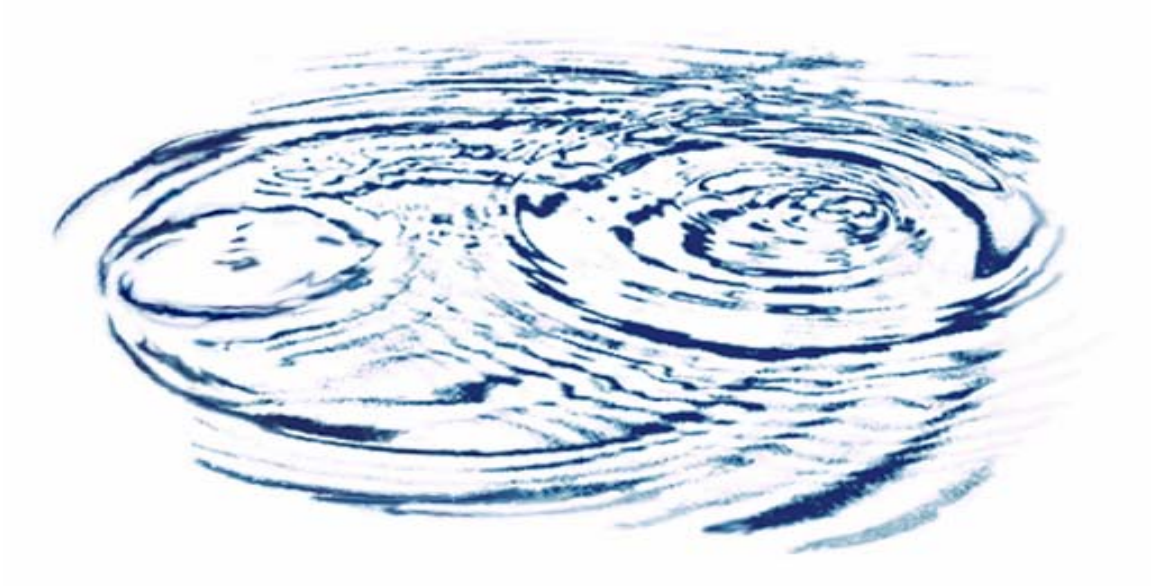
2010 Urban Water Management Plan



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Chapter 1

PLAN PREPARATION

1.1 BACKGROUND

Section 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.

Section 10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(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.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(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.
(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.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

This Urban Water Management Plan (Plan) was prepared in accordance with the California Urban Water Management Planning Act (Act)[1] which became effective on January 1, 1985. The 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

[1] Water Code Sections 10610 through 10656

than 3,000 acre-feet of water annually. The primary objective of the 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 Act is directed primarily at retail water purveyors where programs can be immediately affected upon the consumer.** Sections 10610 through 10656 of the California Water Code, Urban Water Management Planning Act, were enacted in 1983. The Act, originally known as Assembly Bill (AB) 797, is included in Appendix A.

There have been many new amendments added to the Plan and some reorganization of the California Water Code sections since the City's 2005 Plan update. The additions and changes follow:

- Senate Bill (SB) 1087 – Requires reporting of water use projections for lower income households
- AB 1376 – Requires 60 days notice of a public hearing on a Plan
- AB 1420 – Conditions state funding
- SB 7 – Requires 20 percent reduction in per capita water use by 2020 (see Appendix B).

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." This 2010 Plan is an update to the City's 2005 Plan.

1.2 COORDINATION

1.2.1 COORDINATION WITH APPROPRIATE AGENCIES

Section 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.

The City of Glendora (hereinafter referred to as City) is a retail water supplier that provides treated water to its residential, commercial and industrial customers within the City of Glendora and portions of the Cities of San Dimas, Azusa, and areas within the unincorporated portion of Los Angeles County. The City notified the appropriate public agencies (including Three Valleys Municipal Water District, Upper San Gabriel Valley Municipal Water District, Main San Gabriel Basin Watermaster, City of Glendora Planning Department, Los Angeles County Planning Department, and Covina Irrigating Company) of the preparation of the City's 2010 Urban Water Management Plan. (see Table 1) The City did not receive any comments on the its draft 2010 Urban Water Management Plan. A copy of the notification memoranda sent to these agencies is located in Appendix C.

1.2.2 NOTICE OF PUBLIC HEARING

Section 10621
(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to 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. The urban water supplier may consult with, and obtain comments from, any city or county that receives notices pursuant to this subdivision.

The City provides water service to customers in the City of Glendora and portions of Cities of San Dimas and Azusa, as well as an unincorporated portion of Los Angeles County. The City provided a 60-day notice of a public hearing of its 2010 draft Plan to the City Clerk at Cities of Glendora, San Dimas, and Azusa, and County of Los Angeles. A copy of the notice of the public hearing is provided in Appendix D.

1.2.3 PLAN DISTRIBUTION

Section 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 submission of its urban water management plan.

The City provides water service to customers in only the City of and portions of City of San Dimas and Azusa, as well as an unincorporated portion of Los Angeles County. Therefore, the City will provide a copy of the 2010 Plan to the City Clerk at Cities of Glendora, San Dimas, and Azusa, and County of Los Angeles no later than 60 days after submission of the 2010 Plan to DWR:

1.2.4 PUBLIC PARTICIPATION

Section 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. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. 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. 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. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

The City provided a 2-week notice of a public hearing of its 2010 draft Plan. The City made the draft 2010 Plan update available for public review at Glendora City Hall (116 East Foothill Boulevard), Glendora Public Library (140 South Glendora Avenue), and on the City internet website at www.ci.glendora.ca.us; and published a notice of the public review in the City Clerk's office, the City's internet website and in a local newspaper, as shown in Appendix D. Public notification of the hearing was made pursuant to Section 6066 of the Government Code. The notice of public hearing was published and distributed to allow involvement of social, cultural, and economic community groups. A copy of the notice of the public hearing is provided in Appendix D.

The City held a public hearing at the City Council Chambers of City Hall on October 25, 2011 at 7:00 p.m. No public agencies attended the public hearing and no comments were received on the City's draft 2010 Plan.

1.3 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

1.3.1 SUBMITTAL OF AMENDED PLAN

Section 10621
c) 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).

Pursuant to the UWMP Act, the City will submit an amendment or a revised Plan in years ending in 5 and 0. The amendment or revised Plan will undergo adoption by the City's governing board prior to submittal to DWR.

1.3.2 PLAN ADOPTION

Section 10642
After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

No comments were received; therefore, the City did not modify its draft Plan. Following the public hearing, the City adopted the draft Plan during the public hearing on October 25, 2011 as its Plan. A copy of the minutes adopting the Plan is provided in Appendix E.

1.3.3 PLAN IMPLEMENTATION

Section 10643
An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

The City is committed to the implementation of this 2010 Plan in accordance with Section 10643 of the Act, including the water demand management measures (DMMs) (see Chapter 6) and water conservation requirements of SB 7 (see Chapter 3). 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 effect better methods or techniques as the need arises. The City reviewed implementation of its 2005 Plan.

1.3.4 PLAN SUBMITTAL

Section 10644(a)
An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

Within 30 days of adoption of the Plan by the City, a copy of the Plan will be filed with the State of California, Department of Water Resources (DWR), the State of California Library, the County of Los Angeles and the Cities of Glendora, San Dimas, and Azusa. Copies of the letters to DWR, State Library, Cities of Glendora, San Dimas, and Azusa, and County of Los Angeles will be maintained in the City's file.

1.3.5 PUBLIC REVIEW

Section 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.

Within 30 days after submittal of the 2010 Plan to DWR, the City will make the 2010 Plan available for public review at its office during normal business hours.

Chapter 2
SYSTEM DESCRIPTION

2.1 BACKGROUND

2.1.1 CITY OF GLENDORA FORMATION AND LOCATION

The City of Glendora was founded in 1887 and was officially incorporated in 1911. The City of Glendora is nestled at the base of the scenic San Gabriel Mountains, in the eastern portion of Los Angeles County located approximately 30 miles from downtown Los Angeles. The City is bounded by the Cities of Azusa to the west, Covina to the south and San Dimas and unincorporated portions of Los Angeles County to the east.

2.1.2 CITY OF GLENDORA MANAGEMENT

The City of Glendora has a five member City Council. Council members are elected at-large and serve four-year terms. The City of Glendora Mayor is determined each year by a vote of the City Council. The City of Glendora City Manager is appointed by the City of Glendora Council. Other City of Glendora managerial positions are filled by the City of Glendora City Manager. The Water Division Manager is responsible for the operation and management of the City's water system.

2.1.3 CITY WATER SYSTEM

The City’s water system is comprised of an assembly of smaller water companies which historically were formed to support the citrus-producing community until the late 1950s, when agriculture gave way to large scale residential development. The City acquired the Glendora Water Company in 1915, the Glendora Independent Water

Company in 1956, and the Glendora Irrigating Company in 1965. The location of the City of Glendora is shown on Plate 1.

The City's primary source of water supply is groundwater, which is delivered to the system by nine active wells, Wells 1-E, 2-E, 5-E, 8-E, 9-E, 10-E, 11-E, 12-G, and 13-E, located within the Upper San Gabriel Canyon Basin and Glendora Basin of the Main San Gabriel Basin (Main Basin). The locations of the City's wells are shown on Plate 2. Through adjudication, the City has the rights to pump 9,393 acre-feet per year from the Main Basin as described in Section 4.2.

To supplement the City's groundwater supply, the City also has three connections with Three Valleys Municipal Water District (Three Valleys) to purchase imported treated water from the Metropolitan Water District (MWD) and one connection with Covina Irrigating Company (CIC) to purchase local treated surface water.

The City's water distribution system consists of twelve pressure zones served by reservoirs, three zones served by hydro-pneumatic systems and one zone served through a pressure regulating station. The zones range in elevation from approximately 700 feet above mean sea level (amsl) to 1,500 feet amsl. Water is stored in 28 reservoirs constructed between 1916 and 1989. Twenty-three booster pump stations transfer water from the lower elevations to high elevations.

2.1.4 THREE VALLEYS MUNICIPAL WATER DISTRICT

The City is a member of Three Valleys, which was created to provide supplemental water to its member agencies. Three Valleys is a wholesale water supplier. Three Valleys is one of 26 member agencies of the Metropolitan Water District of Southern California (MWD) that is authorized to deliver wholesale water supplies from the Colorado River and Northern California. Approximately two-thirds of Three Valleys' water sales are from surface water treated at MWD's Weymouth Treatment

Plant, while the remaining third is treated and sold out of the MWD's Miramar Treatment Facility.

Three Valleys was formed by public election in 1950 under the name Pomona Valley Municipal Water District and is the area's primary source of supplemental water. The District changed its name to Three Valleys Municipal Water District in 1981 to better reflect the three areas that it serves: the Pomona, Walnut and East San Gabriel Valleys. There are 13 retail customers that are served by Three Valleys.

2.2 SERVICE AREA PHYSICAL DESCRIPTION

Section 10631.
A plan shall be adopted in accordance with this chapter and shall do the following:
a) Describe the service area of the supplier; including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

2.2.1 SERVICE AREA

The City's service area is located within Main San Gabriel Basin (Main Basin), approximately 30 miles northeast of the downtown Los Angeles, as shown on Plate 1. The City's service area is bounded by the San Gabriel Mountains on the north; City of Covina to the south; City of Azusa to the west, and City of San Dimas and unincorporated area within the County of Los Angeles to the east. Plate 2 shows the boundaries of the City's service area.

