Zone, and the Bilicke Zone receive water from the City's system, while the Pasadena Zone, located at the top of the Raymond Hill, receives water from the City of Pasadena. The City can also deliver water to Raymond Hill Tank when the City of Pasadena is unable to supply water to the Pasadena Zone.

The City has a blend program to reduce perchlorate, nitrate and volatile organic compound (VOC) concentrations to below 80 percent of SWRCB-DDW standards. In



addition, in the event it is anticipated VOCs, perchlorate or nitrate may not be reliably blended to below the standards, the City can reduce production from its wells and purchase water from Metropolitan to supply its service area. The City plans to install a VOC treatment system at Graves Well No. 2, which historically has had VOC concentrations detected above the maximum contaminant level (MCL). The proposed VOC treatment system at Graves Well No. 2 and reservoir is in the preliminary design phase.

The City's wells are also located in the vicinity of the San Gabriel Valley Area 3 Superfund Site (Area 3) established by the United States Environmental Protection Agency (USEPA). In the draft Operable Unit/Remedial Investigation Planning Integration technical memorandum dated 1989, USEPA identified three operable unit alternatives to address specific remedial objectives within Area 3. The alternatives included extraction at the City's Wilson Well 2. The primary objectives in developing these alternatives were to manage contaminant migration and remove contaminants from Area 3.

## 6.2.1 BASIN DESCRIPTION

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### CWC 10631.

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

*(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*

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### Main Basin - Description



The San Gabriel Valley is located in southeastern Los Angeles County and is bounded on the north by the San Gabriel Mountains; on the west by the San Rafael and Merced Hills, on the south by the Puente Hills and the San Jose Hills, and on the east by a low divide between the San Gabriel River system and the Upper Santa Ana River system, as shown on Figure 3.

The San Gabriel River and its distributary, the Rio Hondo, drain an area of about 490 square miles upstream of Whittier Narrows. Whittier Narrows is a low gap between the Merced and Puente Hills, just northwest of the City of Whittier, through which the San Gabriel River and the Rio Hondo flow to the coastal plain of Los Angeles County. Whittier Narrows is a natural topographic divide and a subsurface restriction to the movement of groundwater between the Main Basin and the Coastal Plain. The approximately 490 square miles of drainage area upstream of Whittier Narrows consists of about 167 square miles of valley lands and about 323 square miles of mountains and foothills.

The Main Basin includes essentially the entire valley floor of the San Gabriel Valley with the exception of the Raymond Basin and Puente Basin. The boundaries of the Main Basin are the Raymond Basin on the northwest, the base of the San Gabriel Mountains on the north, the groundwater divide between San Dimas and La Verne and the lower boundary of the Puente Basin on the east, and the common boundaries between Upper District and Central Basin Municipal Water District (Central District) through Whittier Narrows on the southwest. The common water supply of the Main Basin does not include the Raymond Basin, the area northerly of Raymond Hill Fault, which was adjudicated in the Pasadena v. Alhambra case (Superior Court of the County of Los Angeles, 1944). The Puente Basin, although tributary to the Main Basin, is not included in the Main Basin administered by the Main Basin Watermaster.



The Main Basin (administered by the Main Basin Watermaster) is a large groundwater basin replenished by stream runoff from the adjacent mountains and hills, by rainfall directly on the surface of the valley floor, subsurface inflow from Raymond Basin and Puente Basin, and by return flow from water applied for overlying uses. Additionally, the Main Basin is replenished with imported water. The Main Basin serves as a natural storage reservoir, transmission system and filtering medium for wells constructed therein.

There are three municipal wholesale water districts overlying and/or partially overlying the Main Basin. The three districts are Upper District, San Gabriel District, and Three Valleys Municipal Water District (Three Valleys District). The boundaries of these water districts are shown on Figure 4.

Urbanization of the San Gabriel Valley began in the early part of the twentieth century, but until the 1940s, agricultural land use occupied more area than residential and commercial land use. After World War II, agricultural areas reduced rapidly and are now less than two thousand acres. The agricultural areas tend to be located in the easterly portion of the Main Basin and along power transmission rights of way adjacent to the San Gabriel River. Agricultural plots are discontinuous and relatively small. There are several major industrial areas adjacent to the San Gabriel River and within other portions of the valley. The greatest area of land use in the valley is for residential and commercial purposes. DWR Bulletin 118 does not identify the Main Basin as being in overdraft, more details is discussed on page 6-20 under "Sustainable Groundwater Management Act."

### **Main Basin - Geology**

The Main Basin consists of a roughly bowl-shaped depression of bedrock, filled over millions of years with alluvial deposits. This bowl-shaped depression is relatively



deep; the elevation at the base of the groundwater reservoir declines from about 800 feet above mean sea level (MSL) in the vicinity of San Dimas, at the northeast corner of the Main Basin, to about 2,200 feet below MSL in the vicinity of South El Monte (DWR, 1966, Plate II).

Most of the alluvium deposited within this depression is debris from the San Gabriel Mountains, washed and blown down from the side of the mountains over time. This process has also resulted in the materials of the Main Basin varying in size from relatively coarse gravel nearer the mountains to fine and medium-grained sand containing silt and clay as the distance from the mountains increases. The principal water-bearing formations of the Main Basin are unconsolidated and semi-consolidated sediments, which vary in size from coarse gravel to fine-grained sands. The interstices between these alluvial particles throughout the Main Basin fill with water and transmit water readily to wells. The thickness of the water-bearing materials in the Main Basin ranges from 200 to 300 feet in the northeastern portion of the Main Basin near the mountains (DPW, 1934, page 141) to nearly 4,000 feet in the South El Monte area (DWR, 1966, page 31).

The soils overlying the Main Basin average about six feet in depth. Soil depths are generally greater at the perimeter of the valley and decrease toward the center along the San Gabriel River. These soils are residual, formed in place through chemical, mechanical and plant weathering processes. The infiltration rates of these soils are greater along the natural channels and their adjacent flood plains. Lower infiltration rates are found in the perimeter areas of the valley. Since the valley is mostly urbanized, a significant portion of the area has been paved and many miles of stream channel have been lined for flood control purposes, thus decreasing infiltration of water through streambeds. Detailed basin geology is discussed in the report entitled "Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geo-hydrology" (DWR, 1966).



## **Main Basin - Hydrology**

The total fresh water storage capacity of the Main Basin is estimated to be about 9.5 million acre-feet. Of that, about 1,100,000 acre-feet have been used historically in Main Basin operations. The change in groundwater elevation at the Key Well is representative of changes in groundwater in the Main Basin. One foot of elevation change at the Key Well is roughly the equivalent of about 8,000 acre-feet of water storage. The location of the Key Well is shown on Figure 5 and the hydrograph of the Key Well is shown on Figure 6. The historical high groundwater elevation was recorded at over 329.1 feet in April 1916, at which time Main Basin storage was estimated to be about 8,700,000 acre-feet. The historical low was recorded in November 2015 at 174.0 feet, at which time Main Basin storage was estimated to be about 7,400,000 acre-feet. The Key Well hydrograph shown on Figure 6 illustrates the cyclic nature of basin recharge and depletion. The hydrograph also illustrates the dramatic recharge capability of the Main Basin during wet periods.

Generally, water movement in the Main Basin is from the San Gabriel Mountains on the north to Whittier Narrows to the southwest, as shown on Figure 7. Groundwater movement in the northern and northeastern regions of the Main Basin is affected by faulting. For example, the Raymond Fault located in the northwesterly portion of the Main Basin separates the Raymond Basin from the Main Basin.

The Main Basin is an unconfined aquifer. Although clay deposits appear mixed with the soils in several locations in the Main Basin and there are various clay lenses throughout the Main Basin, they do not coalesce to form a single impermeable barrier for the movement of subsurface water. The Main Basin therefore operates as a single, unconfined aquifer. As previously mentioned, a thorough discussion of basin hydrogeology is contained in the report "Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geo-hydrology" (DWR, 1966).



Within the Main Basin there are a number of identified sub-basins. These include the Upper San Gabriel Canyon Basin, Lower San Gabriel Canyon Basin, Glendora Basin, Foothill Basin, Way Hill Basin and San Dimas Basin. In addition, the Puente Basin is tributary to the Main Basin from the southeast, between the San Jose and Puente Hills, but is not included in the Main Basin adjudication. Figure 5 shows the location of the sub-basins within the Main Basin.

### **Main Basin – Groundwater Replenishment**

The major sources of recharge to the Main Basin are direct penetration of rainfall on the valley floor, percolation of runoff from the mountains, percolation of imported water and return flow from applied water. Rainfall occurs predominantly in the winter months and is more intense at higher elevations and closer to the San Gabriel Mountains.

The magnitude of annual recharge from direct penetration of local rainfall and return flow from applied water is not easily quantifiable. Percolation of runoff from the mountains and valley floor along with percolation of imported water has only been estimated. The DPW maintains records on the amount of local and imported water conserved in water spreading facilities and stream channels.

The San Gabriel River bisects the Main Basin. The San Gabriel River originates at the confluence of its west and east forks in the San Gabriel Mountains. It flows through the San Gabriel Canyon and enters the Main Basin at the mouth of the canyon north of the City of Azusa. The San Gabriel River flows southwesterly across the valley to Whittier Narrows, a distance of about 15 miles. It exits San Gabriel Valley at Whittier Narrows, and transverses the Coastal Plain in a southerly direction to reach the Pacific Ocean at Alamitos Bay near the City of Long Beach.



The San Gabriel River is joined and fed by tributary creeks and washes. In the Main Basin these include: Big Dalton Wash, which originates in the San Gabriel Mountains; Walnut Creek, which originates at the northeast end of the San Jose Hills; and San Jose Creek, which originates in the San Gabriel Mountains, but which travels around the southerly side of the San Jose Hills through the Puente Narrows before joining the San Gabriel River just above Whittier Narrows.

The channel of the San Gabriel River bifurcates in the upper middle portion of the Main Basin, forming a channel to the west of and parallel to the San Gabriel River, known as the Rio Hondo. Tributaries draining the westerly portion of the Main Basin, including Sawpit Wash, Santa Anita Wash, Eaton Canyon Wash, Rubio Wash and Alhambra Wash, all of which originate in the San Gabriel Mountains or the foothills, feed the Rio Hondo. The Santa Anita Wash, Eaton Canyon Wash, Rubio Wash and Alhambra Wash all cross the Raymond Basin area before entering the Main Basin. The channel of the Rio Hondo passes through Whittier Narrows westerly of the San Gabriel River, and then flows southwesterly to join the Los Angeles River on the Coastal Plain.

To protect residents of the San Gabriel Valley from flooding that can result during periods of intensive rainfall, the DPW and the U.S. Army Corps of Engineers (Corps of Engineers) have constructed an extensive system of dams, debris basins, reservoirs and flood control channels, which are shown on Figure 5. The dams and reservoirs also operate as water conservation facilities. The dams and reservoirs that control the flow of the San Gabriel River and the Rio Hondo include: Cogswell Reservoir on the west fork of the San Gabriel River, San Gabriel Reservoir at the confluence of the west and east forks of the San Gabriel River, Morris Reservoir near the mouth of the San Gabriel Canyon, Santa Fe Reservoir in the northerly portion of the Main Basin and Whittier Narrows Reservoir at the southwestern end of the San Gabriel Valley.



Many of the stream channels tributary to the San Gabriel River have been improved with concrete banks (walls) and concrete-lined bottoms. These stream channel improvements have significantly reduced the area of previous stream channels and reduce Main Basin recharge. A number of off-stream groundwater replenishment facilities have been established along these stream channels to offset such reductions in recharge. The locations of these water spreading facilities are shown on Figure 5. Some of these facilities are accessible to imported water supplies, while some facilities receive only local runoff.

The paths of the surface streams are mirrored in the soils and in the direction of groundwater movement in the Main Basin. The tributary creeks and washes, carrying smaller amounts of water, generally flow toward the center of the San Gabriel Valley, while the direction of flow of the major streams, the San Gabriel River and the Rio Hondo, is from the mountains in the north to Whittier Narrows in the southwest. In similar fashion, the primary direction of groundwater movement in the Main Basin is from the north to the southwest, with contributing movement generally from the east and west toward the center of the Main Basin as shown on Figure 7. The greatest infiltration and transmissivity rates of soils in the Main Basin are from north to south, with the maximum rates found in the center of the valley along the stream channels. Generally, the Main Basin directs groundwater to the southwest through Whittier Narrows.

## 6.2.2 GROUNDWATER MANAGEMENT

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### CWC 10631(b).

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



(1) *A copy of any groundwater management plan adopted by the urban water supplier ... or any other specific authorization for groundwater management.*

(2) *...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.*

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### **Main Basin – Groundwater Management Plan**

The Main Basin has been adjudicated and management of the local water resources within the Main Basin is based on that adjudication. Management of the water resources in the Main Basin is based upon Watermaster services under two Court Judgments: San Gabriel River Watermaster (River Watermaster)<sup>6</sup> and Basin Watermaster<sup>7</sup>. The City is a party to both Judgments and as such participates in these cases. The City also participates in the Main Basin management described in the Main Basin Watermaster document entitled “Five-Year Water Quality and Supply Plan.” The City is a party in the Long Beach Judgment and as such participations in that case.

The following sections provide a description of the two Judgments and the Five-Year Water Quality and Supply Plan that make up the groundwater management plan for the Main Basin. In addition, this section describes Upper District’s and San Gabriel Basin Water Quality Authority’s (WQA) policies to promote groundwater basin clean-up.

### **Main Basin – Long Beach Judgment**

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<sup>6</sup> Board of Water Commissioners of the City of Long Beach, et al., v. San Gabriel Valley Water Company, et al., Los Angeles County Case No. 722647, Judgment entered September 24, 1965.

<sup>7</sup> Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et al., Los Angeles County Case No. 924128, Judgment entered January 4, 1973.



On May 12, 1959, the Board of Water Commissioners of the City of Long Beach, Central District, and the City of Compton, as plaintiffs, filed an action against the City and 24 other producers of groundwater from the San Gabriel Valley as defendants. This action sought a determination of the rights of the defendants in and to the waters of the San Gabriel River system and to restrain the defendants from an alleged interference with the rights of plaintiffs and persons represented by the Central District in such waters. After six years of study and negotiation a Stipulation for Judgment was filed on February 10, 1965, and the Judgment (Long Beach Judgment) was entered on September 24, 1965. Under the terms of the Long Beach Judgment, the water supply of the San Gabriel River system was divided at Whittier Narrows between San Gabriel Valley upstream and the coastal plain of Los Angeles County downstream. A copy of the Long Beach Judgment can be found in Appendix H.