The City is a retail water agency that serves a large majority (approximately ninety percent) of the residents within the City of Glendora. Currently, the City has about 13,701 service connections serving a population of approximately 48,200 people. The primary service connections are residential with some commercial/institutional, industrial and landscape irrigation users. Because the City of Glendora is virtually built

out, it is anticipated that there will be a limited increase in population and number of service connections through 2030. It is estimated that the population in 2030 will be 53,000 (see Chapter 2.3 below). The projected water demand and number of service connections by user category are discussed in Chapter 3.

2.2.2 CLIMATE

Table 2 shows historic rainfall in the San Gabriel Valley. Table 3 shows the monthly average rainfall, monthly average temperature, and monthly average evapotranspiration in the San Gabriel Valley. Table 3 shows the average annual rainfall in the San Gabriel Valley is 17.8 inches, the average daily temperature is 63.8 degrees Fahrenheit (^{o}F), and the average annual evapotranspiration is 55.1 inches. The climate is characterized by hot, dry summers and mild winters.

2.3 SERVICE AREA POPULATION

Section 10631.
A plan shall be adopted in accordance with this chapter and shall do the following:
a) Describe the service area of the supplier; including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

2.3.1 POPULATION

Currently, the City serves a large majority (approximately ninety percent) of the residents of the City of Glendora. The current population of the City of Glendora is approximately 48,200. The City of Glendora is virtually built-out with little development expected over the next 20 years. Table 4 presents the current and projected population for the City of Glendora, which is also the City's service area, from fiscal year 2009-10 to 2029-30. The projections were obtained from the Southern California Association of Governments (SCAG).

2.3.2 OTHER DEMOGRAPHIC FACTORS

There are no other demographic factors affecting the City's water management planning.

Chapter 3
SYSTEM DEMANDS

3.1 WATER DEMANDS

3.1.1 PAST, CURRENT, AND PROJECTED WATER DEMAND

Section 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).

The City is a retail water company that serves approximately ninety percent of the residents of the City of Glendora. The City's water supplies include groundwater pumped from the Main Basin, and treated surface water purchased from Three Valleys and CIC. Currently, the City has about 13,701 service connections with the majority being residential customers followed by commercial customers.

The City does not have historical data on the number of service connections by customer type or water use sector. The City does not have water use records broken down by customer type or water use sector. The City's water use records include cumulative usage within the City's service area and water sales and purchases to other water agencies. The City does not have data for unaccounted-for system losses but estimates it to be approximately 10 percent. Table 5 shows the calculation of projected

water demands. The projected water demand is calculated based on the urban per capita water use target developed per SB 7 (see Chapter 3.2 below) and population projections. Table 6 shows the historical, current, and projected total water demand and unaccounted water losses. Future water uses are projected to be less than historical demands and consequently, the City anticipates it will meet the future water demands.

3.1.2 PROJECTED WATER DEMAND FOR LOWER INCOME HOUSEHOLDS

Section 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.

The City does not keep record of projected water demand for lower income households.

3.2 BASELINES AND TARGETS

Section 10608.20 (e)

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

Methodologies for calculating baseline and compliance urban per capita water use for the consistent implementation of the Water Conservation Bill of 2009 have been published by DWR in its October 2010 guidance document.[2] DWR's guidance document was used by the City to determine the required water use parameters which

[2] California Department of Water Resources, Division of Statewide Integrated Water Management, Water Use and Efficiency Branch. *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*. October 1, 2010.

are discussed below. The City developed the baselines and targets individually and not regionally.

3.2.1 BASELINE DAILY PER CAPITA WATER USE

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 are two different baseline periods for calculating Baseline Daily Per Capita Water Use, as follows (CWC Sections 10608.20 and 10608.22):

- *The first baseline period is a continuous 10- to 15-year period, and is used to calculate Baseline Per Capita Water Use per CWC Section 10608.20. The first baseline period is determined as follows:*

    - *If recycled water makes up less than 10 percent of 2008 retail water delivery, use a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*
    - *If recycled water makes up 10 percent or more of 2008 retail water delivery, use a continuous 10- to 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.*

  The City does not have any recycled water use. Consequently, the first baseline period will consist of a continuous 10-year period that can be selected between 1995-96 and 2008-09.

- *The second baseline period is a continuous five-year period, and is used to determine whether the 2020 per capita water use target meets the minimum water use reduction per CWC Section 10608.22. The continuous five-year period shall end no earlier than December 31, 2007, and no later than December 31, 2010.*

The second baseline period consisting of a continuous five-year period can be selected between 2003-04 and 2008-09.

Unless the urban water retailer's five-year Baseline Daily Per Capita Water Use per CWC Section 10608.12(b)(3) is 100 GPCD or less, Baseline Daily Per Capita Water Use must be calculated for both baseline periods.

The calculation of the Baseline Daily Per Capita Water Use entails the following four steps:

Step 1 *Calculate gross water use for each year in the baseline period using Methodology 1 in DWR's guidance document. According to Methodology 1, gross water use is a measure of water supplied to the distribution system over 12 months and adjusted for changes in distribution system storage and deliveries to other water suppliers that pass through the distribution system. Recycled water deliveries are to be excluded from the calculation of gross water use. Water delivered through the distribution system for agricultural use may be deducted from the calculation of gross water use. Under certain conditions, industrial process water use also may be deducted from gross water use.*

The calculated gross water use, based on recorded groundwater use (Main Basin) and imported and local surface water use, for each year in the baseline period is shown on Table 7.

Step 2 *Estimate service area population for each year in the baseline period using Methodology 2 in DWR's guidance document. To obtain an accurate estimate of GPCD, water suppliers must estimate population of the areas that they actually serve, which may or may not coincide with*

either their jurisdictional boundaries or with the boundaries of cities. According to Methodology 2, data published by the California Department of Finance (DOF) or the U.S. Census Bureau must serve as the foundational building block for population estimates. In some instances, data published by these two sources may be directly applicable. In other instances, additional refinements may be necessary. For example, to account for distribution areas that do not match city boundaries, customers with private sources of supply, or other unique local circumstances, water suppliers may have to supplement the above sources of data with additional local data sources such as county assessor data, building permits data, and traffic analysis zone data. These refinements are acceptable as long as they are consistently applied over time, and as long as they build upon population data sources of the DOF or the U.S Census Bureau.

The City's service area population for each year in the baseline period is based on DOF data (see Table 7).

Step 3 *Calculate daily per capita water use for each year in the baseline period. Divide gross water use (determined in Step 1) by service area population (determined in Step 2).*

The calculated daily per capita water use for each year in the baseline period is shown on Table 7.

Step 4 *Calculate Baseline Daily Per Capita Water Use. Calculate average per capita water use by summing the values calculated in Step 3 and dividing by the number of years in the baseline period. The result is Baseline Daily Per Capita Water Use for the selected baseline period.*

The average per capita water use calculated for a continuous 10-year baseline period (first baseline period) is shown on Table 7, with the highest value of 265 GPCD.

The Baseline Daily Per Capita Water Use for the City was determined to be **265 GPCD**, based on the highest value calculated for a continuous 10-year period (first baseline period) between 1995-96 and 2008-09 (see Table 7).

3.2.2 URBAN WATER USE TARGET

Section 10608.20 (b)

An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) *Eighty percent of the urban retail water supplier's baseline per capita daily water use.*

(2) *The per capita daily water use that is estimated using the sum of the following performance standards:*

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) *Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.*

(4) *A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:*

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.
(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.
(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

The Urban Water Use Target is determined using one of the following methods:

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

Using this method, the Urban Water Use Target for the City was calculated as **212 GPCD**, based on the City's Baseline Per Capita Daily Water Use of 265 GPCD.

Method 2: *Estimate using the sum of the specified three performance standards.*

Due to insufficient data, this method was not considered.

Method 3: *Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's 20x2020 Water Conservation Plan.*[3]

Based on the 20x2020 Water Conservation Plan, the City's service area lies in DWR Hydrologic Region 4 (South Coast), with an established Baseline Per Capita Daily Water Use of 180 GPCD and a Target Per Capita Daily Water Use of 149 GPCD. Using this method, the Urban Water Use Target for the City was calculated as **142 GPCD**.

Method 4: Due to insufficient data, this method was not considered.

[3] California Department of Water Resources, State Water Resources Control Board, California Bay-Delta Authority, California Energy Commission, California Department of Public Health, California Public Utilities Commission, and California Air Resources Board. *20x2020 Water Conservation Plan*. February 2010.

The City's Urban Water Use Target was determined to be **212 GPCD** for 2020, based on Method 1 above.

3.2.3 INTERIM URBAN WATER USE TARGET

Based on the City's Baseline Daily Per Capita Water Use of 265 GPCD and Urban Water Use Target of 212 GPCD, the City's Interim Urban Water Use Target for 2015 was calculated as **239 GPCD** (as determined in Chapter 3.2.5 below).

3.2.4 COMPLIANCE DAILY PER CAPITA WATER USE

Compliance Daily Per Capita Water Use is defined as the Gross Water Use during the final year of the reporting period, and reported in GPCD. The Compliance Daily Per Capita Water Use will be reported in the City's 2015 Plan (interim compliance) and 2020 Plan (final compliance).

3.2.5 MINIMUM WATER USE REDUCTION REQUIREMENT

Section10608.22

> *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.*

The following calculation is made because the five-year Baseline Per Capita Water Use per CWC Section 10608.12(b)(3) is greater than 100 GPCD. The calculation is used to determine whether the water supplier's 2015 and 2020 per capita water use targets meet the minimum water use reduction requirement per CWC Section 10608.22. The calculation entails three steps:

Step 1: *Calculate Baseline Daily Per Capita Water Use using a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.*

This value was calculated as **264 GPCD** (see Table 7).

Step 2: *Multiply the result from Step 1 by 0.95. The 2020 per capita water use target cannot exceed this value (unless the water supplier's five-year Baseline Per Capita Water Use is 100 GPCD or less). If the 2020 target is greater than this value, reduce the target to this value.*

This value was calculated as **251 GPCD**. The City's 2020 Urban Water Use Target was determined using Method 1 above to be 212 GPCD, which is lower than the value calculated in this step. Therefore, no adjustment is needed for the City's 2020 Urban Water Use Target of 212 GPCD.

Step 3: *Set the 2015 target to mid-point between the 10- or 15-year Baseline Per Capita Water Use and the 2020 target determined in Step 2.*

The City's 2015 Interim Urban Water Use Target is therefore set at **239 GPCD**, which is equivalent to a 10 percent reduction in a gross-based per capita by 2015.

Therefore, the City's 2015 Interim Urban Water Use Target of 239 GPCD and 2020 Urban Water Use Target of 212 GPCD meet the legislation's minimum water use reduction requirement per CWC Section 10608.22.

3.3 WATER DEMAND PROJECTIONS

Section 10631(k)

Urban water suppliers that rely 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 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).

The City's projected water demand shown on Table 6 includes water from the Three Valleys and CIC. Three Valleys and CIC are wholesale agencies. The City notified Three Valleys and CIC of the development of its 2010 Plan and made a copy of the draft Plan available to both agencies.

3.4 WATER USE REDUCTION PLAN

10608.36.

Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

The City is not an urban wholesale water supplier. Therefore, this requirement is not applicable to the City.

3.5 PROGRESS REPORT

10608.40.

Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

The City will report to the DWR on its progress in meeting its urban water use targets, using a standardized form to be developed by the DWR, when the form becomes available.

Chapter 4
SYSTEM SUPPLIES

4.1 WATER SOURCES

Section 10631
A plan shall be adopted in accordance with this chapter and shall do the following:
b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

The City's water supply sources include water pumped from local groundwater basin, imported surface water purchased from Three Valleys, and local surface water purchased from CIC. The City's main source of water supply, groundwater, is pumped from the Main Basin.

The City pumps groundwater from the Main Basin from the City's eight active wells. Wells 2-E, 5-E, 8-E, 9-E, 10-E, 11-E, 12-G, and 13-E are located within the Main Basin as shown on Plate 2 and have a combined capacity of about 12,900 gallons per minute (gpm). In addition, the City purchases treated surface water from Three Valleys and CIC to supplement its water supply. The City's maximum day demand is approximately 19 million gallons (MG) of which approximately 13 MG comes from the City's groundwater wells and approximately 6 MG is purchased surface water from Three Valleys and CIC. The City has the legal right to pump groundwater from the Main Basin. Although there is no limit on the quantity of water that may be extracted by Parties to the Main Basin Adjudication, including the City, groundwater production in excess of a Party's water right, or its proportional share (pumper's share) of the Operating Safe Yield,[4] requires purchase of imported replacement water to recharge the Main Basin. The City has a prescriptive pumping right of about 9,393 acre-feet and a pumper's share of 4.75261 percent of the Operating Safe Yield. If the City pumps

[4] Operating Safe Yield is set by Watermaster to allocate to each Party its portion of groundwater that can be produced from the Main Basin free of a Replacement Water Assessment.

more than the allowed amount of water, replacement water may be purchased from Three Valleys to recharge the Main Basin.

The City's past and projected water demands from the Main Basin are shown on Table 6. The City pumps all of its water right from the Main Basin.

In addition to groundwater, the City also has surface water supplies from Three Valleys and CIC. The City has three interconnections with Three Valleys with a capacity of approximately 17,950 gpm, two interconnections with Suburban Water Systems with a capacity of approximately 3,200 gpm, and one interconnection with CIC with a capacity of approximately 1,500 gpm.

4.2 GROUNDWATER

Section 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:

The City pumps groundwater from the Main Basin from the City's eight active wells. Wells 2-E, 5-E, 8-E, 9-E, 10-E, 11-E, 12-G, and 13-E are located within the Main Basin and have a combined capacity of about 12,900 gallons per minute (gpm). The City has the legal right to pump groundwater from the Main Basin. Although there is no limit on the quantity of water that may be extracted by Parties to the Main Basin Adjudication, including the City, groundwater production in excess of a Party's water right, or its proportional share (pumper's share) of the Operating Safe Yield, requires purchase of imported replacement water to recharge the Main Basin. The City has a prescriptive pumping right of about 9,393 acre-feet and a pumper's share of 4.75261 percent of the Operating Safe Yield. If the City pumps more than the allowed amount of water, replacement water may be purchased from Three Valleys to recharge the Main Basin.

4.2.1 MAIN BASIN GROUNDWATER MANAGEMENT

Section 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:
1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

Management of the water resources in the San Gabriel Valley is based upon Watermaster Services under two Court Judgments: San Gabriel River Watermaster (River Watermaster)[5] and Main Basin Watermaster.[6] The City was a defendant in the Long Beach Judgment and Main Basin Judgment and as such had participation. The City also participates in the Main Basin management described in the Main Basin Watermaster document entitled "Five-Year Water Quality and Supply Plan." These three basin management documents are described in the following sections.

4.2.1.1 LONG BEACH JUDGMENT

On May 12, 1959, the Board of Water Commissioners of the City of Long Beach, Central Basin Municipal Water District (Central Basin) and the City of Compton, as plaintiffs, filed an action against the San Gabriel Valley Water Company 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 Basin in such waters. After six years of study and negotiation a Stipulation for Judgment was filed on February 10, 1965, and 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

[5] 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.
[6] Upper San Gabriel Valley Municipal Water District v. City of Alhambra, et al, 924128, Judgment entered January 4, 1973.

River system was divided at Whittier Narrows, the boundary between San Gabriel Valley upstream and the coastal plain of Los Angeles County downstream. A copy of the Long Beach Judgment is located in Appendix F.

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 within Central Basin 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 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 require 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 Central Basin, and one jointly nominated by Upper District and Central Basin. 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 its determinations of usable water received by the Lower

Area, and to prepare an annual report to the Court and to the Parties. The River Watermaster has rendered annual reports for the water years 1963-64 through 2008-09 and operations of the river system under the Long Beach Judgment and through the administration by the River Watermaster have been very 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.

4.2.1.2 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, including the City. After consideration by the Association membership, 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. In this Judgment, the City was included as a Party. 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 Judgment (Main Basin Judgment) was entered on January 4, 1973. A copy of the Main Basin Judgment is located in Appendix G.

There are three municipal water districts overlying and partially overlying the Main Basin. The three districts are the Upper District, SGVMWD and Three Valleys. The location of these districts is shown on Plate 3. The City is a member of Three Valleys.

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 Watermaster. Six of those members are nominated by water producers (producer members) and three members (public members) are nominated by the Upper District and SGVMWD, which overlie most of the Main 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 through the year. A copy of the Main Basin Watermaster's Rules and Regulations is located in Appendix H.

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.

The City's water rights are adjusted annually based on an Operating Safe Yield. If the City 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. As indicated in Chapter 2.1 above, the City has a prescriptive pumping right of 9,393 acre-feet and a pumper's share of 4.75261 percent of the Operating Safe Yield. The Operating Safe Yield for the Main Basin was 170,000 acre-feet in fiscal year 2009-10. Therefore, the City's allocation of its portion of the Operating Safe Yield was 8,079.44 acre-feet in fiscal year 2009-10.

In addition to Replacement Water Assessments, the Main Basin Watermaster levies an Administration Assessment to fund the administration of the Main Basin management program under the Main Basin 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 50 percent of the administration costs of the River Watermaster service. The Main Basin Watermaster also 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 Main Basin 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 Main Basin Judgment provides that the Main Basin Watermaster will not allow imported water to be spread in the main part of the Main Basin when the groundwater elevation at the Baldwin Park Key Well[7] (Key Well) exceeds 250 feet; and that the Main Basin Watermaster will, insofar as practicable, spread imported water in the Main Basin to maintain the groundwater elevation at the Key Well above 200 feet. One of the principal reasons for the limitation on spreading imported water when the Key Well elevation exceeds 250 feet is to reserve ample storage space in the Main Basin to capture native surface water runoff when it occurs and to optimize the conservation of such local water. 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 Area through percolation to groundwater storage) is credited to the Upper Area as Usable Surface Flow.

[7] The Baldwin Park Key Well is a water level monitoring well located in the City of Baldwin Park used to determine when imported water may or may not be spread in the Basin.

4.2.1.3 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 the Main Basin for their water supply. Imported water for groundwater replenishment is delivered to the flood control channels and diverted and spread at spreading grounds through Main Basin Watermaster's agreement with the DPW. Groundwater replenishment, utilizing imported water, is 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 the MWD and Upper District, which permits MWD 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 TVMWD and permits MWD to deliver and store 40,000 acre-feet for future Replacement Water use. The third is with SGVMWD and contains generally the same conditions as the agreement with MWD except that the stored quantity is not to exceed 40,000 acre-feet. The City has a Cyclic Storage account and is allowed to store a maximum of 5,000 acre-feet at any given time. As of the end of fiscal year 2009-10, the City had 2,348.63 acre-feet in its Cyclic Storage account.

Imported Make-Up Water is often 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 reimbursing the Lower Area interests for their purchase of recycled water cannot fulfill the amount of Make-Up 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.

4.2.1.4 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 is 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 volatile organic compounds (VOCs) as well as by agricultural operations that infiltrated nitrates into the groundwater. Cleanup efforts were undertaken at the local, state, and federal level.

By 1989, local water agencies, including the City, adopted a joint resolution regarding water quality issues that stated that 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 "Five-Year Water Quality and Supply Plan" is located in Appendix I.

The Main Basin Watermaster prepares and annually updates the Five-Year Water Quality and Supply Plan in accordance with the requirements of Section 28 of its 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 the 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 Main Basin;
5. address perchlorate, N-nitrosodimethylamine (NDMA), and other emerging contaminants in the Main Basin;
6. develop a cleanup and water supply program consistent with the EPA plans for its San Gabriel Valley 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. 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 Main Basin Watermaster Board takes its final action.

4.2.2 DESCRIPTION OF MAIN BASIN

Section 10631(b)(2)

A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For 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.

4.2.2.1 BACKGROUND

The Main Basin is located within the San Gabriel Valley 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 the San Jose and Puente Hills, as shown on Plate 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, 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. Of the approximately 490 square miles of drainage area upstream of Whittier Narrows, about 167 square miles are valley lands, and about 323 square miles are mountains and foothills.

The Main Basin includes essentially the entire valley floor of 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 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 is a large groundwater basin replenished by stream runoff from the adjacent mountains and hills, by rainfall directly on the surface of the San Gabriel 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.

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 San Gabriel Valley. The greatest area of land use in the San Gabriel Valley is for residential and commercial purposes. DWR Bulletin 118 does not identify the Main Basin as currently being in overdraft.

4.2.2.2 GEOLOGY

The Main Basin consists of a roughly bowl-shaped depression in the bedrock, filled over millions of years with alluvial deposits. This bowl-shaped depression is relatively deep; the elevation of the base of the groundwater reservoir declines from about 800 feet above the 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*).

Most of the alluvium deposited within this depression is debris from the San Gabriel Mountains, washed and blown from the side of the mountains over time. This process has also resulted in the materials within 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 feet to 300 feet in the northeastern portion of the Main Basin near the mountains (*DPW, 1934*) to nearly 4,000 feet in the South El Monte area (*DWR, 1966*).

The soils overlying the Main Basin average about 6 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 San Gabriel Valley. Since the San Gabriel 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. More detailed Main Basin geology is discussed

in the report entitled “Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geohydrology” (*DWR, 1966*).

4.2.2.3 HYDROGEOLOGY

The total fresh water storage capacity of the Main Basin is estimated to be about 9.5 million acre-feet. Of that, about 1,000,000 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 Plate 4 and hydrograph of the Key Well is shown on Figure 1. The historic 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 historic low was recorded in November 2009 at 189.2 feet, at which time Main Basin storage was estimated to be about 7,600,000 acre-feet. The Key Well hydrograph shown on Figure 1 illustrates the cyclic nature of Main 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. The most recent groundwater contour map is shown on Plate 5. 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 to

the movement of subsurface water. The Main Basin therefore operates as a single, unconfined aquifer. As previously mentioned, a thorough discussion of Main Basin hydrogeology is contained in the report "Planned Utilization of Ground Water Basins, San Gabriel Valley, Appendix A: Geohydrology" (*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. Plate 4 shows the location of the sub-basins within the Main Basin.

4.2.2.4 HYDROLOGY

The major sources of recharge to the Main Basin are direct penetration of rainfall on the San Gabriel 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. Rainfall is also highly variable from year to year.

The magnitude of annual recharges 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 been estimated by River Watermaster. DPW maintains records on the amount of local and imported water conserved in water spreading facilities and stream channels.

The Main Basin is bisected by the San Gabriel River. 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 (see Plate 5). The San Gabriel River flows southwesterly across the valley to Whittier Narrows, a distance of about 15 miles. It

exits the San Gabriel Valley at Whittier Narrows, and transverses the Coastal Plan 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. 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. 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 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 reduced 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 Plate 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 Plate 6. 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 San Gabriel Valley along the stream channels. Generally, the Main Basin directs groundwater to the southwest through Whittier Narrows.

4.2.2.5 WATER QUALITY MONITORING

As detailed in Chapter 4.2.1.4 above, the Main Basin Watermaster prepares and annually updates the Five-Year Water Quality and Supply Plan that discusses water quality management in the Main Basin.

4.2.3 LOCATION, AMOUNT AND SUFFICIENCY OF GROUNDWATER PUMPED FOR THE PAST FIVE YEARS

Section 10631(b)(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.