Under the terms of the Long Beach Judgment, the area downstream from Whittier Narrows (Lower Area), the plaintiffs and those they represent, are to receive a quantity of usable water annually from the San Gabriel River system comprised of usable surface flow, subsurface flow at Whittier Narrows and water exported to the Lower Area. This annual entitlement is guaranteed by the area upstream of Whittier Narrows (Upper Area), the defendants, and provision is made for the supply of Make-up Water by the Upper Area for years in which the guaranteed entitlement is not received by the Lower Area.

Make-up Water is imported water purchased by the Main Basin Watermaster and delivered to agencies in Central District to satisfy obligations under the Long Beach Judgment. The entitlement of the Lower Area varies annually, dependent upon the 10-year average annual rainfall in the San Gabriel Valley for the 10 years ending with the year for which entitlement is calculated.



The detailed operations described in the Long Beach Judgment are complex and requires continuous compilation of data so that annual determinations can be made to assure compliance with the Long Beach Judgment. In order to do this, a three-member Watermaster was appointed by the Court, one representing the Upper Area parties nominated by and through Upper District, one representing the Lower Area parties nominated by and through the Central District, and one jointly nominated by Upper District and Central District. This three-member board is known as the River Watermaster.

The River Watermaster meets periodically during the year to adopt a budget, to review activities affecting water supply in the San Gabriel River system area, to compile and review data, to make determinations of usable water received by the Lower Area, and to prepare its annual report to the Court. The River Watermaster has rendered annual reports for the water years 1963-64 through 2014-15 and operations of the river system under that Court Judgment and through the administration by the River Watermaster have been satisfactory since its inception.

One major result of the Long Beach Judgment was to leave the Main Basin free to manage its water resources so long as it meets its downstream obligation to the Lower Area under the terms of the Long Beach Judgment. Upper District intervened in the Long Beach case as a defendant to enforce the provisions of a Reimbursement Contract, which was incorporated into the Long Beach Judgment to assure that any Make-up Water obligations under the terms of the Long Beach Judgment would be satisfied.

### **Main Basin – Main Basin Judgment**

The Upper Area then turned to the task of developing a water resources management plan to optimize the conservation of the natural water supplies of the area.



Studies were made of various methods of management of the Main Basin as an adjudicated area and a report thereon was prepared for the Upper San Gabriel Valley Water Association, an association of water producers in the Main Basin. After due consideration by the Association, Upper District was requested to file as plaintiff, and did file, an action on January 2, 1968, seeking an adjudication of the water rights of the Main Basin and its Relevant Watershed. After several years of study (including verification of annual water production) and negotiations, a stipulation for entry of Judgment was approved by a majority of the parties, by both the number of parties and the quantity of rights to be adjudicated. Trial was held in late 1972 and the Judgment (Main Basin Judgment) was entered on January 4, 1973. The Main Basin Judgment was most recently amended on June 21, 2012. A copy of the Main Basin Judgment, updated as of June 2012, is located in Appendix I.

Under the terms of the Main Basin Judgment all rights to the diversion of surface water and production of groundwater within the Main Basin and its Relevant Watershed were adjudicated. The Main Basin Judgment provides for the administration of the provisions of the Main Basin Judgment by a nine-member Main Basin Watermaster. Six of those members are nominated by water producers (producer members) and three members (public members) are nominated by the Upper District and San Gabriel District, which overlie most of the Basin. The nine-member board employs a staff, an attorney and a consulting engineer. The Main Basin Watermaster holds public meetings on a regular monthly basis throughout the year. A copy of the Main Basin Watermaster's Rules and Regulations is located in Appendix J.

The Main Basin Judgment does not restrict the quantity of water, which parties may extract from the Main Basin. Rather, it provides a means for replacing all annual extractions in excess of a Party's annual right to extract water with Supplemental Water. The Main Basin Watermaster annually establishes an Operating Safe Yield for the Main Basin which is then used to allocate to each Party its portion of the Operating Safe Yield



which can be produced free of a Replacement Water Assessment. If a producer extracts water in excess of its right under the annual Operating Safe Yield, it must pay an assessment for Replacement Water, which is sufficient to purchase one acre-foot of Supplemental Water to be spread in the Main Basin for each acre-foot of excess production. All water production is metered and is reported quarterly to the Main Basin Watermaster.

In addition to Replacement Water Assessments, the Main Basin Watermaster levies an Administration Assessment to fund the administration of the Basin management program under the Court Judgment and a Make-up Obligation Assessment in order to fulfill the requirements for any make-up Obligation under the Long Beach Judgment and to supply fifty percent of the administration costs of the River Watermaster service. The Main Basin Watermaster levies an In-lieu Assessment and may levy special Administration Assessments.

Water rights under the Main Basin Judgment are transferable by lease or purchase so long as such transfers meet the requirements of the Judgment. There is also provision for Cyclic Storage Agreements by which Parties and non-parties may store imported supplemental water in the Main Basin under such agreements with the Main Basin Watermaster pursuant to uniform rules and conditions and Court approval.

The Amended Main Basin Judgment provides that the Main Basin Watermaster will, insofar as practicable, spread imported water in the Main Basin to maintain the groundwater elevation at the Baldwin Park Key Well<sup>8</sup> (Key Well) above 200 feet. Under the terms of the Long Beach Judgment, any excess surface flows that pass through the Main Basin at Whittier Narrows to the Lower Area (which is then conserved in the Lower

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<sup>8</sup> The Baldwin Key Well is a monitoring well located in the City of Baldwin Park used to determine the trends in the groundwater levels throughout the Main Basin.



Area through percolation to groundwater storage) is credited to the Upper Area as Usable Surface Flow.

### **Main Basin – Operations of the Groundwater Basin**

Through the Long Beach Judgment and the Main Basin Judgment, operations of the Main Basin are optimized to conserve local water to meet the needs of the parties of the Main Basin Judgment.

Typically, water producers within Upper District rely upon groundwater from Main Basin for their water supply. The City of Alhambra has agreed to receive treated, imported water as part of the Cooperative Water Exchange Agreement (CWEA) to reduce the groundwater extractions from the western portion of the Main Basin and the associated drawdown concerns.

Imported water for groundwater replenishment is delivered through the flood control channels and diverted and spread at spreading grounds through Main Basin Watermaster's agreement with the Los Angeles County Department of Public Works (DPW). Groundwater replenishment utilizes imported water and is considered Replacement Water under the terms of the Main Basin Judgment. It can be stored in the Main Basin through Cyclic Storage agreements, authorized by terms of the Main Basin Judgment, but such stored water may be used only to supply Supplemental Water to the Main Basin Watermaster.

The Main Basin Watermaster has entered into a Cyclic Storage Agreement with each of the three municipal water districts. One is with Metropolitan and Upper District, which permits Metropolitan to deliver and store imported water in the Main Basin in an amount not to exceed 100,000 acre-feet for future Replacement Water use. The



second Cyclic Storage Agreement is with Three Valleys District and permits Metropolitan to deliver and store up to 40,000 acre-feet for future Replacement Water use. The third is with San Gabriel District and contains generally the same conditions as the agreement with Metropolitan except that the stored quantity is not to exceed 50,000 acre-feet.

Imported Make-up Water has been delivered to lined stream channels and conveyed to the Lower Area. Make-up Water is required to be delivered to the Lower Area by the Upper Area when the Lower Area entitlement under the Long Beach Judgment exceeds the usable water received by the Lower Area. Imported water is used to fulfill the Make-up Water Obligation when the amount of Make-up Water cannot be fulfilled by reimbursing the Lower Area interests for their purchase of recycled water. The amount of recycled water for which reimbursement may be made as a delivery of Make-up Water is limited by the terms of the Long Beach Judgment to the annual deficiency in Lower Area Entitlement water or to 14,735 acre-feet, whichever is the lesser quantity.

### **Main Basin – Five-Year Water Quality and Supply Plan**

The Main Basin Watermaster was created in 1973 to resolve water issues that had arisen among water users in the San Gabriel Valley. Main Basin Watermaster's mission was to generally manage the water supply of the Main Basin. During the late 1970s and early 1980s, significant groundwater contamination was discovered in the Main Basin. The contamination was caused in part by past practices of local industries that had carelessly disposed of industrial solvents referred to as VOCs as well as by agricultural operations that infiltrated nitrates into the groundwater. Cleanup efforts were undertaken at the local, state, and federal level.



Local water agencies adopted a joint resolution in 1989 regarding water quality issues that stated Main Basin Watermaster should coordinate local activities aimed at preserving and restoring the quality of groundwater in the Main Basin. The joint resolution also called for a cleanup plan. In 1991, the Court granted Main Basin Watermaster the authority to control pumping for water quality purposes. Accordingly, Main Basin Watermaster added Section 28 to its Rules and Regulations regarding water quality management. The new responsibilities included development of a Five-Year Water Quality and Supply Plan, updating it annually, submitting it to the California Regional Water Quality Control Board, Los Angeles Region, and making it available for public review by November 1 of each year. A copy of the most recent Five-Year Water Quality and Supply Plan (excluding its appendices) is located in Appendix K.

Main Basin Watermaster prepares and annually updates the Five-Year Water Quality and Supply Plan in accordance with the requirements of Section 28 of the Rules and Regulations. The objective is to coordinate groundwater-related activities so that both water supply and water quality in the Main Basin are protected and improved. Many important issues are detailed in the Five-Year Plan, including how Main Basin Watermaster plans to:

1. Monitor groundwater supply and quality;
2. Develop projections of future groundwater supply and quality;
3. Review and cooperate on cleanup projects, and provide technical assistance to other agencies;
4. Assure that pumping does not lead to further degradation of water quality in the Basin;
5. Address Perchlorate, N-nitrosodimethylamine (NDMA), and other emerging contaminants in the Basin;



6. Develop a cleanup and water supply program consistent with the U.S. Environmental Protection Agency (USEPA) plans for its San Gabriel Basin Superfund sites; and
7. Coordinate and manage the design, permitting, construction, and performance evaluation of the Baldwin Park Operable Unit (BPOU) cleanup and water supply plan.

The Main Basin Watermaster, in coordination with Upper District, has worked with state and federal regulators, along with local water companies to clean up water supplies. Section 28 of the Main Basin Watermaster's Rules and Regulations require all producers (including the City) to submit an application to 1) construct a new well, 2) modify an existing well, 3) destroy a well, or 4) construct a treatment facility. The Main Basin Watermaster prepares a report on the implications of the proposed activity. As a party to the Main Basin Judgment, the City reviews a copy of these reports and is provided the opportunity to submit comments on the proposed activity before the Main Basin Watermaster Board takes final action.

### **Main Basin – Water Quality Authority 406 Plan**

The WQA was established by the State Legislature on February 11, 1993 to develop, finance and implement groundwater treatment programs in the Main Basin. Section 406 of the WQA Act requires the WQA "to develop and adopt a basinwide groundwater quality management and remediation plan" that is required to be consistent with the EPA's National Contingency Plan ("NCP") and Records of Decision ("ROD") and all requirement of the Los Angeles Regional Water Quality Control Board ("LARWQCB"). According to the WQA Act, the Section 406 Plan, which is incorporated in this Plan by reference, must include:

- 1) Characterization of Basin contamination;



- 2) A comprehensive cleanup plan;
- 3) Strategies for financing the design, construction, operation and maintenance of groundwater cleanup facilities;
- 4) Provision for a public information program; and
- 5) Coordination of activities with federal, state, and local entities.

WQA reviews and adopts the Section 406 Plan on an annual basis and as necessary, makes revisions according to changing regulatory, political and/or funding environments.

In support of the Section 406 Plan, WQA also adopts an annual fiscal year budget (July 1 through June 30) which includes all projects (actual or planned) WQA is facilitating through its participation during that time period. The budget identifies the various funding sources, and combinations thereof, to ensure full funding for each project (capital and/or O&M) can be achieved.

### **Sustainable Groundwater Management Act**

The 2014 Sustainable Groundwater Management Act (SGMA) directed DWR to establish initial groundwater basin priorities for the basins identified and defined in DWR's Bulletin 118. DWR finalized the basin prioritization in June 2014 through the California Statewide Groundwater Elevation Monitoring (CASGEM)<sup>9</sup> program. The CASGEM basin prioritization program is being used by DWR to focus resources towards implementing legislation to require all groundwater basins be monitored for seasonal and long-term groundwater elevation trends. DWR plans to evaluate the status of groundwater level monitoring in "High" or "Medium" priority groundwater basins. If DWR determines that groundwater levels in all or part of a High or Medium

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<sup>9</sup> [http://www.water.ca.gov/groundwater/casgem/basin\\_prioritization.cfm](http://www.water.ca.gov/groundwater/casgem/basin_prioritization.cfm)



Priority basins are not being monitored, DWR will work cooperatively with local entities to establish a monitoring program. Compliance with DWR requirements allows the basin monitoring entities to be eligible to receive State water grants or loans. The Main San Gabriel (Basin 4-13) groundwater basin is identified through CASGEM as a “high” priority basin.

### 6.2.3 OVERDRAFT CONDITIONS

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CWC 10631(b).

*(2) For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, 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 eliminate the long-term overdraft condition.*

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The City produces groundwater from the Main Basin, which is an adjudicated basin as discussed in Section 6.2.2. The City is not required by DWR to complete Section 6.2.3.

### 6.2.4 HISTORICAL GROUNDWATER PUMPING

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CWC 10631(b).

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



*(3) 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.*

### **Main Basin – Historical Pumping**

As discussed in Section 6.2, the City's Main Basin active wells include Graves Well No. 2, Wilson Well No. 3, and Wilson Well No. 4. The City's historical groundwater production in the Main Basin over the past five years is shown on Table 6-1. The groundwater supply from the Main Basin is pumped to the City's storage reservoirs and then delivered to the City's customers. The City's groundwater production from the Main Basin from FY 2010-11 to FY 2014-15 has averaged approximately 4,300 AFY.

As noted in Section 6.2.2, the Main Basin is managed by the Main Basin Watermaster. Section 42, Basin Operating Criteria, of the Main Basin Amended Judgment states in part "...Watermaster shall spread Replacement Water, insofar as practicable, to maintain the water level at the Key Well above Elevation two hundred (200)." Figure 6 shows the historical fluctuation of the Key Well elevation and illustrates since the Main Basin was adjudicated in 1973, it generally operated between an elevation 250 feet and 200 feet above MSL. Furthermore, at an elevation of 174 feet above MSL at the Key Well, which represents the historical low, the Main Basin has about 7,400,000 acre-feet of available storage. During the period of management under the Judgment, significant drought events have occurred from 1969 to 1977, 1983 to 1991, 1998 to 2004, 2006 to 2009, and 2011 to 2015. In each drought cycle the Main



Basin has been managed to maintain water levels. A supply and demand assessment of the City's Main Basin supplies is provided in Section 7.3.

### 6.3 SURFACE WATER

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

### 6.4 STORMWATER

The City does not use stormwater to meet its water demands.