4.2.3.1 GROUNDWATER SOURCES IN MAIN BASIN

The City produces groundwater through its eight active wells (Wells 2-E, 5-E, 8-E, 9-E, 10-E, 11-E, 12-G, and 13-E) in the Main Basin, as shown on Plate 2. Historically, the City also produced groundwater from Wells No. 3-E, 4-E, and 7-E in the Main Basin but these wells are currently inactive due to elevated levels of nitrate, perchlorate, and/or volatile organic compounds (VOCs). The groundwater supply from the Main Basin is pumped to the reservoir storage facilities and then delivered to the City's customers.

The City's past groundwater supply pumped from the Main Basin over the past five years is shown on Table 8. The City has a prescriptive pumping right of about 9,393 acre-feet and a pumper's share of 4.75261 percent of the Operating Safe Yield. If the City pumps more than the allowed amount of water, replacement water may be purchased from Three Valleys to recharge the Main Basin. In regards to "sufficiency" of groundwater pumped, the City was able to rely on the Main Basin to meet most of its groundwater demand.

4.2.4 LOCATION, AMOUNT AND SUFFICIENCY OF GROUNDWATER PROJECTED TO BE PUMPED

Section 10631(b)(4)

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.

4.2.4.1 GROUNDWATER SOURCES IN MAIN BASIN

As noted in Chapter 4.2.1, the Main Basin is managed by the Main Basin Watermaster. Section 42 of the Main Basin Judgment (Basin Operating Criteria) states in part "*…Watermaster shall not spread Replacement Water when the water level at the Key Well exceeds Elevation two hundred fifty (250), and Watermaster shall spread Replacement Water, insofar as practicable, to maintain the water level at the Key Well above Elevation two hundred (200).*" Figure 1 shows the historic fluctuation of the Key Well since the Main Basin was adjudicated in 1973 and demonstrates that the Main Basin was generally operated between elevation 250 feet and 200 feet above MSL. Furthermore, at elevation 200 feet MSL at the Key Well, the Main Basin has about 7,600,000 acre-feet of available storage. During the period of management under the Main Basin Judgment, significant drought events have occurred from 1969 to 1977, 1983 to 1991, 1998 to 2004, and 2006-07 to 2008-09. In each drought cycle, the Main Basin was managed to maintain its water levels. As shown on Table 6, future demands are projected to be less than historical demands. **Therefore, based on historic and on-going management practices, the City will be able to rely on the Main Basin for adequate supply over the next 20 years under single year and multiple year droughts.** The groundwater projected to be pumped by the City, is shown on Table 8. Details on any changes or expansion planned for the groundwater supply is provided in Chapter 4.6 below.

4.3 TRANSFER OPPORTUNITIES

Section 10631(d)
Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

4.3.1 SHORT-TERM

- The City has one interconnection with Suburban Water Systems that serves as short-term emergency exchange opportunities. This connection was utilized in the past to blend with the supply from Wells 3-E and 4-E. However, since the nitrate concentration in the Suburban supplied water varied as they put their wells with higher nitrate concentration into service without the City of Glendora's knowledge, this connection could not be dependably utilized by the City.

4.3.2 LONG-TERM

The City has four interconnections with other water agencies that serve as long-term exchange opportunities and includes:

- Three Valleys Municipal Water District
- Covina Irrigating Company

4.4 DESALINATED WATER OPPORTUNITIES

Section 10631(i)
Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

Groundwater produced from the Main Basin has acceptable Total Dissolved Solids (TDS) concentrations (less than secondary Maximum Contaminant Level [MCL] of 1,000 milligrams per liter or mg/l) and does not require desalination. The average

TDS value for the City's Main Basin Wells is below its secondary MCL, based on recent data. The California Department of Public Health (CDPH) 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 does not need 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, if needed, through coordination with other agencies that have ocean desalination programs.

4.5 RECYCLED WATER OPPORTUNITIES

4.5.1 RECYCLED WATER AND POTENTIAL FOR USE

Section 10633

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

The City does not have access to recycled water due to the lack of infrastructure to convey recycled water to the City. The City would have to construct costly transmission and distribution facilities to deliver recycled water to customers within its service area. A list of potential recycled water users within the City with a potential minimum demand of 15 AFY are listed in Appendix J. The potential users comprise mainly of schools, hospitals, and golf courses.

The City has assessed the use of recycled water and determined that use of recycled water is not cost effective at this time. The City assessed the use of recycled water considering these essential factors:

- The cost of transmission and distribution facilities
- The cost of retrofitting existing irrigation systems

- The cost of installation of meters
- The cost of operation and maintenance of a separate system
- The cost of administering user agreements
- Water quality issues
- Difference in revenue from recycled water versus domestic water usage
- Potential funding sources
- Potential number of users
- Potential usage volume.

Although an exhaustive cost benefit analysis has not been conducted, it is evident that use of recycled water is not cost effective at this time due to the unavailability of a nearby source of supply. The City will continue to assess the potential for use of recycled water and work with local and regional agencies on this matter.

4.5.2 WASTEWATER COLLECTION, TREATMENT, AND DISPOSAL

Section 10633
(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

Wastewater from the City of Glendora is collected and treated by the County Sanitation District of Los Angeles County (LACSD). Since LACSD collects and treats the wastewater generated, the City does not maintain a record of wastewater collected and treated in the service area.

4.5.3 CURRENT RECYCLED WATER USE

Section 10633
(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use

The City currently does not have any recycled water use within its service area. Therefore, this requirement is currently not applicable to the City.

4.5.4 POTENTIAL USES OF RECYCLED WATER

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.

As shown in Appendix J, there are several potential recycled water users that exist within the City boundary. The purpose of use will be mainly for landscape irrigation. The estimated annual recycled water use for each potential users are also shown in Appendix J.

4.5.5 PROJECTED RECYCLED WATER USE

Section 10633
(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

The City does not have any existing or planned recycled water use within its service area. Therefore, this requirement is currently not applicable to the City.

4.5.6 ENCOURAGING USE OF RECYCLED WATER

Section 10633
(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

As indicated above, the City does not have access to recycled water due to the lack of infrastructure to convey recycled water to the City. Therefore, this requirement is currently not applicable to the City.

4.5.7 PLAN FOR OPTIMIZING USE OF RECYCLED WATER

Section 10633
(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

As indicated above, the City does not have access to recycled water due to the lack of infrastructure to convey recycled water to the City. Therefore, this requirement is currently not applicable to the City.

4.6 FUTURE WATER PROJECTS

Section 10631
(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water uses as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of 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.

The City currently has no plans to implement any water supply projects or programs in the near future.

Chapter 5
WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING

5.1 WATER SUPPLY RELIABILITY

5.1.1 WATER MANAGEMENT TOOLS

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.

This Plan describes water management tools and options used by the City to maximize local resources and minimize the need to import water. These include Groundwater Basin Management Structure (Chapter 4.2), Future Water Projects (Chapter 4.6), and DMMs (Chapter 6).

5.1.2 SUPPLY INCONSISTENCY

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.

As a result of the Main Basin management, the City has not experienced water supply inconsistencies. The management of Main Basin is based on its adjudications, which are described in Chapter 4.2.

5.2 WATER SHORTAGE CONTINGENCY PLANNING

5.2.1 CATASTROPIC INTERRUPTION OF WATER SUPPLIES

Section 10632
(c) 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.

The City has developed an Emergency Response Plan (ERP) that describes the actions the City would take in response to various major events including natural and man-made disasters. A copy of the ERP is included in Appendix K. The ERP contains action plans for scenarios deemed to be detrimental to City operations and outlines procedures that City personnel should take in order to respond effectively to emergencies, including acts of sabotage, that affect the water distribution system.

5.2.2 MANDATORY PROHIBITIONS

Section 10632
(d) 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.

The City Ordinance 1925 includes prohibitions on various wasteful water uses such as lawn watering during mid-day hours, washing sidewalks and driveways with potable water, and allowing plumbing leaks to go uncorrected more than 24 hours after customer notification. During a City declared Stage 1 Drought Condition, all consumer shall reduce their water consumption by at least ten percent (10%) below their average consumption for the same period of the previous year, or the year prior to the Stage 1 Drought Condition being declared. A copy of City Ordinance 1925 is included in Appendix L.

5.2.3 CONSUMPTION REDUCTION METHODS

Section 10632
(e) 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.

As the 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% of normal supply during a severe or extended water shortage. The various consumption reduction methods undertaken by the City are included in Table 10.

5.2.4 PENALTIES OR CHARGES FOR EXCESSIVE USE

Section 10632
(f) Penalties or charges for excessive use, where applicable.

Under the City's "No Waste" Ordinance, any customer violating the regulations and restrictions on water use set forth in the Ordinance shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning. For a third violation, the City may install a flow-restrictor in the service. If a flow-restrictor is placed, the violator shall pay the cost of the installation and removal. If water service is disconnected, it shall be restored only upon payment of the turn-on charge fixed by the City Council. The various penalties and charges for excessive use are included in Table 11.

5.2.5 REVENUE AND EXPENDITURE IMPACTS

Section 10632
(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), 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.

The City has not performed an analysis on the impacts of the actions and conditions as described above on the revenues and expenditures. However, the City does perform periodic financial review and continue to monitor the revenue requirement to potentially make adjustments to insure that revenue needs are met during water shortage periods.

5.2.6 DRAFT WATER SHORTAGE CONTINGENCY RESOLUTION OR ORDINANCE

Section 10632
(h) A draft water shortage contingency resolution or ordinance.

The City has adopted Ordinance 1585 and 1925 pertaining to Drought Regulations and Water Conservation Standards. A copy of both Ordinances are included in Appendix L.

5.3 WATER QUALITY

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.

The City owns and operates Wells 1-E, 2-E, 5-E, 8-E, 9-E, 10-E, 11-E, 12-G, and 13-E in the Upper San Gabriel Canyon Basin and Glendora Basin with a combined capacity of about 12,900 GPM. Groundwater from Wells 10-E and 11-E has nitrate concentration exceeding the MCL of 45 mg/L and are blended with the clean Upper San Gabriel Canyon Basin wells (5-E, 8-E, 9-E, and 12-G). The City's active wells meet all California Department of Public Health (CDPH) standards for drinking water. Wells 3-E, 4-E, and 7-G have been impacted by VOCs, nitrate, and perchlorate and are currently

inactive. The City will be able to use groundwater as a supply source over the next 20 years.

The City also receives treated surface water from MWD and CIC. Water quality from MWD and CIC relating to supply reliability are addressed separately in their respective Urban Water Management Plan.

5.4 DROUGHT PLANNING

5.4.1 RELIABILITY OF SUPPLY AND VULNERABILITY TO SEASONAL OR CLIMATIC SHORTAGE

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.

As a result of the Main Basin management, the City has not experienced water supply deficiencies. The management of Main Basin is based on its adjudications, which are described in Chapter 4.2. Based on current management practices in the Main Basin, the minimum water supplies available at the end of an average water year, a single dry year, and multiple dry years would be at least equal if not greater than the City's water demand.

Information regarding the reliability of the groundwater supplies from Main Basin is based on the 51-year rainfall data for the San Gabriel Valley (Table 2), and past data on the availability of water supply to meet demands during seasonal or climatic shortage. Table 2 summarizes the rainfall in the San Gabriel Valley from 1958-59 through 2008-09. According to the rainfall data for the San Gabriel Valley, the annual average rainfall is 17.8 inches. Therefore, 2005-06 represents an average water year for the City in which the total amount of rainfall was about 16.8 inches. A single dry

year for the City was represented in 2006-07 in which the total amount of rainfall was about 4.9 inches. A multiple dry year sequence for the City is represented from 2006-07 to 2008-09, where the total amount of rainfall was about 4.9 inches, 16.4 inches, and 14.0 inches, respectively. Table 12 shows that during an average year, single dry year and multiple dry years, groundwater production for the City remained relatively stable. A single dry year or multiple dry years did not compromise the City's ability to provide a reliable supply of water to its customers.

Therefore, based on current management practices in the Main Basin and the reliability of the imported water supply from Three Valleys, the minimum water supplies available at the end of an average water year, a single dry year, and multiple dry years would be at least equal if not greater than the City's water demand.

5.4.2 STAGES OF ACTION IN RESPONSE TO WATER SUPPLY SHORTAGES

Section 10632
(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

The City has seven water shortage stages, including up to 50 percent reduction in water supply which are detailed in Table 1 of the ERP included in Appendix K.

5.4.3 THREE YEAR MINIMUM WATER SUPPLY

Section 10632
(b) 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.

As shown on Table 12, the City experienced multiple dry years during fiscal years 2006-07, 2007-08 and 2008-09. The ratio between the normal water year in 2005-06 and multiple dry years were estimated for the City's supply, as shown on Table 12. This ratio from Table 12 was used to estimate the minimum water supply available

during each of the next three water years based on the driest three-year historic sequence for the City's water supply (see Table 13).

5.4.4 WATER USE REDUCTION MEASURING MECHANISM

Section 10632
(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

The City records potable water production daily under normal water supply conditions. Reports are prepared on a weekly basis by the Water Supervisor. Totals are reviewed by the Water Division Manager and a water supply report is prepared monthly. The superintendent presents the report to the Director of Public Works and the City Manager.

During a Stage 1 or Stage 2 water shortage, daily production figures are reported to the Water Superintendent. The Water Superintendent compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the Water Manager. Monthly reports are sent to the Director of Public Works, the City Manager, and to the City Council. If reduction goals are not met, the Director of Public Works through the City Manager will notify the City Council for direction to implement corrective action. During a Stage 3 water shortage, the procedures for Stage 1 and 2 will be followed, with the addition of a daily production report to the Director of Public Works.

5.4.5 ASSESSMENT OF THE RELIABILITY OF WATER SERVICE

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 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 year 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.*

As previously discussed in Chapter 3.2, the City applied SB 7 to estimate the City's 2015 Interim Urban Water Use Target of 239 GPCD and the City's 2020 Urban Water Use Target of 212 GPCD. These Urban Water Use Targets were then applied to estimate the City's projected normal year demands in 2015, 2020, 2025 and 2030, as shown on Table 6. The City will continue to use groundwater and imported and local surface water as its future water supplies over the next 20 years. The following sections discuss the City's water service reliability assessment, which compares the City's supply and demand over the next 20 years during normal, dry and multiple dry years.

5.4.5.1 NORMAL WATER YEAR

As previously discussed, the City's projected normal water year demand over the next 20 years in five-year increments was based on the City's 2015 and 2020 Urban Water Use Targets of 239 GPCD and 212 GPCD, respectively. The City's projected supply was based on the projected demand, as shown on Table 8. The comparison of the City's projected supply and demand during a normal water year is shown on Table 15. As shown on Table 14, the City's supply can meet demands during a normal water year for the next 20 years.

5.4.5.2 SINGLE-DRY YEAR

As shown on Table 12, the City experienced a single-dry year during fiscal year 2006-07 and a normal water year during fiscal year 2005-06. The ratio between the normal water year and single-dry year was estimated for the City's supply and demand, as shown on Table 12. This ratio and the projected supply and demand during a normal water year from Table 15 was used to estimate the City's projected supply and demand during a single-dry year over the next 20 years in five-year increments. The comparison

of the City's projected supply and demand during a single-dry year is shown on Table 15. As shown on Table 15, the City's supply can meet demands during a single-dry year for the next 20 years.

5.4.5.3 MULTIPLE DRY YEARS

As shown on Table 12, the City experienced multiple dry years during fiscal years 2006-07, 2007-08 and 2008-09. The ratio between the normal water year in 2005-06 and multiple dry years were estimated for the City's supply and demand, as shown on Table 12. This ratio and the projected supply and demand during a normal water year from Table 15 was used to estimate the City's projected supply and demand during multiple dry years over the next 20 years in five-year increments. The comparison of the City's projected supply and demand during multiple dry years is shown on Table 16. As shown on Table 16, the City's supply can meet demands during multiple dry years for the next 20 years.

5.4.5.4 GROUNDWATER RELIABILITY

The City obtains its water supply from groundwater wells located in the Main Basin. Chapter 4 provides a description of the management of water resources in the Main Basin, as well as information on basin management. Chapter 4 also demonstrates the management structure of the Main Basin provides a reliable source of groundwater supply for the City in an average, single-dry and multiple-dry water years. Historical data indicate the Main Basin have been well managed for over 40 years of adjudication, resulting in a stable and reliable water supply. There are no contemplated basin management changes, other than the planned use of recycled water for groundwater replenishment in the Main Basin. Therefore, the groundwater supply in the Main Basin is deemed reliable.

Chapter 6

DEMAND MANAGEMENT MEASURES (DMM)

The City supports water conservation planning and implementation of water conservation measures. Historically, the City has employed numerous conservation measures to discourage water waste and over-use. The City participates in the promotion of water conservation programs developed and implemented by Three Valleys, a regional agency of which the City is a member. Water conservation programs offered by Three Valleys are available to residents of the City.

6.1 DEMAND MANAGEMENT MEASURES BEING IMPLEMENTED

Section 10631

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

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.
(B) Residential plumbing retrofit.
(C) System water audits, leak detection, and repair.
(D) Metering with commodity rates for all new connections and retrofit of existing connections.
(E) Large landscape conservation programs and incentives.
(F) High-efficiency washing machine rebate programs.
(G) Public information programs.
(H) School education programs.
(I) Conservation programs for commercial, industrial, and institutional accounts.
(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

6.1.1 WATER SURVEY PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL AND MULTIFAMILY RESIDENTIAL CUSTOMERS [10631(F)(1)(**A**)]

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

The City maintains two full time staff persons to perform water use efficiency field survey at the customers' property. During fiscal year 2009-10, a total of 105 surveys were performed including residential, commercial, industrial and institutional customers.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.2 RESIDENTIAL PLUMBING RETROFIT [10631(F)(1)(**B**)]

The City offers a rebate program for the purchase of rotating sprinkler nozzles to their residential customers as part of the residential plumbing retrofit program to promote water conservation. The City currently offers $4.00 per nozzle to qualifying residential customers. The rebate application along with a list of qualifying appliances are listed on the City's website. During fiscal year 2009-10, the City provided rebates in the amount of $13,304.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction

from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.3 SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR [10631(F)(1)(**C**)]

As a part of normal operation and maintenance of the water system, City staff does preventive maintenance. This includes regular checks on valves and meters, and pipeline maintenance. If leaks are encountered or suspected during routine inspection of the system, further evaluation is conducted. If leaks are found, they are repaired.

The City monitors the water system for loss by comparing water production to water sales. The City will continue to monitor the water system for water loss, and if a trend develops to indicate that further analyses are required, the City will provide the necessary funds to institute another leak detection program.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.4 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS [10631(F)(1)(**D**)]

The City meters all customer connections, including separate metering for single-family residential, commercial, industrial, large landscape and institutional/governmental facilities.

The City has two commodity rates (Baseline and Discretionary Use) for water for each of the City's four pressure zones. It currently ranges from $1.50 per hundred cubic

feet (CCF) of water to $2.84 per CCF. Water connection fees are added to the commodity rate to comprise the total water bill. The water connection fees are based on the size of the meter and range from $56.73 per month for a meter less than 1-inch in size to $975.82 per month for an 8-inch meter. Water bills are sent out bi-monthly. A water rate sheet showing current rates and the proposed rate increase is located in Appendix M. Based on the current billing system, the more water a customer uses, the higher the water bill. This applies to all water-use sectors (e.g., single family residential, multifamily residential, industrial, institutional, etc.). Therefore, there is a economic benefit to conserving water.

The City has an automatic water rate adjustment in place tied to the consumer price index at a not to exceed rate of five percent increase per year.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.5 LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES [10631(F)(1)(**E**)]

The City routinely hosts seminars and workshops in the community to promote landscape conservation. The City continues to offer a rebate program for the purchase of landscape related items to both residential and commercial customers to promote water conservation. These items include synthetic turf replacement at $0.50 per square foot, weather based irrigation controller at $80 each for residential customers and $25 per station for commercial customers, and rotating nozzle retrofit at $4.00 each for commercial customers. During fiscal year 2009-10, the City provided rebates in the amount of $17,724.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.6 HIGH-EFFICIENCY WASHING MACHINE REBATES PROGRAM [10631(F)(1)(**F**)]

The City continues to offer a rebate program for the purchase of high-efficiency washing machines to both residential and commercial customers to promote water conservation. The City currently offers $85.00 to qualifying residential customers and $100.00 to qualifying commercial customers. The rebate application along with a list of qualifying appliances are listed on the City's website. During fiscal year 2009-10, the City provided rebates in the amount of $2,975.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction

from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.7 PUBLIC INFORMATION PROGRAMS [10631(F)(1)(**G**)]

The City has developed a public information program to educate the public to the benefits of water conservation. The program started in 2010. The program involves the dissemination of information through literature provided at City Hall and other City of Glendora facilities, and articles in the City of Glendora newsletter. The City includes informational flyers with the water bills periodically to address water conservation and other important matters.

The City periodically holds public seminars and workshops with other local agencies to promote water conservation. Some of the events hosted in 2010 include "Water/Energy Sustainability Summit and Workshop", "Rain Bird Corporation Water Technology Seminar", and "California-Friendly Gardening Workshop" with Golden States Water Company.

The City also provides water conservation information and updates on its website.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.8 SCHOOL EDUCATION PROGRAMS [10631(F)(1)(**H**)]

As part of a public outreach program for water conservation, City representatives have visited schools to discuss water conservation. This discussion is usually included

as part of an overall presentation on the water system and how it works. During 2010, the City gave presentations at the following schools:

- Sellers Elementary School
- Cullen Elementary School
- Goddard Middle School
- La Ferta Elementary School
- Sutherland Elementary School

The City will continue the school education programs to promote water conservation to that sector of the community.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.9 CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL ACCOUNTS [10631(F)(1)(**I**)]

The City offers a rebate program for the purchase of connectionless food steamers ($485 each), Tier III ice making machines ($300 each), pressurized waterbrooms ($100 each), cooling tower conductivity controllers ($625 each), and pH/conductivity controllers ($1,750 each) as part of their conservation programs for commercial, industrial, and institutional customers to promote water conservation. The rebate application along with a list of qualifying appliances are listed on the City's website. During fiscal year 2009-10, the City provided rebates in the amount of $200. In addition, the City regularly performs water use efficiency field surveys for the commercial, industrial, and institutional customers. During fiscal year 2009-10, the City

performed a total of 15 surveys for these classes of customers. The City will continue to coordinate with this sector of the community regarding water use and conservation through public education process described above.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.10 CONSERVATION PRICING [10631(F)(1)(**K**)]

The City's current water rates structure is tiered to promote water conservation by customers. The City established a baseline allocation rate starting at $1.50 per unit of water and in the event the customer uses more than the amount of water allotted for the baseline allocation, a discretionary allocation rate starting at $1.95 per unit of water would apply. The discretionary allocation rate essentially penalizes the customers for over usage of water.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.11 WATER CONSERVATION COORDINATOR [10631(F)(1)(**L**)]

Various City staffs are involved in the water conservation program. These include maintenance and operations personnel, Water Department Superintendent,

Public Works Director, and administrative staff who answer billing and usage questions and serve at the front counter at City Hall. In addition, the City employs a full time Water Conservation Coordinator to oversee all water conservation activities with the assistance of two other full time employees. The Water Conservation Coordinator is responsible for all matters pertaining to the City's water conservation program including implementation of DMMs.