### 6.5 WASTEWATER AND RECYCLED WATER

The City does not have access to recycled water supplies due to the lack of infrastructure to convey recycled water supplies to the City. Subject to the availability of recycled water, the City would construct transmission and distribution facilities to deliver recycled water to customers within its service area.

#### 6.5.1 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...*

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The City does not have access to recycled water supplies due to the lack of infrastructure to convey recycled water supplies to the City. However, the City is a member agency, and is located within the service area of Upper District, which provides recycled water service.

Upper District has developed a recycled water program to provide direct delivery of recycled water to serve non-potable demands in the southerly-most portion of its service area, thereby offsetting reliance on imported water supplies. Upper District's recycled water program is in various stages ranging from completed projects to planned and conceptual options. Recycled water supply is obtained from the two water reclamation plants described in the following section.

## 6.5.2 WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL

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### CWC 10633(a).

*(Describe) 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.*

### CWC 10633(b).

*(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.*

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Wastewater generated by the City is treated by the Sanitation Districts of Los Angeles County (LACSD). LACSD's water reclamation plants are not located within the City's service area. The water reclamation plants serving the City include the Whittier



Narrows Water Reclamation Plant (WNWRP) and the Joint Water Pollution Control Plant (JWPCP), however, the percentage breakdown between these two plants in treating the City's wastewater is unknown. Based on information provided by LACSD, it is estimated approximately 60 gallons per person per day of wastewater is generated within LACSD's service area in the vicinity of the City's service area. Based on a 2015 population of approximately 24,040 within the City's service area, the estimated amount of wastewater collected within the City's service area is approximately 1.4 million gallons per day (about 1,616 AFY), as shown in Table 6-2.

The WNWRP began operations in 1962 and has a treatment capacity of about 15 MGD. The WNWRP provides coagulated, filtered and disinfected tertiary effluent. All wastewater treated at the WNWRP meets recycled water standards. Approximately 99 percent of treated water at the WNWRP is reused in a recycled water project. The WNWRP serves a population of approximately 150,000 people. The method of disposal when treated recycled water is not used (non-recycled) is discharge to the San Gabriel River/Rio Hondo and eventually flows to the ocean.

LACSD's JWPCP, which began operation in 1928, 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. Though highly treated, effluent from the JWPCP does not meet recycled water standards and is therefore not re-used for such purposes. However, all water discharged to the ocean is monitored to ensure compliance with applicable local, state, and federal standards for discharge water.



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### 6.5.3 RECYCLED WATER SYSTEM

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**Section 10633**

- (c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use*
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The City does not have access to recycled water supplies due to the lack of infrastructure to convey recycled water to the City. Subject to the availability of recycled water, the City would evaluate transmission and distribution facilities to deliver recycled water to customers within its service area.

### 6.5.4 RECYCLED WATER BENEFICIAL USES

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**Section 10633**

- (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*

**Section 10633**

- (e) (Provide) a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.*
-



Subject to the availability of recycled water, the City would evaluate transmission and distribution facilities to deliver recycled water to customers within its service area. Potential uses of recycled water include landscape irrigation at the Arroyo Golf Course and Arroyo Ball Park. An estimated 30 acre-feet per year of recycled water could be used to irrigate the Arroyo Golf Course and about 18 acre-feet per year of recycled water could be used to irrigate the Arroyo Ball Park.

The City anticipates the access to recycled water supplies from the City of Pasadena, where the City of Pasadena has an agreement in place with the City of Glendale to provide up to 6,000 acre-feet of non-potable water annually to the City of Pasadena from the Los Angeles-Glendale Water Reclamation plant. This water is tertiary treated through a three-step process. City of Pasadena is developing plans to construct a new distribution system to deliver non-potable water from the Los Angeles-Glendale Water Reclamation Plant to the City of Pasadena. Phase 1 of the proposed Pasadena Non-Potable Water Project includes connections to four customers with large irrigation demands: Art Center College of Design, Brookside Golf Course, Rose Bowl Stadium, and Brookside Park. Phase 2 will include the City of Pasadena's Glenarm Power Plant which will use the water for cooling and processes in place of potable water, saving millions of gallons of water annually.

Table 6-5 indicates the City did not use recycled water in 2015 and did not project recycled water would be used in its 2010 Plan.



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

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### Section 10633

- (f) *(Describe the) 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) *(Provide 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.*
- 

Upper District has conducted studies to identify potential direct users of recycle water in the City's service area. However, the City could not directly benefit from any recycling project at this time due to its distance from the source of supply. Therefore, it is premature to quantify financial incentives and plans for optimizing the use of recycled water.

Upper District provides wholesale deliveries of recycled water to member agencies. Upper District supplies treated recycled water through Upper District's Phase I (Rosehills), Phase IIA (Whittier Narrows and Rosemead), and Phase IIB (City of Industry) recycled water projects. Upper District will continue to study future recycled water expansion projects, including recycled water deliveries to the City.

Upper District is also developing the Indirect Reuse Replenishment Project (IRRP), which would replenish the Main Basin groundwater with up to 10,000 AFY of treated recycled water. The IRRP would pump treated recycled water from SJCWRP to



the Santa Fe Spreading Grounds through a proposed 9-mile pipeline adjacent to the San Gabriel River. It is estimated the IRRP will be completed by 2020.

## 6.6 DESALINATED WATER OPPORTUNITIES

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### *Section 10631(h)*

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

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The City does not have opportunities to incorporate desalinated water into its supply. The City pumps groundwater from the Main Basin which is low in Total Dissolved Solids (TDS) and does not require desalination. The annual average TDS value is for San Gabriel's Main Basin Wells is approximately 338 mg/L, according to the draft Main Basin Salt and Nutrient Management Plan. The SWRCB-DDW recommended level is 500 mg/l and water can be provided for long-term domestic use with TDS concentrations of up to 1,000 mg/l. Due to the high quality (low TDS concentration) of the groundwater, 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 potential water supply source in the future, through coordination with other agencies that have ocean desalination programs.

## 6.7 TRANSFER OPPORTUNITIES

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**Section 10631(d)**

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

**6.7.1 EXCHANGES**

The City does not have any current or planned water exchange opportunities.

**6.7.2 TRANSFERS**

The City plans to receive a temporary lease of Main Basin water rights. This temporary lease of water rights provides the City with about 2,000 acre-feet of water available to pump for the next five years.

As a Party to the Main Basin Judgment, the City can pump from the Main Basin. The Main Basin Judgment does not restrict the quantity of groundwater that can be produced, but provides for a Replacement Water assessment for production in excess of water rights. In addition, the City may enter into a Cyclic Storage agreement, described in Chapter 6.2.2, with the Main Basin Watermaster to store imported water in the Main Basin for a period of up to five years to be used to offset a future Replacement Water requirement.

**6.7.3 EMERGENCY INTERTIES**

The City has three (3) interconnections with the City of Pasadena, as well as one Metropolitan connection (USG-2), that can serve as short-term emergency exchange



opportunities. Emergency 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.

## 6.8 FUTURE WATER PROJECTS

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### *Section 10633*

*(g) ...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 average, single-dry, and multiple-dry 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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The City plans to rehabilitate its Wilson Well No. 2. The anticipated well yield is 750 gpm and additional supply to the City is about 2-5 acre-feet. The City awarded the Wilson Well No. 2 project in May 2016. The City also plans to install a VOC treatment system at Graves Well No. 2, which historically had VOC concentrations detected above MCLs. The anticipated well yield is 800 gpm and additional supply to the City is about 2 acre-feet. In addition, the City will replace its reservoir at the Graves wellsite. The reservoir capacity will not change from the original reservoir and will remain at 1.0 million gallons. As of May 2016, the Graves Well No. 2 rehab and reservoir replacement project is in the design phase and is anticipated to be completed in 2018.



The City has also completed a preliminary assessment of Raymond and Bilicke overhead steel tanks. The results from the assessment indicate the need for structural upgrade, which the City intends to rehabilitate within a couple of years.

## 6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

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### *Section 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 10631(a).*
- (4) (Provide 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.*
- 

As discussed in Chapter 6, the City has three sources of water supply: groundwater, treated imported water, and purchased water from adjacent City of Pasadena. The actual quantities of the water supply sources available to the City during fiscal year 2014-15 are summarized in Table 6-8. The reliable quantities of projected water supply sources available to the City in five-year increments through 2040 during average years are summarized in Table 6-9.

The City has an interest to continue with water conservation efforts, however, the City production rate is higher than its adjudicated water rights, as such, it is the intent of the City to explore entitlement for additional water rights.



## **6.10 CLIMATE CHANGE IMPACTS TO SUPPLY**

The California Water Code does not require the City to address climate change. However, a discussion on single-dry year and multiple dry years is provided in Section 7.2 and a discussion on potential impacts to basin management practices is provided in Section 6.2. A discussion regarding the regional impacts of climate change on demand and supply are provided in Metropolitan's 2015 Plan, which is incorporated by reference.



## CHAPTER 7

### WATER SUPPLY RELIABILITY ASSESSMENT

#### 7.1 CONSTRAINTS ON WATER SOURCES

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*Section 10631(c)*

*(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

*Section 10634*

*The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.*

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The City has not experienced water supply constraints or deficiencies. Management of the City's primary groundwater supplies is based on adjudications, which are described in Section 6.2.2. The City has the legal right to pump groundwater from the Main Basin; can purchase imported water from the Metropolitan through Upper District; and can purchase water from the City of Pasadena through three interconnections. The quality of the City's groundwater supply and imported water supply from Metropolitan is discussed below.



### **7.1.1 GROUNDWATER**

Currently, the City's groundwater supply is provided from three wells (Graves Well No. 2, Wilson Well No. 3, and Wilson Well No. 4), as described in Section 6.2. A fourth well, Wilson Well No. 2, is planned to be rehabilitated. All of the City's wells are located in the Main Basin.

As discussed in Chapter 2, VOCs and nitrate have been detected at concentrations above the MCLs at the City's wells. The City has maintained a blending program to manage VOCs and nitrate concentrations in its water supply. The City plans to install VOC treatment at Graves Well No. 2 and replace a reservoir at the Graves wellsite. Under the existing blending plan approved by SWRCB-DDW, all water delivered to the City's customers meets SWRCB-DDW guidelines and is not expected to change over the next 20 years. A copy of the City's 2014 Consumer Confidence Report is provided in Appendix L.

### **7.1.2 IMPORTED WATER FROM METROPOLITAN**

Imported water from Metropolitan is delivered to the City by Upper District. Metropolitan's water quality meets all state and federal water quality standards. Water quality plays a vital role in Metropolitan's availability of a useful water supply. Water quality affects the reliability of groundwater storage, recycled water and impacts the CALFED Bay-Delta. To the extent possible, Metropolitan responds to water quality concerns by concentrating on protecting the quality of the source water and developing water management programs that maintain and enhance water quality. As discussed in Metropolitan's 2015 Regional Plan, Metropolitan anticipates no significant reductions in water supply availability from these sources due to water quality concerns.



Metropolitan's efforts and water quality data are explained in its 2015 Regional Plan, which is incorporated by reference.



## 7.2 RELIABILITY BY TYPE OF YEAR

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### *Section 10631(c)*

- (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:
- (a) an average water year,
  - (b) a single dry water year,
  - (c) multiple dry water years.
- 

Information regarding the reliability of the City's groundwater supplies is based on the historical precipitation data in the vicinity of the City's service area. As indicated in Section 3.3, the historical average rainfall in the vicinity of the City's service area is about 17.4 inches. Fiscal year 2009-10 represents an average or normal water year for the City in which the total amount of rainfall was about 20.2 inches. A single dry year for the City was represented in fiscal year 2013-14 in which the total amount of rainfall was about 6.3 inches. A multiple dry year period for the City is represented from fiscal year 2011-12 to fiscal year 2014-15, where the total amount of rainfall was about 10.9 inches, 8.0 inches, 6.3 inches and 11.4 inches, respectively. Table 7-1 summarizes these "base years" for average, single dry, and multiple dry years and provides the total amount of water supplies available to the City during those base years. The City's historical water supply tabulation provided in Section 6.1 shows that during these base years (for average year, single dry year and multiple dry years), groundwater production remained stable. A single dry year or a multiple dry year period will not compromise the City's ability to provide a reliable supply of water to its customers.



### 7.2.1 TYPES OF YEARS

The City's base years for average, single dry, and multiple dry years are provided in Section 7.2 and are summarized in Table 7-1. As indicated in Section 6.1, the City's groundwater supplies were sufficient in meeting the City's historical water demands under all base years, including during normal, single, and multiple dry years. A normal or average year was based on a year during the past 20 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 multiple dry year 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 the first year of a multiple dry year period during the past 20 years. The multiple dry year period was based on a period of three to four consecutive dry years during the past 20 years.

### 7.2.2 AGENCIES WITH MULTIPLE WATER SOURCES

The City primarily obtains its water supply from groundwater wells located in the Main Basin. As discussed in Section 7.3 and shown in Table 7-2, Table 7-3, and Table 7-4, a single dry year or a multiple dry year period will not compromise the City's ability to provide a reliable supply of water to its customers.

## 7.3 SUPPLY AND DEMAND ASSESSMENT

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#### *Section 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 total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry 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.*

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As previously discussed, the City's projected normal year water demands over the next 25 years in five-year increments were based on the City's 2020 Urban Water Use Target of 150 GPCD. The ratio of water supplies available to the City during a historical normal year in 2009-10 (or 4,754 AF) and during a historical single dry year in 2013-14 (or 4,572 AF) was used to estimate the City's projected water demands during single dry years. The ratio of water supplies available to the City during a historical normal year in 2009-10 (or 4,754 AF) and a historical multiple dry year period from 2011-12 to 2014-15 (or 4,446 AF, 4,569 AF, 4,572 AF, and 3,872 AF, respectively) was used to estimate the City's projected water demands during a multiple dry year 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, single, and multiple dry years. These tables indicate the City can meet water demands during normal, single dry, and multiple dry years over the next 25 years.

#### **7.4 REGIONAL SUPPLY RELIABILITY**

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##### **Section 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.*



As noted in Section 6.2.2, the Main Basin is managed by the Main Basin Watermaster. During the period of management under the Judgment, significant drought events have occurred. In each drought cycle the Main 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 Main Basin for adequate supply over the next 25 years under single year and multiple year droughts.

Chapter 6 provides a description of the management of groundwater resources in the Main Basin, as well as information on basin management. Chapter 6 also demonstrates the management structure of the Main Basin provides a reliable source of groundwater supply for the City during average, single-dry and multiple-dry water years. Historical data indicates the Main Basin has been well managed for over 30 to 40 years of adjudication, resulting in a stable and reliable water supply. There are no contemplated basin management changes, other than increasing direct use of recycled water (see Section 6.5) and the planned use of recycled water for groundwater replenishment in the Main Basin to reduce the need to import water from other regions. Therefore, the groundwater supplies in the Main Basin are deemed reliable.