6.1.12 WATER WASTE PROHIBITION [10631(F)(1)(**M**)]

The City adopted a Drought Regulations and Water Conservation Standards Ordinance (Ordinance 1585) in April 1991. The ordinance states that it shall be a violation for any consumer or account holder to waste any water obtained from or through the water distribution facilities of the City. Waste is defined as any excessive, unnecessary or unwarranted use of water, including but not limited to any use which causes unnecessary runoff beyond the boundaries of any property as served by its meter and any failure to repair as soon as reasonably possible any leak or rupture in any water pipes, faucets, valves, plumbing fixtures or other water service appliances. The Ordinance identifies seven phases of implementation and restricts specific uses of water during a declared water shortage. In August 2009, the City adopted Ordinance 1925 to amend the municipal code for mandatory conservation measures. Ordinance 1925 provided amendment to actions to be taken during a Stage 1 and 2 drought condition.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.1.13 RESIDENTIAL ULTRA-LOW FLUSH TOILET REPLACEMENT PROGRAMS [10631(F)(1)(**N**)]

The City continues to offer a rebate program for the purchase of ultra-low flush toilets to both residential and commercial customers to promote water conservation. The City currently offers $100.00 per toilet to all qualifying customers and $200.00 per urinal to all qualifying commercial customers. The rebate applications along with a list of qualifying toilets and urinals are listed on the City's website. During fiscal year 2009-10, the City provided rebates in the amount of $12,400.

The Uniform Building Code requires the installation of low flow toilets in new construction as of 1992. Even though this does not affect older facilities, it has aided in the overall water conservation effort.

The City does not evaluate the effectiveness of this DMM separately but evaluates the year-to-year overall water savings. The water consumption reduction from fiscal year 2008-09 to 2009-10 is approximately 8.9 percent and includes impacts of climate, weather and water conservation efforts.

6.2 DEMAND MANAGEMENT MEASURES NOT IMPLEMENTED

Section 10631

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and non-economic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

6.2.1 WHOLESALE AGENCY PROGRAMS [10631(F)(1)(**J**)]

The City is a retail water supplier. Therefore wholesale agency programs are not applicable to the City. However, as a member of Three Valleys, the City participates in Three Valleys' wholesale agency programs. Three Valleys' 2010 Plan is incorporated by reference.

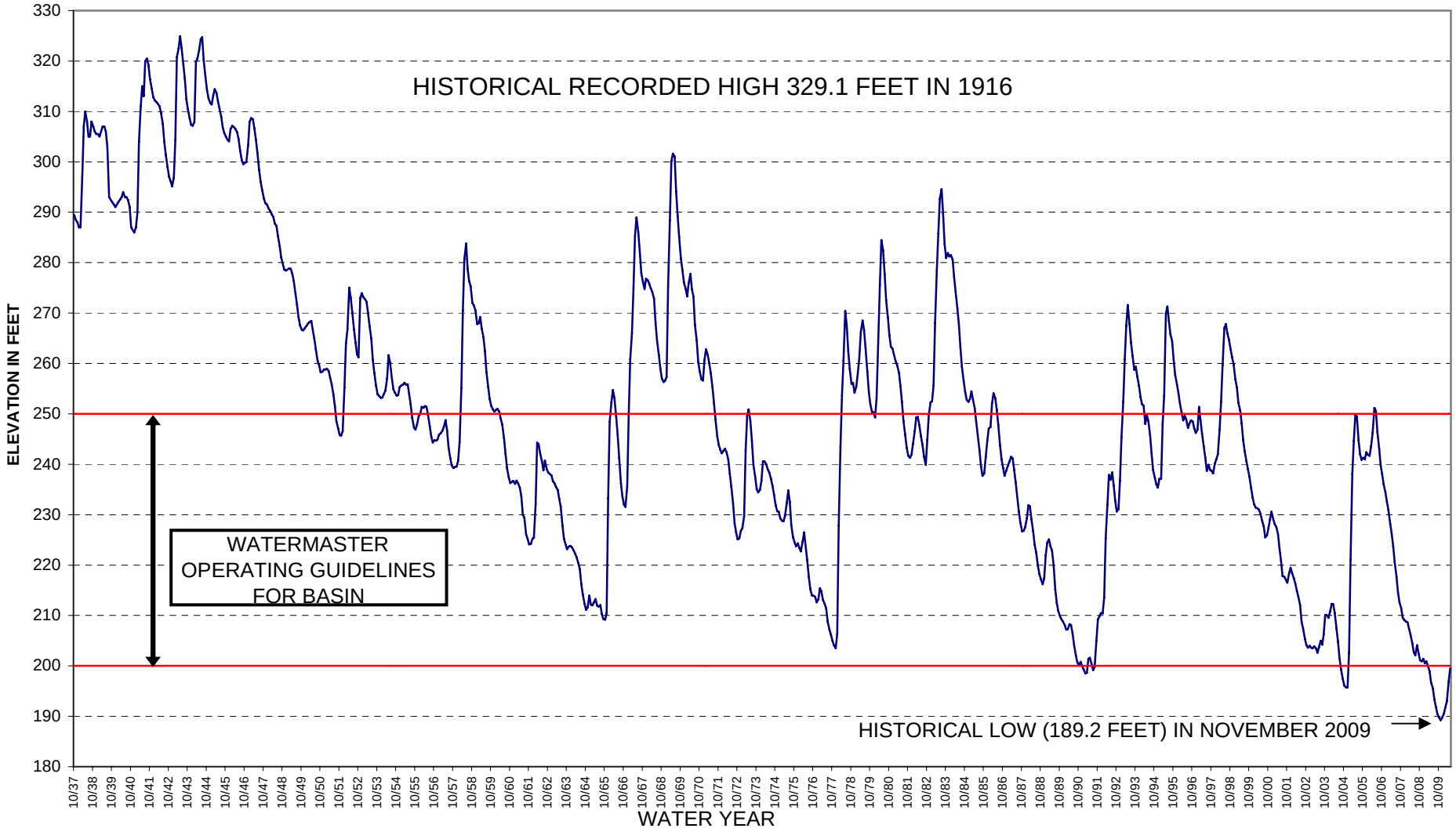
Chapter 7

COMPLETED URBAN WATER MANAGEMENT PLAN CHECKLIST

A completed Plan checklist, with page information indicating where the required element can be found within the Plan, is provided in Appendix N.

Z:\Jobs\2360\Report\Glendora 2010 UWMP (FINAL).doc

FIGURES



STETSON ENGINEERS INC.

Covina, California

WATER RESOURCE ENGINEERS

CITY OF GLENDORA

HISTORICAL BALDWIN PARK KEY WELL ELEVATION

FIGURE 1

J:\Jobs\2360\Figures\Figure 1_ Key Well Elevation

TABLES

TABLE 1
COORDINATION WITH APPROPRIATE AGENCIES

Agencies	Participated in Developing the Plan	Commented on the Draft	Attended Public Meetings	Was Contacted for Assistance	Was Sent a Copy of the Draft Plan	Was Sent a Notice of Intent to Adopt	Not Involved/ No Information
1. City of Glendora Planning Department					x	x	
2. Three Valleys Municipal Water District					x	x	
3. Covina Irrigating Company					x	x	
4. County of Los Angeles					x	x	
5. Main San Gabriel Basin Watermaster					x	x	
6. Upper San Gabriel Valley Municipal Water District					x	x	

TABLE 2
ANNUAL RAINFALL IN THE SAN GABRIEL VALLEY
FROM 1958-59 THROUGH 2008-09*

WATER YEAR	RAINFALL IN INCHES
1958-59	8.5
1959-60	10.6
1960-61	5.9
1961-62	22.4
1962-63	12.3
1963-64	9.4
1964-65	15.2
1965-66	19.6
1966-67	25.0
1967-68	15.0
1968-69	30.5
1969-70	11.1
1970-71	13.3
1971-72	8.5
1972-73	22.4
1973-74	16.8
1974-75	14.9
1975-76	12.1
1976-77	14.5
1977-78	38.4
1978-79	23.9
1979-80	34.8
1980-81	10.3
1981-82	18.9
1982-83	39.3
1983-84	10.6
1984-85	14.6
1985-86	22.0
1986-87	9.1
1987-88	14.9
1988-89	11.2
1989-90	12.4
1990-91	15.1
1991-92	22.8
1992-93	35.9
1993-94	11.6
1994-95	30.4
1995-96	15.6
1996-97	17.5
1997-98	36.1
1998-99	8.6
1999-00	14.4
2000-01	15.5
2001-02	6.4
2002-03	19.4
2003-04	12.7
2004-05	45.3
2005-06	16.8
2006-07	4.9
2007-08	16.4
2008-09	14.0
TOTAL	**907.8**
51-YEAR AVERAGE	**17.8**

*Annual rainfall determined as the average of rainfall at San Dimas (station 95), Pomona† (station 356C), El Monte (station 108D), and Pasadena (station 610B).

†Pomona (station 356C) replaced Walnut (station 102D) in 2000-01.

TABLE 3
CLIMATE

	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Average Rainfall (in.)	3.6	5.5	1.9	1.2	0.5	0.1	0.0	0.0	0.2	1.0	1.4	2.4	17.8
Average Temperature (^{o}F)	54	54	56	59	61	69	72	77	76	70	61	57	63.8
Evapotranspiration (in.)	2.2	2.8	4.0	5.1	5.9	6.6	7.4	6.8	5.7	4.0	2.7	1.9	55.1

Source: Rainfall data from average of four Los Angeles County Department of Public Works rainfall stations. Temperature data from www.city-data.com for San Gabriel Valley. Evapotranspiration data from California Irrigation Management Information System.