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## CHAPTER 8

### WATER SHORTAGE CONTINGENCY PLAN

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**Section 10632**

- (a) *The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier.*
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In May 2014, the City adopted Ordinance No. 2268, which includes the Water Conservation and Supply Shortage Plans and Enforcement, as shown in Appendix M. As a water purveyor, the City must provide the minimum health and safety water needs of the community at all times. The water shortage response is designed to provide a minimum of 50 percent of the normal supply during a severe or extended water shortage. Ordinance No. 2268 is in response to the Water Conservation Act of 2009 and the California Governor's Drought Emergency Declaration in January 2014.

#### 8.1 STAGES OF ACTION

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**Section 10632(a)**

- (1) *Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*
-



The City has developed a 'four-stage' rationing plan including up to 50 percent reduction in water supply. The City's plan includes voluntary and mandatory stages. Stage 2 Shortage was implemented by the City in April 2015.

### **Stage 1 Shortage**

A Stage 1 shortage occurs when the City experiences moderate water supply shortage conditions. Due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. During this stage, the City will implement a reduction goal of 10 percent for all customers.

### **Stage 2 Shortage**

A Stage 2 shortage occurs when the City experiences serious water supply shortage conditions. Due to drought or other water supply conditions, a water supply shortage or threatened shortage exists and demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. During this stage, the City will implement a reduction goal of 20 percent for all customers.

In April 2015, due to ongoing drought conditions, Stage 2 Shortage was implemented by the City.

### **Stage 3 Shortage**

A Stage 3 shortage occurs when the City experiences extreme water supply shortage conditions. Due to drought or other water supply conditions, a water supply



shortage or threatened shortage exists and demand reduction is necessary to make more efficient use of water and appropriately respond to existing water conditions. During this stage, the City will implement a reduction goal of 30 percent for all customers.

### **Stage 4 Shortage**

A Stage 4 shortage occurs when the City experiences emergency water supply shortage conditions. Under the declaration by the City council of a Stage 4 water supply shortage, the department will implement the mandatory Stage 4 conservation measures. During this stage, the City will implement a reduction goal of up to 50 percent for all customers.

## **8.2 PROHIBITIONS ON END USES**

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### ***Section 10632(a)***

- (4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning*
  - (5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.*
-



## 8.2.1 LANDSCAPE IRRIGATION

### Effective at All Times

- Spray irrigation shall be scheduled between 5:00 p.m. and 9:00 a.m.
- Spray irrigation of lawn, landscape or other vegetated area during periods of rain is prohibited.

### Stage 1

- Watering or irrigating of lawn, landscape or other vegetated area is limited to three designated days per week.

### Stage 2

- Watering or irrigating of lawn, landscape or other vegetated area is limited to two designated days per week.

### Stage 3

- Watering or irrigating of lawn, landscape or other vegetated area is limited to one designated day per week. But does not apply to the following categories of use:
  - Use of low drip type irrigation systems where no emitter produces more than 2 gallons of water per hour
  - Use of hand-held bucket or container
  - Watering for very short period of time for the purpose of adjusting or repairing an irrigation system
  - Maintenance of vegetation intended for consumption
  - Maintenance of existing landscape necessary for fire protection
  - Maintenance of existing landscape for soil erosion control



- Maintenance of plant materials identified as rare or essential to protected species
- Maintenance of landscape within active public parks and playing fields, school grounds, golf course, cemeteries and day care centers, provided irrigation does not exceed two days per week.
- Actively irrigated habitat restoration or environmental mitigation projects.

#### **Stage 4**

- Watering or irrigating of lawn, landscape or other vegetated area is prohibited. But does not apply to the following categories of use:
  - Maintenance of vegetation intended for consumption
  - Maintenance of existing landscape necessary for fire protection
  - Maintenance of existing landscape for soil erosion control
  - Maintenance of plant materials identified as rare or essential to protected species
  - Maintenance of landscape within active public parks and playing fields, school grounds, golf course, cemeteries and day care centers, provided irrigation does not exceed two days per week.

### **8.2.2 COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL (CII)**

#### **Effective at All Times**

- No restaurant or other public place where food is sold, served or offered for sale shall serve drinking water to any customer unless requested by the customer.



- Food preparation establishments, such as restaurants, cafes and cafeterias, are prohibited from using non-water conserving dish washing spray valves.

### 8.2.3 SWIMMING POOLS AND SPAS

#### Stage 4

- Refilling of more than one foot and initial filling of residential swimming pools or outdoor spas is prohibited.

### 8.2.4 DEFINING WATER FEATURES

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#### Section 10632

*(b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the 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.*

#### Health and Safety Code Section 115921

*As used in this article the following terms have the following meanings: (a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and aboveground structures and includes, but is not limited to, hot tubs, spas, portable spas, and non-portable wading pools.*

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#### Effective at All Times

- No water shall be used to clean, fill or maintain levels in decorative fountains, ponds, or other similar aesthetic structures unless the structure uses a recirculating water system.



### **Stages 2, 3 and 4**

- Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life.

### **8.2.5 OTHER**

#### **Effective at All Times**

- Washing hard or paved surfaces is prohibited except as follows:
  - Necessary to alleviate safety or sanitary hazards and use of hand-held bucket or container or hose with shut-off nozzle
  - When using a low volume high pressure cleaning machine equipped with recycled water or low volume, high pressure water broom
- It shall be unlawful for any reason to allow water to run so as to have water mitigate onto sidewalk, driveway, street, alley, gutter or ditch.
- It shall be unlawful for anyone to wash any vehicle, trailer or boat by allowing any hose to run continuously.
- Repair all leaks more than seven days of receiving notice from the City department is prohibited.
- Installation of non-recirculating equipment in Commercial Car Wash and Laundry Systems is prohibited.
- Installation of single pass cooling systems is prohibited in buildings requesting new service.

### **Stage 1**



- All leaks, breaks or other malfunctions shall be repaired within 72 hours of notification by the City department.

### **Stage 2**

- All leaks, breaks or other malfunctions shall be repaired within 48 hours of notification by the City department.

### **Stage 3**

- All leaks, breaks or other malfunctions shall be repaired within 36 hours of notification by the City department.

### **Stage 4**

- All leaks, breaks or other malfunctions shall be repaired within 24 hours of notification by the City department.
- No new potable water service will be provided, no new temporary meters or permanent meters will be provided, and no statements of immediate ability to service or provide potable water service will be issued except under the following circumstances:
  - A valid, unexpired building permit has been issued for the project
  - The project is necessary to protect public health, safety and welfare
  - The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new meter to the satisfaction of the City department

## **8.3 PENALTIES, CHARGES, OTHER ENFORCEMENT OF PROHIBITIONS**

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*Section 10632(a)*

*(6) Penalties or charges for excessive use, where applicable.*

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**Residential Customers and All Other Customers with Water Meters Less than Two Inches**

- First Violation – The City department will issue a written notice of violation.
- Second Violation – A second violation within the preceding 12 calendar months is punishable by a fine of \$100.
- Third Violation – A third violation within the preceding 12 calendar months is punishable by a fine of \$200.
- Fourth and Subsequent Violations – After a fourth or subsequent violation, the department may elect to impose a fine of \$500 and disconnect a customer's service.

**Non-Residential Customers with Water Meters Two Inches or Larger**

- First Violation – The City department will issue a written notice of violation.
- Second Violation – A second violation within the preceding 12 calendar months is punishable by a fine of \$200.
- Third Violation – A third violation within the preceding 12 calendar months is punishable by a fine of \$400.
- Fourth and Subsequent Violations – After a fourth or subsequent violation, the department may elect to impose a fine of \$1,000 and disconnect a customer's service.



## 8.4 CONSUMPTION REDUCTION METHODS

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### *Section 10632(a)*

*(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.*

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During restrictive stages and water use reductions of up to 50 percent, the City will expand its public information campaign to customers to promote conservation and increase the frequency of meter reads. In April 2015, the City declared a Stage 2 “Serious Water Supply Shortage” and informed its customers of the water conservation measures and reduction goal of 28 percent.

## 8.5 DETERMINING WATER SHORTAGE REDUCTIONS

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### *Section 10632(a)*

*(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.*

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Under normal water supply conditions, the City’s water production volumes are recorded daily and reported monthly to the Director of Public Works (Director). Water meters are read every two months, and a one year history of water consumption is



maintained for each account. The production volumes can be reviewed weekly with the Director.

The City also measures and determines reductions in water use by using SWRCB's Drought Response Tool pursuant to SWRCB's [Executive Order B-29-15](#) discussed in Section 8.2. Beginning October 2014, urban water suppliers were required to estimate and report the number of gallons of water per person per day used by residential customers it serves using the tool for submitting monthly water production data. The Drought Response Tool allows the City to calculate residential GPCD on a monthly basis for comparison with the City's baseline year 2013, which is set by the SWRCB.

## 8.6 REVENUE AND EXPENDITURE REPORTS

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### *Section 10632(a)*

*(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.*

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### 8.6.1 DROUGHT RATE STRUCTURE AND SURCHARGES

The City's water rate structure is designed to provide adequate reserves to allow operation of the system during periods of low consumption due to water shortages. The rates have been designed to recover fixed costs through the water consumption charges and water efficiency fee. The City generates a positive revenue stream from



continued water sales and maintains a reserve fund. This structure minimizes the City's vulnerability to funding shortages when water consumption levels are reduced.

The City implements a three-tiered rate structure which varies between meter size, which promotes water conservation. The current water rates are provided in Appendix N.

### **8.6.2 USES OF FINANCIAL RESERVES**

The City historically maintains a financial reserve in its water fund. The City may use financial reserves for water system expenditures to make up for shortfalls in water revenue associated with unanticipated reduced water sales.

## **8.7 RESOLUTION OR ORDINANCE**

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*Section 10632(a)*

*(8) A draft water shortage contingency resolution or ordinance.*

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In response to the Water Conservation Act of 2009 and the Governor of California's Drought Emergency Declaration, the City adopted Ordinance No. 2268 in May 2014 (see Appendix M). Ordinance No. 2268 establishes guidelines for water use efficiency practices and water conservation measures that will reduce the overall water consumption within the City's service boundaries. In April 2015, the City declared a Stage 2 "Serious Water Supply Shortage" pursuant to Ordinance No. 2268.



## 8.8 CATASTROPHIC SUPPLY INTERRUPTION

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### *Section 10632(a)*

*(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.*

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The City has set up an Emergency Operations Center that would be activated in times of local and regional emergencies. The City maintains its equipment and vehicles in good condition in preparation for responding to emergency conditions. The water system is designed with redundant features in its production, storage and distribution systems, and it has been recently automated by the installation of a telemetry and control system.

The City has prepared an Emergency Response Plan which describes the actions the City will take during a catastrophic interruption of water supplies including, a regional power outage, an earthquake, a fire, emergency chlorination, damage or destruction to its facilities and other disasters. In addition, the City may declare a catastrophic water supply shortage and impose whatever emergency water allocation or conservation actions deemed necessary, in the professional judgment of the director of public works, to protect the reliability and quality of the city's water supply, until the emergency passes or city council takes other action. (Ord. No. 2268)

## 8.9 MINIMUM SUPPLY NEXT THREE YEARS

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### *Section 10632(a)*



*(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.*

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The City's three-year drought sequence was fiscal years 2011-12, 2012-13, and 2013-14. During those years, the City's demand was 4,446, 4,569, and 4,572 acre-feet per year, respectively, as shown on Table 8-4. The City had adequate water supply from groundwater from the Main Basin to meet its demands, as shown on Figure 6. Based on Ordinance No. 2268 and historical data of meeting its demands during multiple dry year periods, it is anticipated the City will be able to provide adequate water to its customers in the next three-year period. Based on the City's demand during the three-year period of fiscal years 2011-12, 2012-13, and 2013-14, the estimated three-year minimum water supply available to the City is 4,446, 4,569, and 4,572 acre-feet per year from groundwater in the Main Basin. Consequently, the City will have adequate supply in an average, single-dry and multiple dry year sequence.



## CHAPTER 9

### DEMAND MANAGEMENT MEASURES

The City is not a member of the California Urban Water Conservation Council (CUWCC). However, the City is a member agency of Upper District, which is a member of the CUWCC. Upper District signed a Memorandum of Understanding (MOU) pledging to implement "Best Management Practices (BMP)," which are cost-effective conservation programs.

For purposes in this Plan, the Best Management Practices are equivalent to Demand Management Measures (DMM). Upper District's commitment to water conservation is upheld through the continuation of projects that conserve water and increase the public's awareness of conservation and other water-related issues. The City recognizes that water conservation and demand management measures are important for the reliability of water sources. The City has made continued efforts to address and comply with all Demand Management Measures (DMM). This chapter addresses DMM implemented by the City and Upper District.

#### 9.1 DEMAND MANAGEMENT MEASURES FOR WHOLESALE AGENCIES

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##### *Section 10632(a)*

(f) *Provide a description of the (wholesale) 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, (provide) 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 DEMAND MANAGEMENT MEASURES FOR RETAIL AGENCIES

### Section 10631(f)

- (A) The narrative shall describe the water demand management measure 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

### [SECTION 10631 (f)(1)(b)(i)]

In May 2014, the City adopted Ordinance No. 2268, which includes the Water Conservation and Supply Shortage Plans and Enforcement, as shown in Appendix M. Ordinance No. 2268 also includes water use efficiency requirements and measures. Under Ordinance No. 2268, the following are water use efficiency requirements that are effective at all times to the City's customers:

- Spray irrigation shall be scheduled between 5:00 p.m. and 9:00 a.m.
- Spray irrigation of lawn, landscape or other vegetated area during periods of rain is prohibited.
- No restaurant or other public place where food is sold, served or offered for sale shall serve drinking water to any customer unless requested by the customer.
- Food preparation establishments, such as restaurants, cafes and cafeterias, are prohibited from using non-water conserving dish washing spray valves.
- No water shall be used to clean, fill or maintain levels in decorative fountains, ponds, or other similar aesthetic structures unless the structure uses a recirculating water system.
- Washing hard or paved surfaces is prohibited except as follows:
  - Necessary to alleviate safety or sanitary hazards and use of hand-held bucket or container or hose with shut-off nozzle
  - When using a low volume high pressure cleaning machine equipped with recycled water or low volume, high pressure water broom



- It shall be unlawful for any reason to allow water to run so as to have water mitigate onto sidewalk, driveway, street, alley, gutter or ditch.
- It shall be unlawful for anyone to wash any vehicle, trailer or boat by allowing any hose to run continuously.
- Repair all leaks more than seven days of receiving notice from the City department is prohibited.
- Installation of non-recirculating equipment in Commercial Car Wash and Laundry Systems is prohibited.
- Installation of single pass cooling systems is prohibited in buildings requesting new service.

## 9.2.2 METERING

[SECTION 10631 (f)(1)(b)(ii)]

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### **CWC 526**

- (a) *Notwithstanding any other provisions 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 the following:*
- (1) *Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.*
-



Meters are installed on all existing service connections and any new service connections, which are partially covered by the new service connection fees. The City's service area is fully developed and only a few new service connections are expected to be installed within the next twenty years.

### **9.2.3 CONSERVATION PRICING**

[SECTION 10631 (f)(1)(b)(iii)]

The City implements a three-tiered rate structure which varies between meter size and promotes water conservation. The current water rates are provided in Appendix N. The number of units allocated under each tier is based on the meter size. For example, for a meter size of  $\frac{3}{4}$  inch, the number of units allocated under Tier 1 is 0 to 15 units of water, Tier 2 is 16 to 30 units of water, and Tier 3 is over 30 units of water. The tiered water rate structure also includes a water efficiency fee based on water consumption, and is used to promote conservation and infrastructure improvements.

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

[SECTION 10631 (f)(1)(b)(iv)]

The City participates in the public information program by posting internet website links on conservation programs that offer incentives and rebates for high-efficiency appliances, and providing access to links such as Bewaterwise.com on the City's internet website. The City also participates in the public information program through campaigns and banners. Information pamphlets and brochures containing valuable water conservation tips are available at the City Hall and are enclosed



periodically in water bills. The City promotes efficient water use at its annual Clean Air and Green Living car show and exposition.

The public information program is also available to the City's customers through Upper District. Upper District promotes water conservation through its many public information programs. Upper District offers conservation brochures and posters, activity booklets, public outreach displays, oral presentations, and workshops to inform the public of conservation efforts. Upper District also raises awareness about water conservation through paid advertising, press releases, news advertisements, media events, and through the Speaker's Bureau. Upper District hosts an annual water awareness festival (Water Fest) to raise public awareness about water conservation, water quality, and other water-related issues. Additional information regarding Upper District's public information programs can be found on Upper District's internet website and Upper District's 2015 UWMP, which is incorporated by reference.

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

[SECTION 10631 (f)(1)(b)(v)]

The City performs routine checks for leaks using leak detection devices, including sounding of fire hydrants and main pipelines. Under the City's leak detection program, monthly monitoring for leaks are conducted in the field. Repairs to leaking water mains or hydrants are performed immediately. The City plans to install an AMR system that will trigger an alarm if a leak is detected.



The City closely monitors its water production and consumption to calculate the amount of “unaccounted-for water.” As discussed in Section 4.3, the unaccounted-for water of the City is about 1 percent, which is considered normal for a water system. Normal water loss can result from activities such as the installation of new water mains, difference in accuracy of meters, discharges from water facilities or water connections, street cleaning and fire department training. If the City notices an increase in unaccounted-for water, the City will investigate the cause and make modifications as necessary.

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

[SECTION 10631 (f)(1)(b)(vi)]

The City funded a Water Conservation Coordinator position with a portion of the adopted tiered water rate structure. The City employs a Management Analyst to perform the function of a water conservation coordinator to implement water conservation efforts by creating an outreach material on water conservation (rebates available and conservation tips). The Management Analyst coordinates outreach events; attends meetings on conservation actions; tracks and analyzes data; makes recommendations to council on water conservation actions; processes internal rebates; develops the City’s Model Water Efficient Landscape Ordinance, parkway ordinance, native tree list, and water conservation ordinance; oversees finances of water conservation fund; and conducts water, landscape, and toilet installation audits.

Customers of the City can participate in conservation programs promoted by Upper District’s water conservation coordinator. The conservation coordinator employed by Upper District promotes water conservation issues and programs. The position was created in 1992 as a full-time position. The water conservation coordinator



does research on water managements practices and advises the Upper District Board Members and its member agencies, including the City, on water conservation matters. More information about Upper District's conservation coordinator can be found in its 2015 Plan, which is incorporated by reference.

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

[SECTION 10631 (f)(1)(b)(vii)]

#### **Water survey programs for single-family residential and multi-family residential customers**

Residential water survey is conducted by the Management Analyst upon request by residents. The City also has a computerized billing system to monitor water consumption data, and if there are unusual variations in consumption the City is alerted. The City's billing system flags unusual consumption which alerts the City of inordinate water use. If the City is alerted of an inordinate water use, a follow-up survey will be scheduled to check for water leaks at the residence. In addition, the water bills sent to each customer contains consumption information for the "same time last year." Inclusion of this information has been helpful to customers by alerting them to unusually high consumption.

### **9.3 IMPLEMENTATION OVER THE PAST FIVE YEARS**

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CWC 10631



(f) 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.

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### 9.3.1 WATER WASTE PREVENTION ORDINANCES

Over the past five years, the City has adopted water conservation measures in Article II and Article III of Chapter 35 of the City of South Pasadena Municipal Code. Article II concerns general water conservation issues and prohibits the following activities:

- hosing down paved areas
- runoff into streets or on adjacent property
- daytime (9:00 a.m. and 5:00 p.m.) watering of landscaping
- washing of vehicles using continuously running hose
- serving water in restaurants without customer request
- failure to repair leaks in a timely manner
- non-recycling decorative fountains.

### 9.3.2 METERING

Over the past five years, the City continued to meter all water sales to its customers. The City does not have any unmetered accounts. Additionally, if there is new development, each unit is individually metered.



### 9.3.3 CONSERVATION PRICING

The City's water rate previously consisted of two components: the commodity charge and the service charge. The City conducted a water rate study in September 2012 and implemented a necessary rate structure for 2013-14, 2014-15, and 2015-16. The City is considering additional rate study to ensure availability of sufficient funds for the next 5 years. The City adopted a three-tiered water rate structure to promote water conservation. The number of units allocated under each tier is based on the meter size. For example, for a meter size of  $\frac{3}{4}$  inch, the number of units allocated under Tier 1 is 0 to 15 units of water, Tier 2 is 16 to 30 units of water, and Tier 3 is over 30 units of water. The tiered water rate structure also includes a water efficiency fee based on water consumption, and is used to promote conservation and infrastructure improvements.

### 9.3.4 PUBLIC EDUCATION AND OUTREACH

Over the past five years, the City participated in the public information program by posting internet website links on conservation programs that offer incentives and rebates for high-efficiency appliances, and providing access to links such as Bewaterwise.com on the City's internet website. The City also participated in the public information program through campaigns and banners. Information pamphlets and brochures containing valuable water conservation tips were available at the City Hall and were enclosed periodically in water bills. The following lists public events and outreach performed by the City:

- Earth day event with water wise garden tour
- Letters and communication to restaurants about only serving water on request, providing window clings, rebate information, and other water conservation tips



- Articles and paid ads in The Quarterly, South Pasadena Review, e-newsletter on water conservation rebates, tips, and outreach events
- Partnering with neighbor agencies for an annual water conservation symposium at Descanso Gardens with lectures and outreach material
- Website and social media campaigns on water conservation
- Giveaways of sponges, pens, pencils to promote water conservation
- Street banners advertising watering days
- Lawn signs placed on City medians with conservation information
- Work with community groups (WIPPA, Rotary, Kiwanis, PEO, South Pasadena Beautiful, Friends of the Nature Park, Girl Scouts, Senior Center, and schools) as guest speakers and providing outreach at events

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

Over the past five years, the City performed routine checks for leaks using leak detection devices, including sounding of fire hydrants and main pipelines. Under the City's leak detection program, monthly monitoring for leaks were conducted in the field. Repairs to leaking water mains or hydrants were performed immediately.

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

The City funded a Water Conservation Coordinator position with a portion of the adopted tiered water rate structure. Customers of the City were able to participate in conservation programs promoted by Upper District's water conservation coordinator. The conservation coordinator employed by Upper District promoted water conservation issues and programs. The water conservation coordinator researched water



management practices and advised the Upper District Board Members and its member agencies, including the City, on water conservation matters.

### 9.3.7 OTHER DEMAND MANAGEMENT MEASURES

Over the past five years, the City uses its computerized billing system to monitor water consumption data, and if there were unusual variations in consumption the City was alerted. The City's billing system flagged unusual consumption which alerted the City of inordinate water use. If the City was alerted of an inordinate water use, a follow-up survey was scheduled to check for water leaks at the residence. In addition, the water bills were sent to each customer contained consumption information for the "same time last year." Inclusion of this information has been helpful to customers by alerting them to unusually high consumption.

## 9.4 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

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### CWC 10631

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

(1)(A) ...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.

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As previously discussed in Section 9.2, the City adopted its Ordinance No. 2268, as shown in Appendix M. The City's 2015 Interim Target was 169 GPCD and the confirmed 2020 Target is 150 GPCD. The City's actual water use during 2015 was 144 GPCD. Consequently, the City is in compliance with the 2015 Interim Target and the



confirmed 2020 Target. Although the City does not need to implement additional DMMs to achieve its confirmed 2020 Target, the City will continue to enforce its Ordinance No. 2268 to prevent future water waste and continue to meet its water use targets.

## 9.5 MEMBERS OF THE CALIFORNIA URBAN WATER CONSERVATION COUNCIL

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### CWC 10631

- (i) *For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.*
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The City is not a member of the CUWCC, and is not required by DWR to complete Section 9.5.



## CHAPTER 10

### PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

#### 10.1 INCLUSION OF ALL 2015 DATA

The data provided in the City's 2015 Plan is provided on a fiscal year basis through June 30, 2015 (as discussed in Section 2.4.2).

#### 10.2 NOTICE OF PUBLIC HEARING

##### 10.2.1 NOTICE TO CITIES AND COUNTIES

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###### **CWC 10621.**

*(b) Every urban water supplier required to prepare a plan shall... at least 60 days prior to the public hearing on the plan ... 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 hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area...*

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As discussed in Section 2.5.2. the City of South Pasadena coordinated the preparation of the Urban Water Management Plan with the County of Los Angeles, the Main San Gabriel Basin Watermaster, the Upper San Gabriel Valley Municipal Water District, California American Water Company, and the City of South Pasadena. The City notified these agencies at least sixty (60) days prior to the public hearing of the preparation of the 2015 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 C.

Additionally, a notice of public hearing was sent to the County of Los Angeles, the Main San Gabriel Basin Watermaster, the Upper San Gabriel Valley Municipal Water District, California American Water Company, and the City of South Pasadena. Copies of the notice of the public hearing are provided in Appendix O.

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

## 10.2.2 NOTICE TO THE PUBLIC

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### **CWC 10642.**

*...Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection...Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code...*

### **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*



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*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 of South Pasadena 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 and electronic newsletter during the weeks of 6/20/16 and 6/27/16. A notice of public hearing was also provided to the City Clerk's office and was posted on the City's website. To ensure that the plan was available for review, the City placed a copy of the 2015 draft Plan at the City Clerk's office located at City Hall and made a copy available for review on its website.

### 10.3 PUBLIC HEARING AND ADOPTION

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**CWC 10642.**

*...Prior to adopting a plan, the urban water supplier shall hold a public hearing 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.*
-



Prior to adopting the 2015 Plan, the City held a public hearing on July 6, 2016 which included input from the community regarding the City's draft 2015 Plan. As part of the public hearing, the City provided information on determination of its water use targets through selection of Target Method 1 (see Section 5.7.1).

The City is committed to the implementation of the 2015 Plan in accordance with Section 10643 of the Act, including the water demand management measures (DMMs) (see Section 9) and water conservation requirements of SBX7-7 (see Section 5). The City continues to be committed to the concept of good water management practice and intends to expand its water conservation program as budgets and staffing allow. The City's water conservation program will periodically be re-evaluated and modified to institute additional methods or techniques as the need arises. The City reviewed implementation of its 2010 Plan and incorporated changes to create the 2015 Plan.

### 10.3.1 ADOPTION

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**CWC 10642.**

*...After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*

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Following the public hearing, the City adopted the draft Plan as its 2015 Plan. A copy of the resolution adopting the 2015 Plan is provided in Appendix P.



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## 10.4 PLAN SUBMITTAL

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### CWC 10621.

*(d) An urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.*

### 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.

*(b) 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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### 10.4.1 SUBMITTING A UWMP TO DWR

Within 30 days of adoption of the 2015 Plan by the City Council, the City of South Pasadena will submit the adopted 2015 Plan to DWR. The 2015 Plan will be submitted through DWR's "Water Use Efficiency (WUE) Data Online Submittal Tool" website.

DWR previously provided a checklist to make determine if an Urban Water Management Plan has addressed the requirements of the California Water Code. The City has completed the DWR checklist by indicating where the required CWC elements can be found within the City's 2015 Plan (See Appendix B).



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

Within 30 days of adoption of the 2015 Plan, the City will also submit all data tables associated with the 2015 Plan through DWR's "Water Use Efficiency (WUE) Data Online Submittal Tool" website.

#### **10.4.3 SUBMITTING A UWMP TO THE CALIFORNIA STATE LIBRARY**

Within 30 days of adoption of the 2015 Plan by the City Council, a copy (CD or hardcopy) of the 2015 Plan will be 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 2015 Plan will be mailed to the following address if sent by regular mail:

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

The 2015 Plan will be mailed to the following address if sent by courier or overnight carrier:

California State Library  
Government Publications Section  
914 Capitol Mall  
Sacramento, CA 95814



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

Within 30 days of adoption of the 2015 Plan by the City Council, a copy of the 2015 Plan will be submitted to the County of Los Angeles Registrar / Records office and the City Clerk's Office. A copy of the letter to the County of Los Angeles will be maintained in the City's file.

#### 10.5 PUBLIC AVAILABILITY

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**CWC 10645.**

*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.*

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Within 30 days after submittal of the 2015 Plan to DWR, the City will make the 2015 Plan available at the City Clerk's Office located at City Hall during normal business hours and on the City's website.

#### 10.6 AMENDING AN ADOPTED UWMP

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**CWC 10621.**

*(b) 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) 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.*

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If DWR requires significant changes to the City's 2015 Plan before it determines the Plan to be "complete," the City will submit an amended or revised Plan. The amendment or revised Plan will undergo adoption by the City's governing board. Within 30 days of adoption, the amendment or revised Plan will then be submitted to DWR, the State of California Library, the County of Los Angeles Registrar / Records office, and the City Clerk's Office.