TABLE 4
CURRENT AND PROJECTED POPULATION

Fiscal Year	Population Served by the City of Glendora [(1)(2)]	Percent Average Annual Increase of the Population of the City's Service Area
2004-05	46,800	--
2009-10	48,200	0.6
2014-15	49,500	0.5
2019-20	50,800	0.5
2024-25	51,800	0.4
2029-30	53,000	0.5

[(1)] Data from Southern California Association of Governments (SCAG)
[(2)] City of Glendora serves approximately 90% of the City's population

TABLE 5
CALCULATION OF PROJECTED WATER DEMAND
(ACRE-FEET)

Fiscal Year	Projected Population Served by the City of Glendora [1]	Urban Water Use Target (GPCD) [2]	Projected Water Demand [3]
2014-15	49,500	239	13,253
2019-20	50,800	212	12,064
2024-25	51,800	212	12,302
2029-30	53,000	212	12,587

[1] See Table 4
[2] See Chapter 3.2 for urban water use target
[3] (Projected population) x (Urban Water Use Target)

GPCD = gallons per capita per day

TABLE 6
WATER DEMANDS - PAST, CURRENT, AND PROJECTED
(ACRE-FEET)

Fiscal Year	Total Demand [1]	Delivery	Unaccounted Use [2]
2005-06	12,927	11,634	1,293
2006-07	14,608	13,147	1,461
2007-08	13,604	12,243	1,360
2008-09	13,012	11,711	1,301
2009-10	11,718	10,546	1,172
2014-15 [3]	13,253	11,928	1,325
2019-20 [3]	12,064	10,858	1,206
2024-25 [3]	12,302	11,072	1,230
2029-30 [3]	12,587	11,328	1,259

[1] See Table 8
[2] Historical unaccounted use = demand minus delivery
[3] Projected water demand from Table 5

TABLE 7
CALCULATION OF BASELINE DAILY PER CAPITA WATER USE

Water Use			Service Area Population		Per Capita Water Use		
						Average Per Capita Water Use	
Fiscal Year	Recorded Groundwater (Main Basin) and Imported and Local Surface Water Supply (acre-feet) [1]	Calculated Gross Water Use (gallons per day) [1]	Calendar Year	Population of City of Glendora [2]	Calculated Daily Per Capita Water Use	10-Year Continuous [3]	5-Year Continuous [4]
1995-96	12,096	10,797,841	1996	43,596	248		
1996-97	13,930	12,435,198	1997	43,630	285		
1997-98	12,062	10,767,231	1998	43,750	246		
1998-99	13,010	11,613,788	1999	43,957	264		
1999-00	14,116	12,600,916	2000	44,357	284		
2000-01	13,174	11,760,456	2001	45,140	261		
2001-02	13,974	12,474,155	2002	45,715	273		
2002-03	12,958	11,567,190	2003	46,240	250		
2003-04	15,344	13,697,218	2004	46,652	294		
2004-05	12,816	11,440,304	2005	46,828	244	265	
2005-06	12,927	11,539,508	2006	46,835	246	265	
2006-07	14,608	13,040,079	2007	46,910	278	264	
2007-08	13,604	12,143,845	2008	46,860	259	265	264
2008-09	13,012	11,615,565	2009	47,227	246	264	255
2009-10	11,718	10,460,444	2010	48,200	217	257	249

10-Year Baseline Daily Per Capita Water Use = 265 gallons per capita per day. [5]
5-Year Baseline Daily Per Capita Water Use = 264 gallons per capita per day. [6]

[1] See Table 8.
[2] Source: California Department of Finance. City of Glendora serves approximately 90% of the City's population.
[3] Average per capita water use for first base period of 10-year continuous, ending no earlier than December 31, 2004 and no later than December 31, 2010.
[4] Average per capita water use for second base period of 5-year continuous, ending no earlier than December 31, 2007 and no later than December 31, 2010.
[5] Highest value calculated for a 10-year continuous period between 1995-96 and 2009-10.
[6] Highest value calculated for a 5-year continuous period between 2003-04 and 2009-10.

TABLE 8
WATER SUPPLIES - PAST, CURRENT, AND PROJECTED
(ACRE-FEET)

Fiscal Year	Supply Sources			Total
	Main Basin Groundwater	Three Valleys Imported Water	CIC Surface Water	
1995-96	8,627	3,469	0	12,096
1996-97	11,790	2,140	0	13,930
1997-98	10,757	1,288	17	12,062
1998-99	11,901	1,109	0	13,010
1999-00	12,078	1,771	267	14,116
2000-01	10,759	2,104	311	13,174
2001-02	11,111	2,561	302	13,974
2002-03	11,084	1,722	152	12,958
2003-04	11,958	3,309	76	15,344
2004-05	10,728	1,919	168	12,816
2005-06	11,351	1,338	237	12,927
2006-07	12,204	2,256	148	14,608
2007-08	9,337	4,109	158	13,604
2008-09	9,908	2,895	209	13,012
2009-10	11,012	696	9	11,718
2014-15 (1)	--	--	--	13,253
2019-20 (1)	--	--	--	12,064
2024-25 (1)	--	--	--	12,302
2029-30 (1)	--	--	--	12,587

(1) See Table 6

TABLE 9
WATER SHORTAGE CONTINGENCY – MANDATORY PROHIBITIONS

Prohibition	Water Shortage Stage
Continuous running water from a hose, pipe, or faucet for the purpose of cleaning buildings and paved, tile, wood, plastic or other surfaces shall be prohibited	I through VII
Operator of restaurant providing table service shall offer water only upon request and post table signs notifying its customers of drought conditions and that water is available upon request	I through VII
Operator of hotel, motel, or other commercial establishment offering lodgings shall institute daily washing of towels and linens only upon request and shall post signs in each room notifying customers of the drought condition	I through VII
Use of water that causes runoff to cocur beyond the immediate vicinity of use shall be prohibited	I through VII
Watering shall be prohibited from 8:00 a.m. to 5:00 p.m. of any yard, orchard, park, golf course, recreational area, or other area containing vegetation with certain exceptions	I through VII
Use of water through a meter that is used solely for irrigation purposes shall be prohibited	I through VII
Watering of any yard, orchard, hillside, park, golf course, recreational area, or other area containing vegetation shall be limited to Monday, Wednesday, and Friday for all even address locations shall be limited to Tuesday, Thursday and Saturday for all odd address locations. Watering times shall be limited to no more than 5 minutes for each water cycle station and done only between the hours of 5:00 p.m. and 8:00 a.m.	I through VII
Private washing of all recreational vehicles and other vehicles shall be prohibited, except by use of a bucket and hose equipped with a self-closing valve that requires operator pressure to activate the flow of water	I through VII

TABLE 10
WATER SHORTAGE CONTINGENCY – CONSUMPTION REDUCTION METHODS

Consumption Reduction Method	Water Shortage Stage	Mandatory Reduction
Customer Water Curtailment	I	10 percent
Customer Water Curtailment	II	15 percent

TABLE 11
WATER SHORTAGE CONTINGENCY – PENALTIES AND CHARGES

Penalties or Charges	Stage When Penalty Takes Effect
First Violation – Issurance of a written notice of the fact of such violation to the account holder	I through VII
Second Violation – Impose a penalty against the account holder in an amount to be established by resolution of the City Council	I through VII
Third Violation – Impose a penalty against the account holder in an amount to be established by resolution of the City Council and may install a flow restricter on the service to the property for a period to be determined by the Director	I through VII
Fourth and Subsequent Violations – Impose a penalty against the account holder in an amount to be established by resolution of the City Council and may install a flow restricter on, or shut off, the service to the property for a period to be determined by the Director	I through VII

TABLE 12
SUPPLY RELIABILITY – HISTORIC CONDITIONS
(ACRE-FEET)

	Average/ Normal Water Year (2005-06)	Single Dry Water Year (2006-07)	Multiple Dry Water Years		
			Year 1 (2006-07)	Year 2 (2007-08)	Year 3 (2008-09)
Supply [1]	12,927	14,608	14,608	13,604	13,012
Percent of Normal Year Supply	--	113.00	113.00	105.24	100.66
Demand [2]	12,927	14,608	14,608	13,604	13,012
Percent of Normal Year Demand	--	113.00	113.00	105.24	100.66

[1] See Table 8
[2] See Table 6

TABLE 13
SUPPLY RELIABILITY – CURRENT WATER SOURCES
(ACRE-FEET)

Sources of Supply	Normal Year (2005-06[1])	Multiple Dry Year Supply		
		Year 2011 [2]	Year 2012 [2]	Year 2013 [2]
Main Basin	11,351	12,204	9,337	9,908
Three Valleys	1,338	2,256	4,109	2,895
CIC	237	148	158	209
Total Supply	12,927	14,608	13,604	13,012

[1] See Table 8

[2] See Table 12 for percent of normal year applicable to total supply;
percent of normal year for individual sources of supply calculated in a similar manner

TABLE 14
SUPPLY AND DEMAND COMPARISON – NORMAL YEAR
(ACRE-FEET)

Fiscal Year	2014-15	2019-20	2024-25	2029-30
Supply Total [1]	13,253	12,064	12,302	12,587
Demand Total [2]	13,253	12,064	12,302	12,587
Difference (Supply minus Demand)	0	0	0	0
Difference as Percent of Supply	0	0	0	0
Difference as Percent of Demand	0	0	0	0

[1] See Table 8, last column

[2] Based on Urban Water Use Targets of 239 gallons per capita per day (GPCD) in 2015 and 212 GPCD in 2020. See Table 5

TABLE 15
SUPPLY AND DEMAND COMPARISON – SINGLE DRY YEAR
(ACRE-FEET)

Fiscal Year	2014-15	2019-20	2024-25	2029-30
Supply Total [1]	14,976	13,633	13,902	14,224
Demand Total [2]	14,976	13,633	13,902	14,224
Difference (Supply minus Demand)	0	0	0	0
Difference as Percent of Supply	0	0	0	0
Difference as Percent of Demand	0	0	0	0

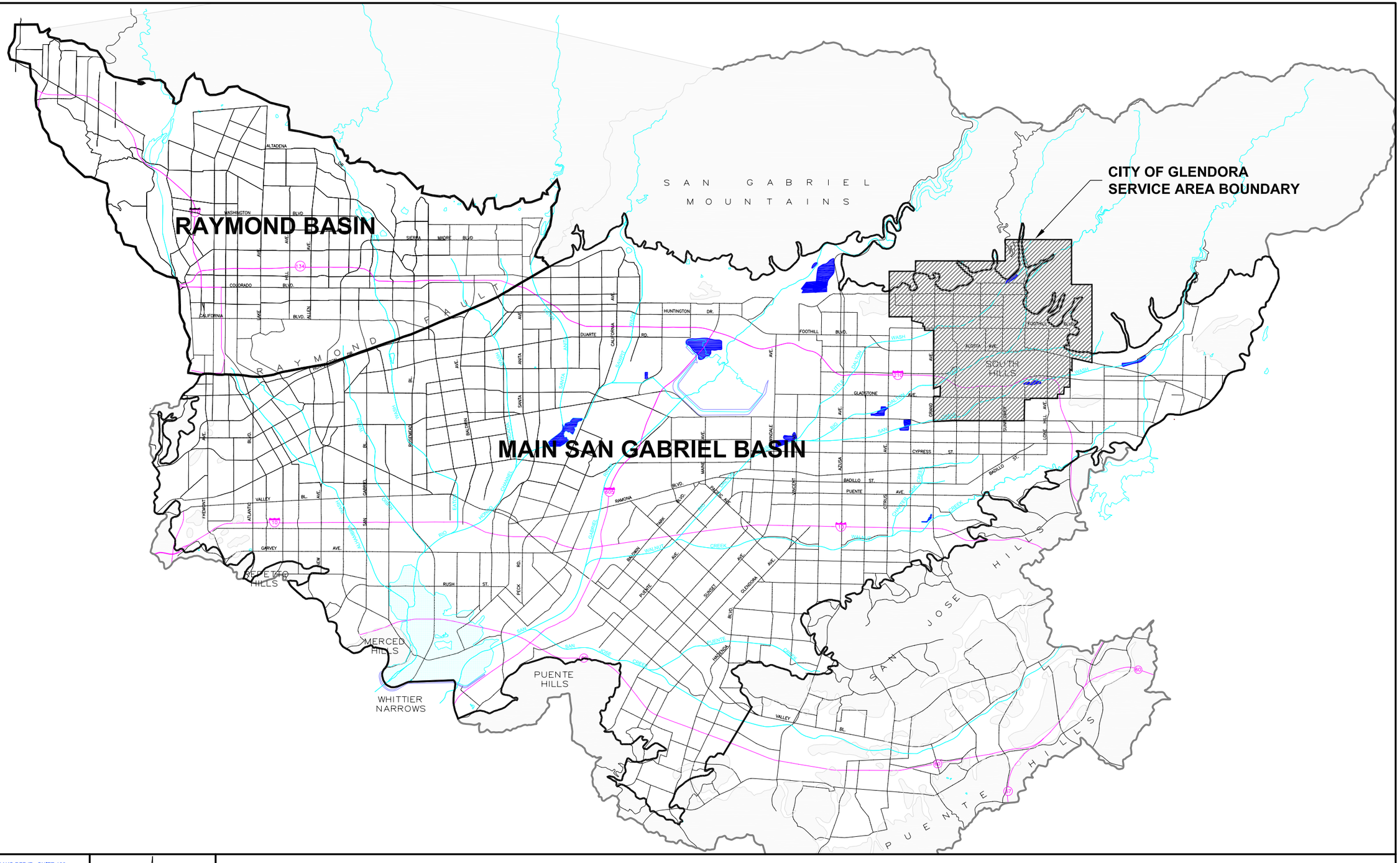
[1] Based on ratio between Normal Water Year with Single-Dry Year. See Tables 8 and 12
[2] Based on ratio between Normal Water Year with Single-Dry Year. See Tables 6 and 12