# TABLES

**Table 2-1 Retail Only: Public Water Systems**

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA1910154	City of South Pasadena	6,168	3,872
<b>TOTAL</b>		<b>6,168</b>	<b>3,872</b>
NOTES:			

**Table 2-2: Plan Identification**

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance <i>if applicable</i> <i>drop down list</i>
<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:			

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
<input type="checkbox"/>	Agency is a wholesaler
<input checked="" type="checkbox"/>	Agency is a retailer
Fiscal or Calendar Year (select one)	
<input type="checkbox"/>	UWMP Tables Are in Calendar Years
<input checked="" type="checkbox"/>	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
7/1	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF
NOTES:	

<b>Table 2-4 Retail: Water Supplier Information Exchange</b>
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The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
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Wholesale Water Supplier Name <i>(Add additional rows as needed)</i>
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Upper San Gabriel Valley Water District (Upper District)
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NOTES:
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**Table 3-1 Retail: Population - Current and Projected**

Population Served	2015	2020	2025	2030	2035	2040( <i>opt</i> )
	24,040	24,157	24,281	24,405	24,530	24,656

NOTES:

**Table 4-1 Retail: Demands for Potable and Raw Water - Actual**

Use Type <i>(Add additional rows as needed)</i>	2015 Actual		
<i>Drop down list</i> <i>May select each use multiple times</i> <i>These are the only Use Types that will be recognized by the WUEdata online submittal tool</i>	Additional Description <i>(as needed)</i>	Level of Treatment When Delivered <i>Drop down list</i>	Volume
Single Family		Drinking Water	1,919
Multi-Family		Drinking Water	1,023
Commercial		Drinking Water	765
Institutional/Governmental		Drinking Water	6
Landscape		Drinking Water	66
Other		Drinking Water	12
Losses		Drinking Water	81
<b>TOTAL</b>			<b>3,872</b>
NOTES:			

**Table 4-2 Retail: Demands for Potable and Raw Water - Projected**

Use Type <i>(Add additional rows as needed)</i>	Additional Description <i>(as needed)</i>	Projected Water Use <i>Report To the Extent that Records are Available</i>				
<u>Drop down list</u> <i>May select each use multiple times</i> <i>These are the only Use Types that will be recognized by the WUEdata online submittal tool</i>		2020	2025	2030	2035	2040-opt
Single Family		2,012	2,022	2,032	2,043	2,053
Multi-Family		1,072	1,078	1,083	1,089	1,095
Commercial		802	806	810	814	818
Institutional/Governmental		6	6	6	7	7
Landscape		70	70	70	71	71
Other		13	13	13	13	13
Losses		85	85	85	86	86
<b>TOTAL</b>		4,059	4,080	4,101	4,122	4,143
NOTES:						

**Table 4-3 Retail: Total Water Demands**

	2015	2020	2025	2030	2035	2040 (opt)
Potable and Raw Water <i>From Tables 4-1 and 4-2</i>	3,872	4,059	4,080	4,101	4,122	4,143
Recycled Water Demand* <i>From Table 6-4</i>	0	0	0	0	0	0
<b>TOTAL WATER DEMAND</b>	3,872	4,059	4,080	4,101	4,122	4,143

*\*Recycled water demand fields will be blank until Table 6-4 is complete.*

NOTES:

**Table 4-4 Retail: 12 Month Water Loss Audit Reporting**

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	47.57

*\* Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*

NOTES:

**Table 4-5 Retail Only: Inclusion in Water Use Projections**

<p>Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i></p>	<p>Yes</p>
<p>If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc... utilized in demand projections are found.</p>	<p>Sections 7.3, 8.2, 8.5</p>
<p>Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i></p>	<p>Yes</p>
<p>NOTES:</p>	

**Table 5-1 Baselines and Targets Summary***Retail Agency or Regional Alliance Only*

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	1995	2004	188	169	150
5 Year	2003	2007	181		

\*All values are in Gallons per Capita per Day (GPCD)

NOTES:

**Table 5-2: 2015 Compliance**

*Retail Agency or Regional Alliance Only*

Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD					2015 GPCD* (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Enter "0" if no adjustment is made <i>Methodology 8</i>						
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
144	169	0	0	0	0	144	144	Yes

*\*All values are in Gallons per Capita per Day (GPCD)*

NOTES:

**Table 6-1 Retail: Groundwater Volume Pumped**

☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type <i>Drop Down List</i> <i>May use each category multiple times</i>	Location or Basin Name	2011	2012	2013	2014	2015
<i>Add additional rows as needed</i>						
Alluvial Basin	Main San Gabriel Basin	4,354	4,422	4,351	4,461	3,710
<b>TOTAL</b>		4,354	4,422	4,351	4,461	3,710
NOTES:						

**Table 6-2 Retail: Wastewater Collected Within Service Area in 2015**

<input type="checkbox"/>	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2015 service area covered by wastewater collection system( <i>optional</i> )					
	Percentage of 2015 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 2015	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>
<i>Add additional rows as needed</i>						
LACSD	Estimated	1,616	LACSD	WNWRP and JWPCP	No	No
<b>Total Wastewater Collected from Service Area in 2015:</b>		1,616				
NOTES:						



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

<input checked="" 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 Agency Producing (Treating) the Recycled Water:								
Name of Agency Operating the Recycled Water Distribution System:								
Supplemental Water Added in 2015								
Source of 2015 Supplemental Water								
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment <i>Drop down list</i>	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation								
Landscape irrigation (excludes golf courses)								
Golf course irrigation								
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge (IPR)*								
Surface water augmentation (IPR)*								
Direct potable reuse								
Other (Provide General Description)								
<b>Total:</b>			0	0	0	0	0	0
<i>*IPR - Indirect Potable Reuse</i>								
NOTES:								

**Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual**

<input checked="" type="checkbox"/>	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.	
Use Type	2010 Projection for 2015	2015 Actual Use
Agricultural irrigation		
Landscape irrigation (excludes golf courses)		
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Surface water augmentation (IPR)		
Direct potable reuse		
Other	<i>Type of Use</i>	
<b>Total</b>	<b>0</b>	<b>0</b>

NOTES:

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

<input checked="" 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.		
	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>			
<b>Total</b>			0
NOTES:			

**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.					
	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type <i>Drop Down List</i>	Expected Increase in Water Supply to Agency <i>This may be a range</i>
	<i>Drop Down List (y/n)</i>	<i>If Yes, Agency Name</i>				
<i>Add additional rows as needed</i>						
Wilson Well No. 2 Rehab	No			To be planned	All Year Types	2-5 AF
Graves Well No. 2 Treatment	No			2018	All Year Types	2 AF
Graves Reservoir Replacement	No			2018	All Year Types	0 AF
NOTES:						

**Table 6-8 Retail: Water Supplies — Actual**

Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
<i>Drop down list</i> <i>May use each category multiple times.</i> <i>These are the only water supply categories that will be recognized by the WUEdata online submittal tool</i>		Actual Volume	Water Quality <i>Drop Down List</i>	Total Right or Safe Yield <i>(optional)</i>
<i>Add additional rows as needed</i>				
Groundwater	Main Basin	3,710	Drinking Water	
Purchased or Imported Water	MWD USG-2	145	Drinking Water	
Purchased or Imported Water	Pasadena	17	Drinking Water	
<b>Total</b>		3,872		0
NOTES:				

**Table 6-9 Retail: Water Supplies — Projected**

Water Supply		Projected Water Supply <i>Report To the Extent Practicable</i>											
		2020		2025		2030		2035		2040 (opt)			
<i>Drop down list</i> 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		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)
		<i>Add additional rows as needed</i>											
Groundwater	Main Basin	3,889		3,909		3,929		3,950		3,970			
Purchased or Imported Water	MWD USG-2	152		153		154		154		155			
Purchased or Imported Water	Pasadena	18		18		18		18		18			
<b>Total</b>		4,059	0	4,080	0	4,101	0	4,122	0	4,143	0		
NOTES:													

**Table 7-1 Retail: Basis of Water Year Data**

Year Type	Base Year <i>If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000</i>	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	2009-10	4,754	100%
Single-Dry Year	2013-14	4,572	96%
Multiple-Dry Years 1st Year	2011-12	4,446	94%
Multiple-Dry Years 2nd Year	2012-13	4,569	96%
Multiple-Dry Years 3rd Year	2013-14	4,572	96%
Multiple-Dry Years 4th Year <i>Optional</i>	2014-15	3,872	81%
Multiple-Dry Years 5th Year <i>Optional</i>			
Multiple-Dry Years 6th Year <i>Optional</i>			
<p>Agency 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 an agency 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.</p>			
<p>NOTES:</p>			

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

	2020	2025	2030	2035	2040 <i>(Opt)</i>
Supply totals <i>(autofill from Table 6-9)</i>	4,059	4,080	4,101	4,122	4,143
Demand totals <i>(autofill from Table 4-3)</i>	4,059	4,080	4,101	4,122	4,143
Difference	0	0	0	0	0

NOTES:

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

	2020	2025	2030	2035	2040 (Opt)
Supply totals	3,904	3,924	3,944	3,964	3,984
Demand totals	3,904	3,924	3,944	3,964	3,984
Difference	0	0	0	0	0

NOTES:

**Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison**

		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	3,796	3,816	3,835	3,855	3,875
	Demand totals	3,796	3,816	3,835	3,855	3,875
	Difference	0	0	0	0	0
Second year	Supply totals	3,901	3,921	3,941	3,962	3,982
	Demand totals	3,901	3,921	3,941	3,962	3,982
	Difference	0	0	0	0	0
Third year	Supply totals	3,904	3,924	3,944	3,964	3,984
	Demand totals	3,904	3,924	3,944	3,964	3,984
	Difference	0	0	0	0	0
Fourth year <i>(optional)</i>	Supply totals	3,306	3,323	3,340	3,357	3,374
	Demand totals	3,306	3,323	3,340	3,357	3,374
	Difference	0	0	0	0	0
Fifth year <i>(optional)</i>	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0
Sixth year <i>(optional)</i>	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0

NOTES:

**Table 8-1 Retail  
Stages of Water Shortage Contingency Plan**

Stage	Complete Both	
	Percent Supply Reduction <sup>1</sup> <i>Numerical value as a percent</i>	Water Supply Condition <i>(Narrative description)</i>
<i>Add additional rows as needed</i>		
1	10%	Moderate Water Supply Shortage condition
2	20%	Serious Water Supply Shortage condition
3	30%	Extreme Water Supply Shortage condition
4	40-50%	Emergency Water Supply Shortage condition
<sup>1</sup> One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES:		

**Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses**

Stage	Restrictions and Prohibitions on End Users <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>Drop Down List</i>
<i>Add additional rows as needed</i>			
At all Times	Landscape - Limit landscape irrigation to specific times	Spray irrigation shall be scheduled between 5:00 p.m. and 9:00 a.m.	Yes
At all Times	Landscape - Other landscape restriction or prohibition	Spray irrigation of lawn, landscape or other vegetated area during periods of rain is prohibited.	Yes
1	Landscape - Limit landscape irrigation to specific days	Watering or irrigating of lawn, landscape or other vegetated area is limited to three designated days per week.	Yes
2	Landscape - Limit landscape irrigation to specific days	Watering or irrigating of lawn, landscape or other vegetated area is limited to two designated days per week.	Yes
3	Landscape - Limit landscape irrigation to specific days	Watering or irrigating of lawn, landscape or other vegetated area is limited to one designated day per week.	Yes
4	Landscape - Prohibit all landscape irrigation		Yes
At all Times	CII - Restaurants may only serve water upon request		Yes
At all Times	CII - Commercial kitchens required to use pre-rinse spray valves		Yes
4	Other water feature or swimming pool restriction	Refilling of more than one foot and initial filling of residential swimming pools or outdoor spas is prohibited.	Yes

**Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses**

Stage	Restrictions and Prohibitions on End Users <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>Drop Down List</i>
<i>Add additional rows as needed</i>			
At all Times	Water Features - Restrict water use for decorative water features, such as fountains	No water shall be used to clean, fill or maintain levels in decorative fountains, ponds, or other similar aesthetic structures unless the structure uses a recirculating water system.	Yes
2, 3, 4	Other water feature or swimming pool restriction	Filling or re-filling ornamental lakes or ponds is prohibited, except to the extent needed to sustain aquatic life.	Yes
At all Times	Other - Prohibit use of potable water for washing hard surfaces		Yes
At all Times	Other	It shall be unlawful for any reason to allow water to run so as to have water mitigate onto sidewalk, driveway, street, alley, gutter or ditch.	Yes
At all Times	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
At all Times	Other	Repair all leaks more than seven days of receiving notice from the City department is prohibited.	Yes
At all Times	Other	Installation of non-recirculating equipment in Commercial Car Wash and Laundry Systems is prohibited.	Yes
At all Times	Other	Installation of single pass cooling systems is prohibited in buildings requesting new service.	Yes

**Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses**

Stage	Restrictions and Prohibitions on End Users <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>Drop Down List</i>
<i>Add additional rows as needed</i>			
1	Other	All leaks, breaks or other malfunctions shall be repaired within 72 hours of notification by the City department.	Yes
2	Other	All leaks, breaks or other malfunctions shall be repaired within 48 hours of notification by the City department.	Yes
3	Other	All leaks, breaks or other malfunctions shall be repaired within 36 hours of notification by the City department.	Yes
4	Other	All leaks, breaks or other malfunctions shall be repaired within 24 hours of notification by the City department.	Yes
4	Other	No new potable water service will be provided, no new temporary meters or permanent meters will be provided, and no statements of immediate ability to service or provide potable water service will be issued	Yes
NOTES:			

**Table 8-3 Retail Only:  
Stages of Water Shortage Contingency Plan - Consumption Reduction Methods**

Stage	Consumption Reduction Methods 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>	Additional Explanation or Reference <i>(optional)</i>
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*Add additional rows as needed*

At all times	Expand Public Information Campaign	
At all times	Increase Frequency of Meter Reading	

NOTES:

**Table 8-4 Retail: Minimum Supply Next Three Years**

	2016	2017	2018
Available Water Supply	4,446	4,569	4,572

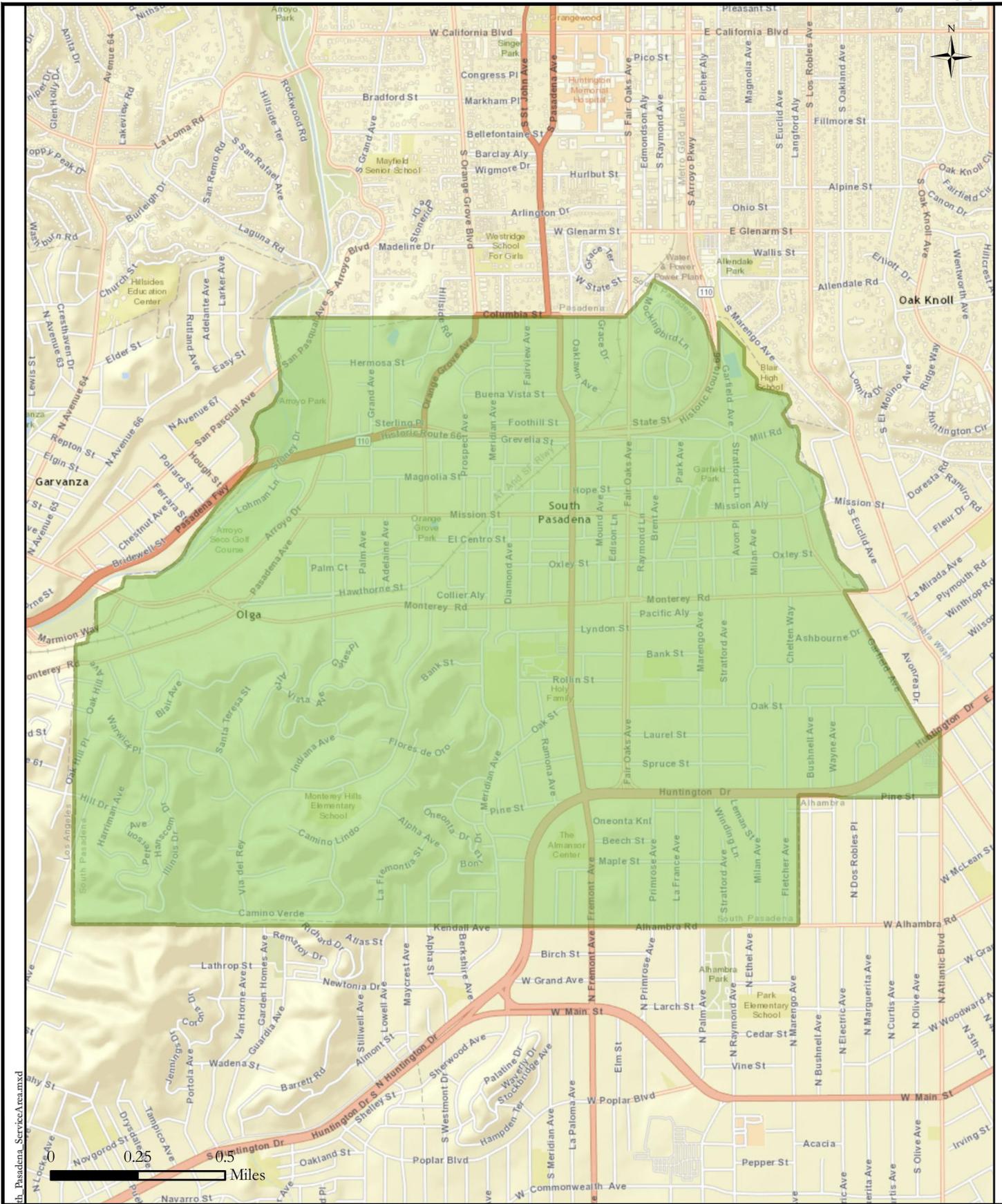
NOTES:

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

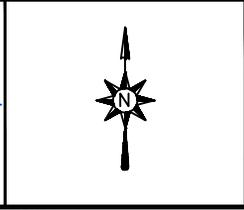
City Name	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
City of South Pasadena	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
Los Angeles County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

# FIGURES

FIGURE 1

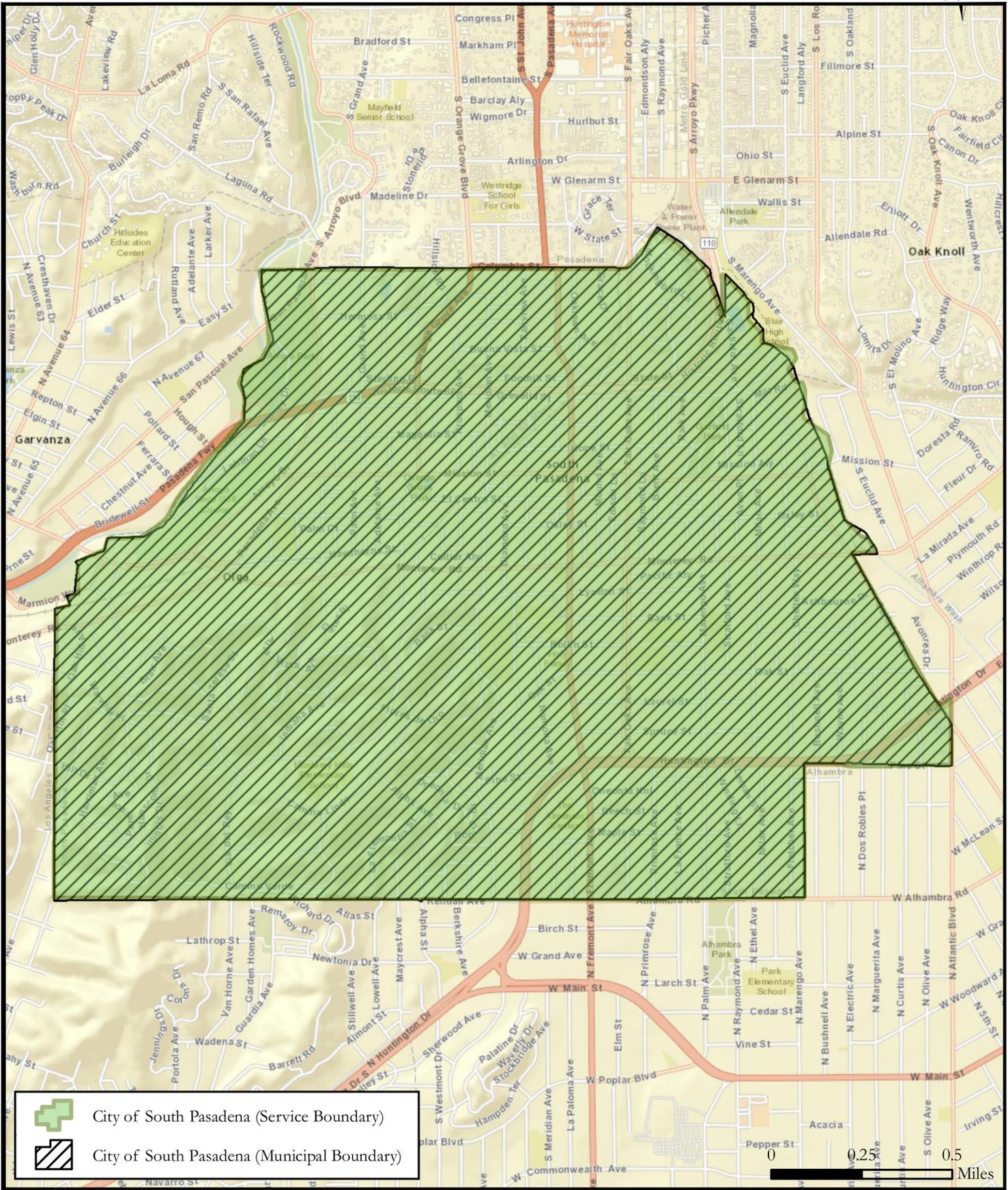



  
 861 VILLAGE OAKS DRIVE, SUITE 100  
 COVINA, CALIFORNIA 91724  
 TEL: (626) 967-6202  
 FAX: (626) 331-7065  
  
 2171 E Francisco Blvd., Suite K  
 San Rafael California 94901  
 2651 W Guadalupe Rd., Suite A209  
 Mesa Arizona 85202



CITY OF SOUTH PASADENA

**WATER SERVICE AREA BOUNDARY**



	City of South Pasadena (Service Boundary)
	City of South Pasadena (Municipal Boundary)



861 VILLAGE OAKS DRIVE, SUITE 100  
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FAX: (626) 331-7065

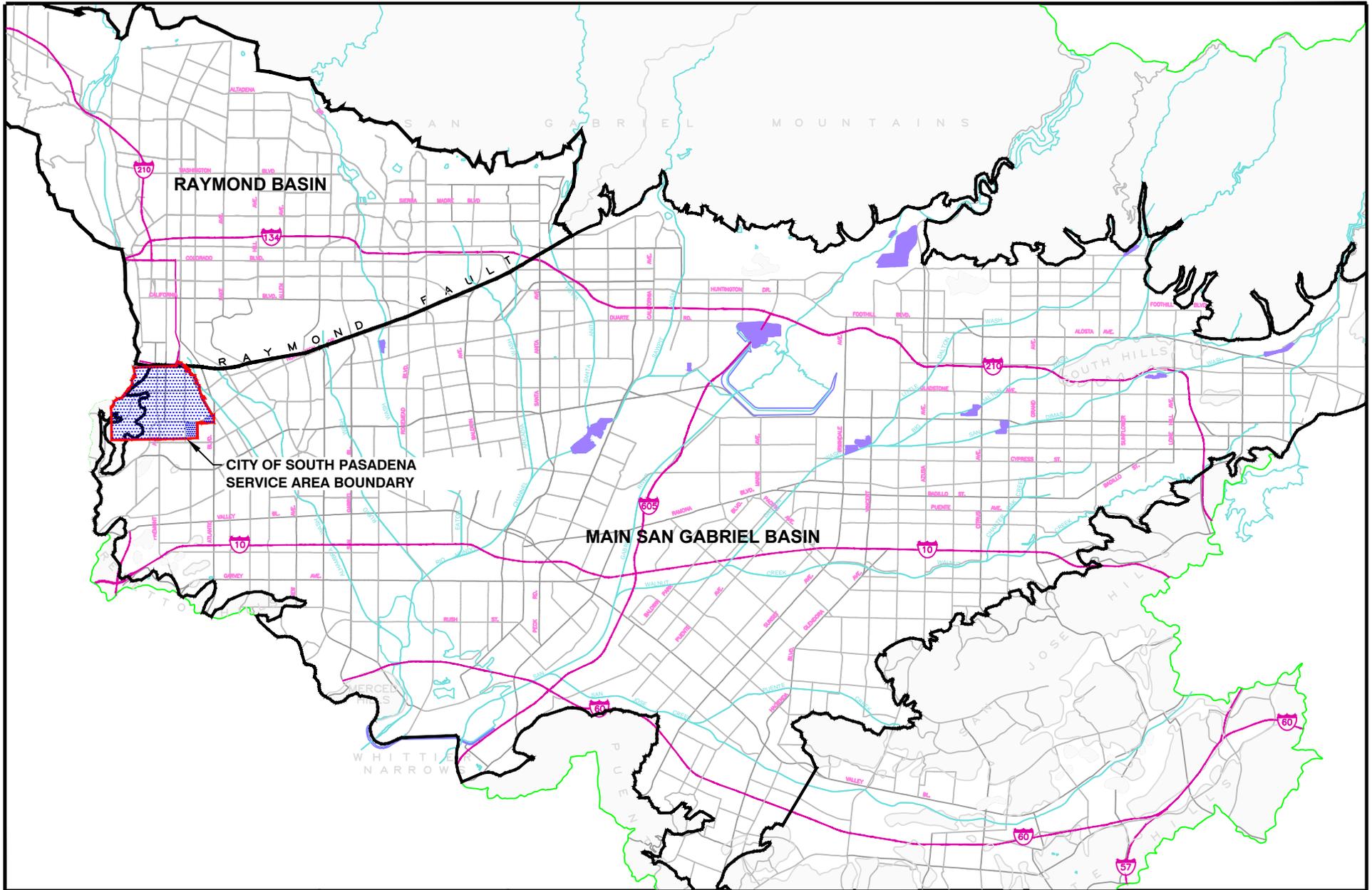
2171 E Francisco Blvd., Suite K  
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Mesa Arizona 85202



CITY OF SOUTH PASADENA

**WATER SERVICE AREA AND MUNICIPAL BOUNDARIES**



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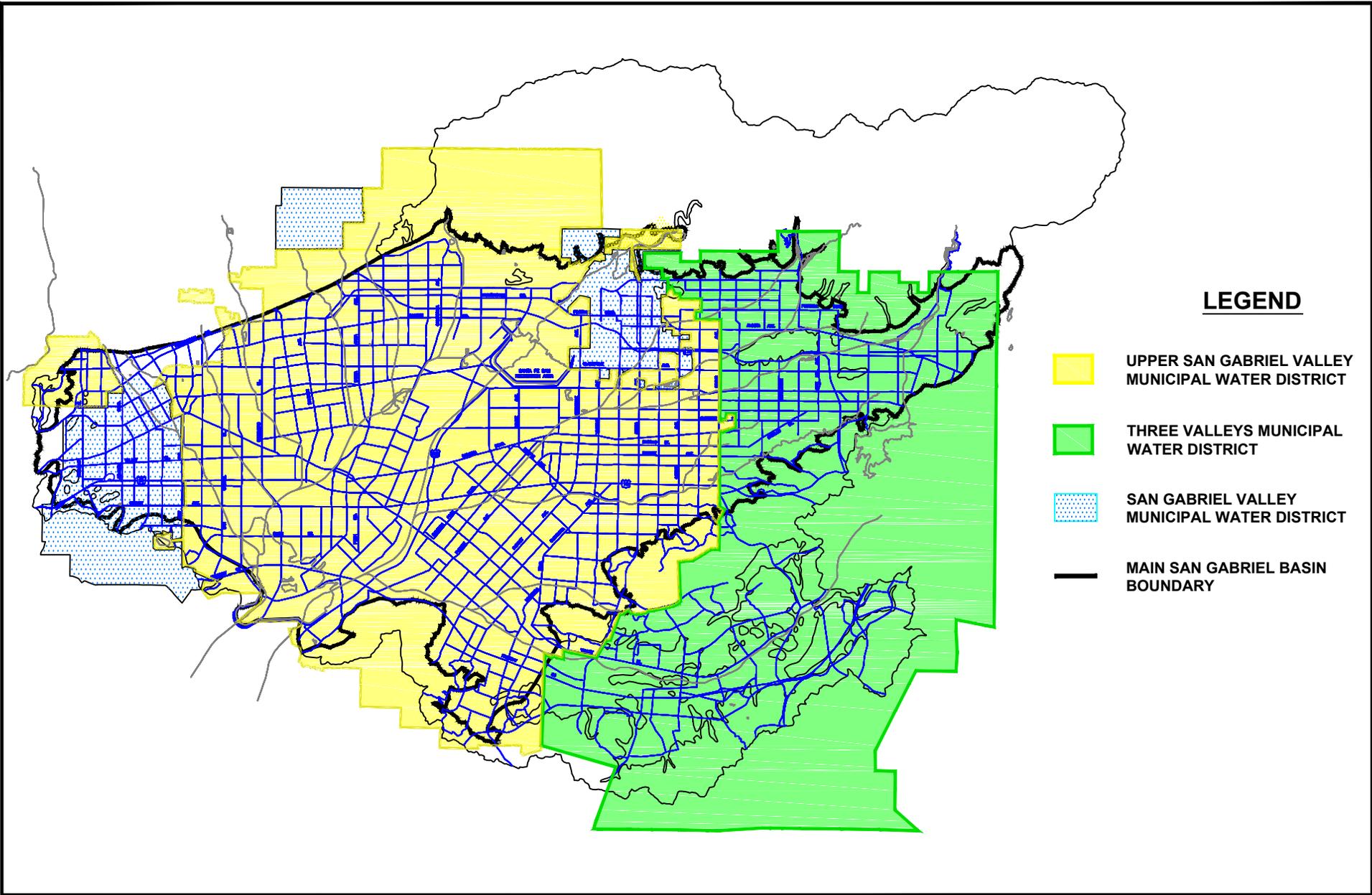


N.T.S.

CITY OF SOUTH PASADENA

**VICINITY MAP - MAIN SAN GABRIEL BASIN AND  
 RAYMOND BASIN**

FIGURE 3



**LEGEND**

-  UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
-  THREE VALLEYS MUNICIPAL WATER DISTRICT
-  SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT
-  MAIN SAN GABRIEL BASIN BOUNDARY



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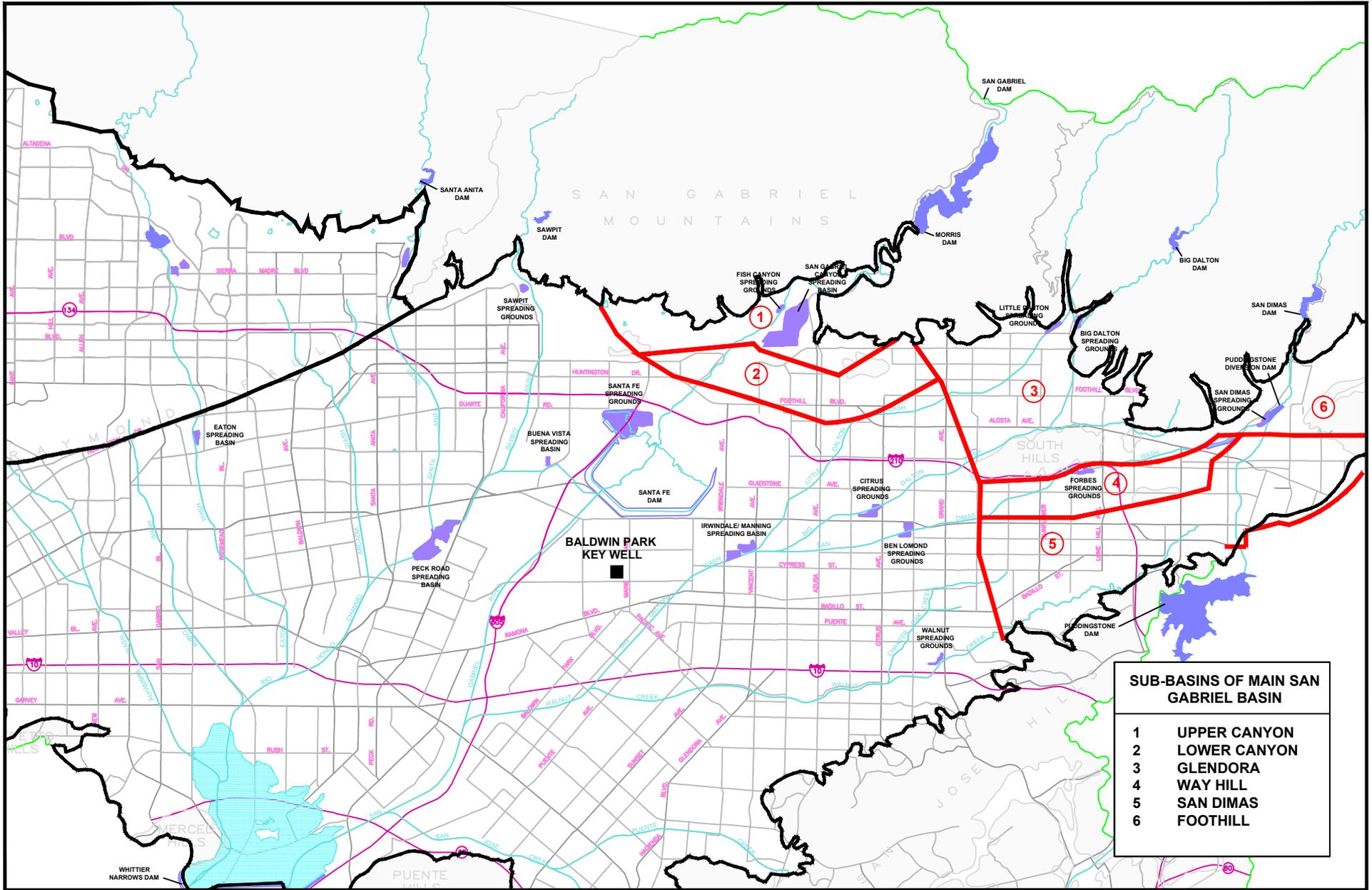


N.T.S.

CITY OF SOUTH PASADENA

**MUNICIPAL WATER DISTRICT BOUNDARIES**

FIGURE 4

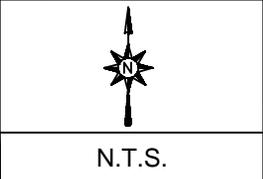


SUB-BASINS OF MAIN SAN GABRIEL BASIN	
1	UPPER CANYON
2	LOWER CANYON
3	GLENDORA
4	WAY HILL
5	SAN DIMAS
6	FOOTHILL



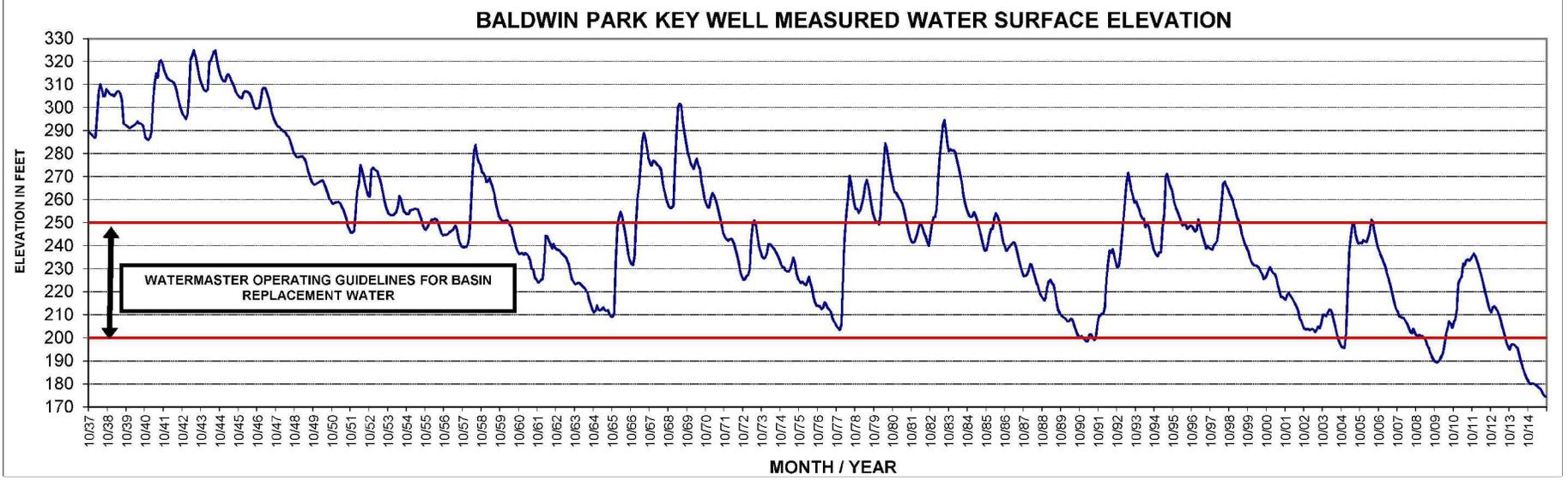
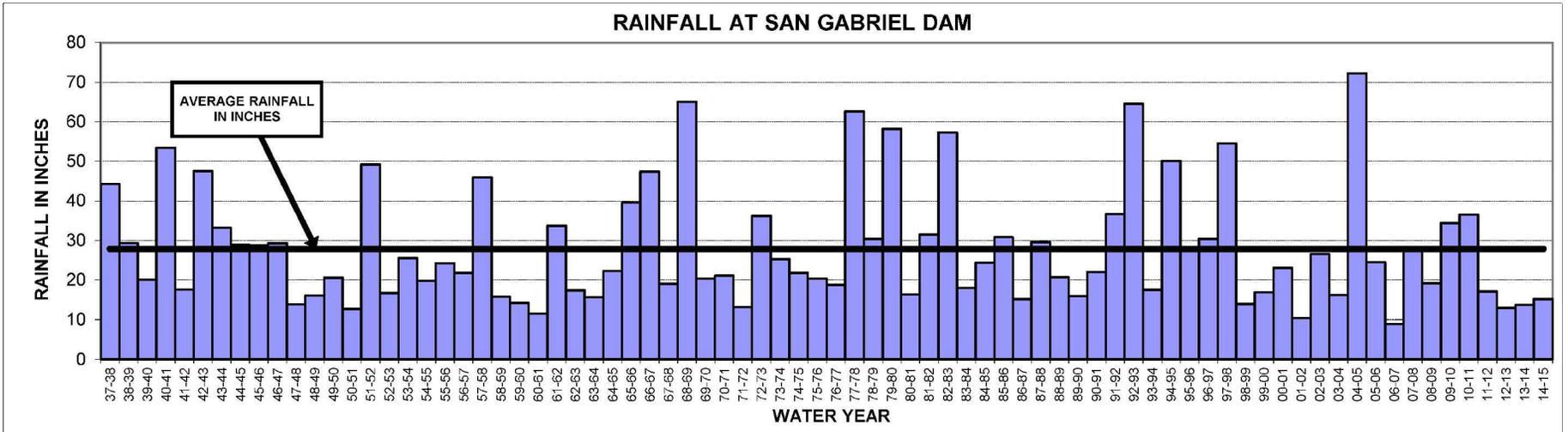
861 VILLAGE OAKS DRIVE, SUITE 100  
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CITY OF SOUTH PASADENA

**LOCATION OF SUB-BASINS, SPREADING GROUNDS AND WATER CHANNELS  
 MAIN SAN GABRIEL BASIN**




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 COVINA, CALIFORNIA 91724  
 TEL: (626) 967-6202  
 FAX: (626) 331-7065

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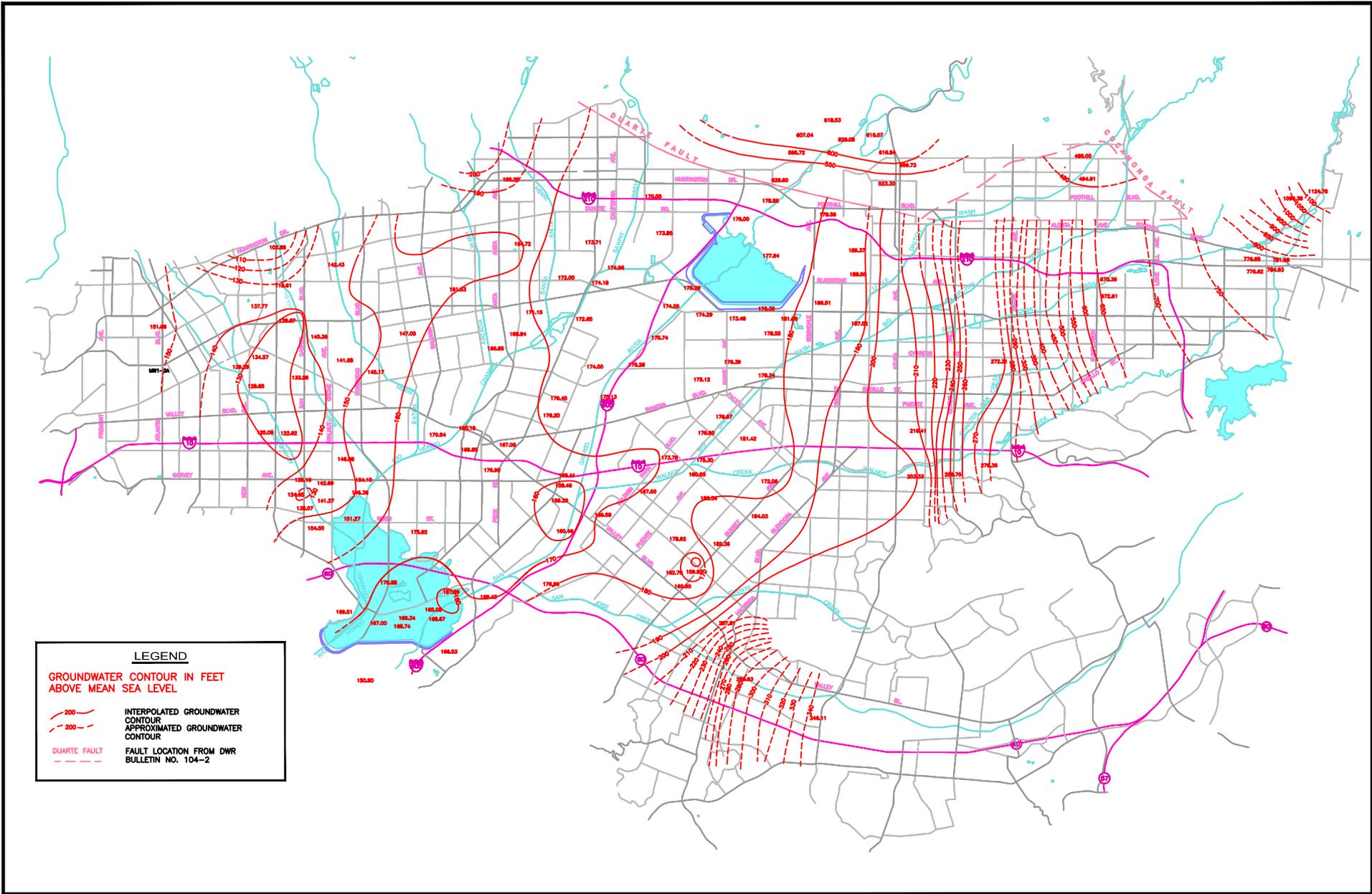
2171 E Francisco Blvd., Suite K  
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CITY OF SOUTH PASADENA

**HISTORICAL BALDWIN PARK KEY WELL ELEVATIONS**



**LEGEND**

GROUNDWATER CONTOUR IN FEET ABOVE MEAN SEA LEVEL

- INTERPOLATED GROUNDWATER CONTOUR
- - - APPROXIMATED GROUNDWATER CONTOUR
- - - FAULT LOCATION FROM DWR BULLETIN NO. 104-2



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CITY OF SOUTH PASADENA

**GROUNDWATER CONTOURS MAP  
 MAIN SAN GABRIEL BASIN - JULY 2015**

FIGURE 7