TABLE 16
SUPPLY AND DEMAND COMPARISON – MULTIPLE DRY-YEAR EVENTS
(ACRE-FEET)

	Fiscal Year	2014-15	2019-20	2024-25	2029-30
Multiple-Dry Year First Year Supply	Supply Total [1]	14,976	13,633	13,902	14,224
	Demand Total [2]	14,976	13,633	13,902	14,224
	Difference (Supply minus Demand)	0	0	0	0
	Difference as Percent of Supply	0	0	0	0
	Difference as Percent of Demand	0	0	0	0
Multiple-Dry Year Second Year Supply	Supply Total [1]	13,947	12,696	12,946	13,246
	Demand Total [2]	13,947	12,696	12,946	13,246
	Difference (Supply minus Demand)	0	0	0	0
	Difference as Percent of Supply	0	0	0	0
	Difference as Percent of Demand	0	0	0	0
Multiple-Dry Year Third Year Supply	Supply Total [1]	13,340	12,144	12,383	12,670
	Demand Total [2]	13,340	12,144	12,383	12,670
	Difference (Supply minus Demand)	0	0	0	0
	Difference as Percent of Supply	0	0	0	0
	Difference as Percent of Demand	0	0	0	0

[1] Based on ratio between Normal Water Year with Multiple Dry Years. See Tables 8 and 12
[2] Based on ratio between Normal Water Year with Multiple Dry Years. See Tables 6 and 12

PLATES



STETSON ENGINEERS INC.

861 VILLAGE OAKS DRIVE, SUITE 100
COVINA, CALIFORNIA 91724
TEL: (626) 967-6202
FAX: (626) 331-7065

2171 E Francisco Blvd., Sulte K
San Rafael California 94901

2651 W Guadalupe Rd., Sulte A209
Mesa Arizona 85202

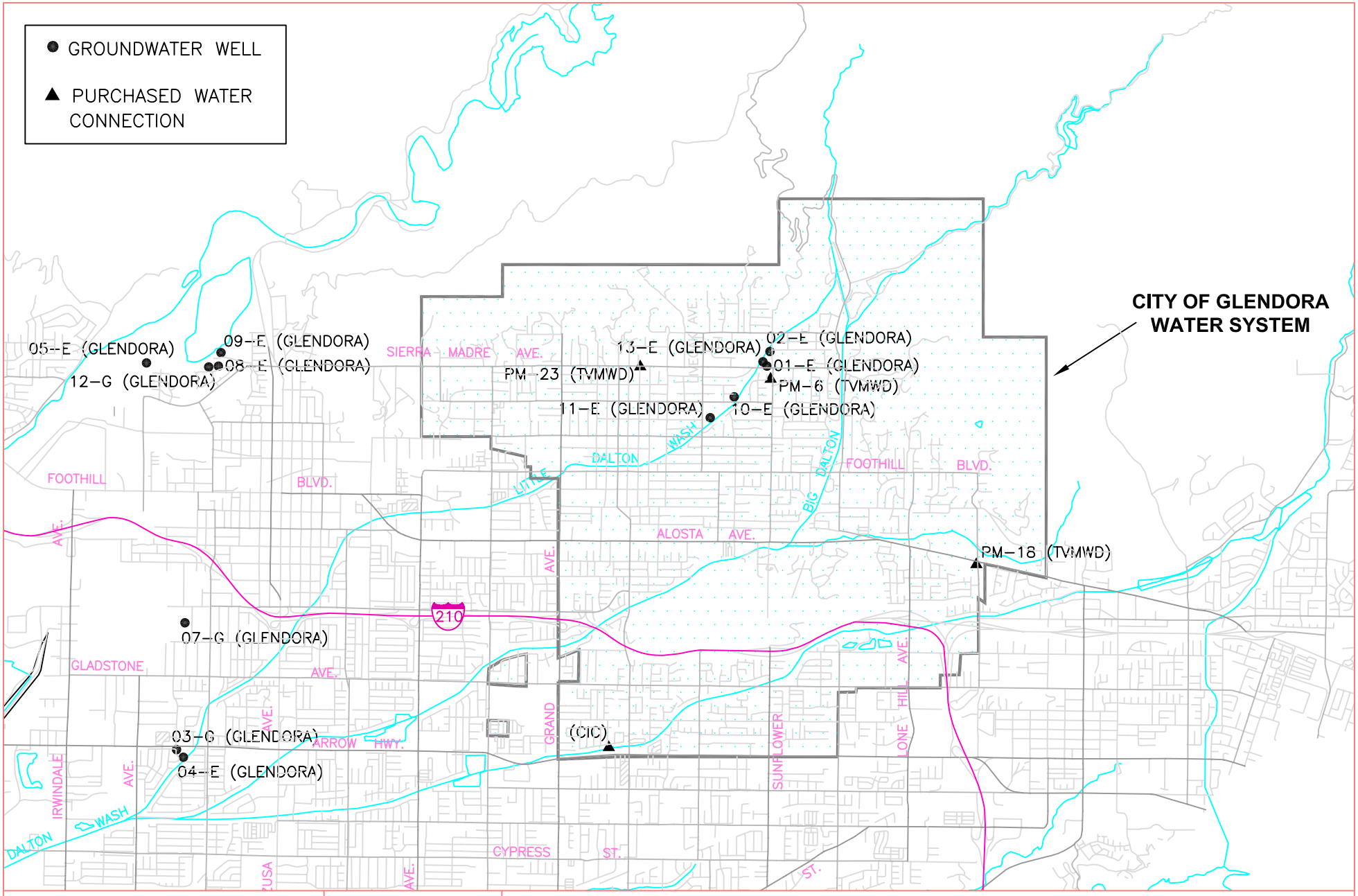
N

APPROXIMATE SCALE
0 5,500' 11,000'

CITY OF GLENDORA

LOCATION MAP

F:\JOBS\2360\Plates\PLATE 1.DWG
F:\JOBS\2360.CTB


GROUNDWATER WELL
PURCHASED WATER CONNECTION
CITY OF GLENDORA WATER SYSTEM
05--E (GLENDORA)
09--E (GLENDORA)
08--E (GLENDORA)
12--G (GLENDORA)
SIERRA MADRE AVE.
13--E (GLENDORA)
PM--23 (TVMWD)
02--E (GLENDORA)
01--E (GLENDORA)
PM--6 (TVMWD)
11--E (GLENDORA)
10--E (GLENDORA)
DALTON WASH
FOOTHILL BLVD.
LITTLE DALTON WASH
BIG DALTON WASH
FOOTHILL BLVD.
ALOSTA AVE.
PM--18 (TVMWD)
210
07--G (GLENDORA)
GLADSTONE
03--G (GLENDORA)
04--E (GLENDORA)
ARROW HWY.
(CIC)
GRAND AVE.
SUNFLOWER HILL
LONE
IRWINDALE AVE.
DALTON WASH
CYPRESS ST.
ST.
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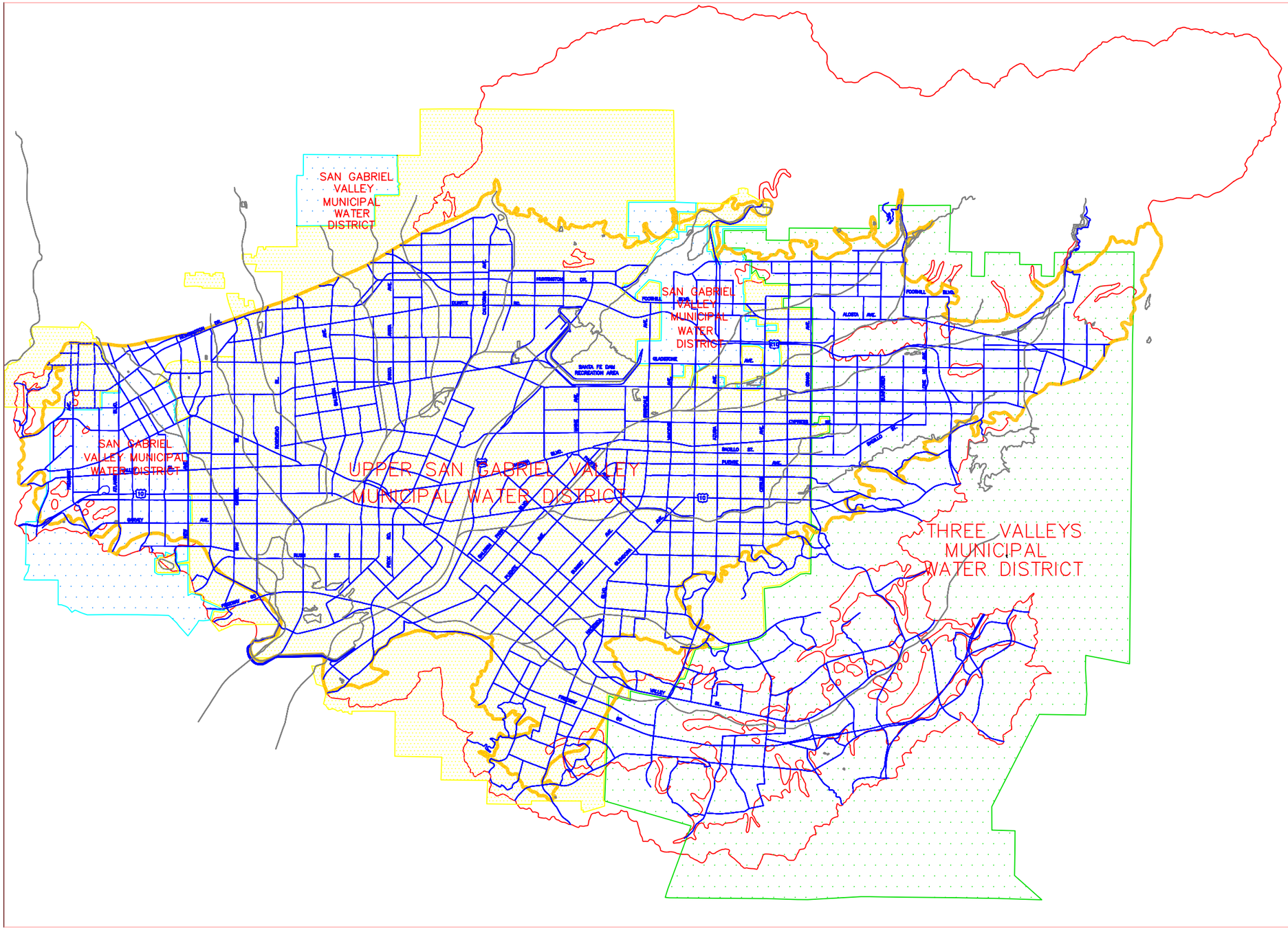
2651 W Guadalupe Rd., Suite A209
Mesa Arizona 85202
STETSON ENGINEERS INC.
APPROXIMATE SCALE :
2,500' 0 2,500'
CITY OF GLENDORA
WATER SYSTEM MAP
PLATE 2
JOBS\2360\PLATE 2.DWG
JOBS\2272-01.CTB



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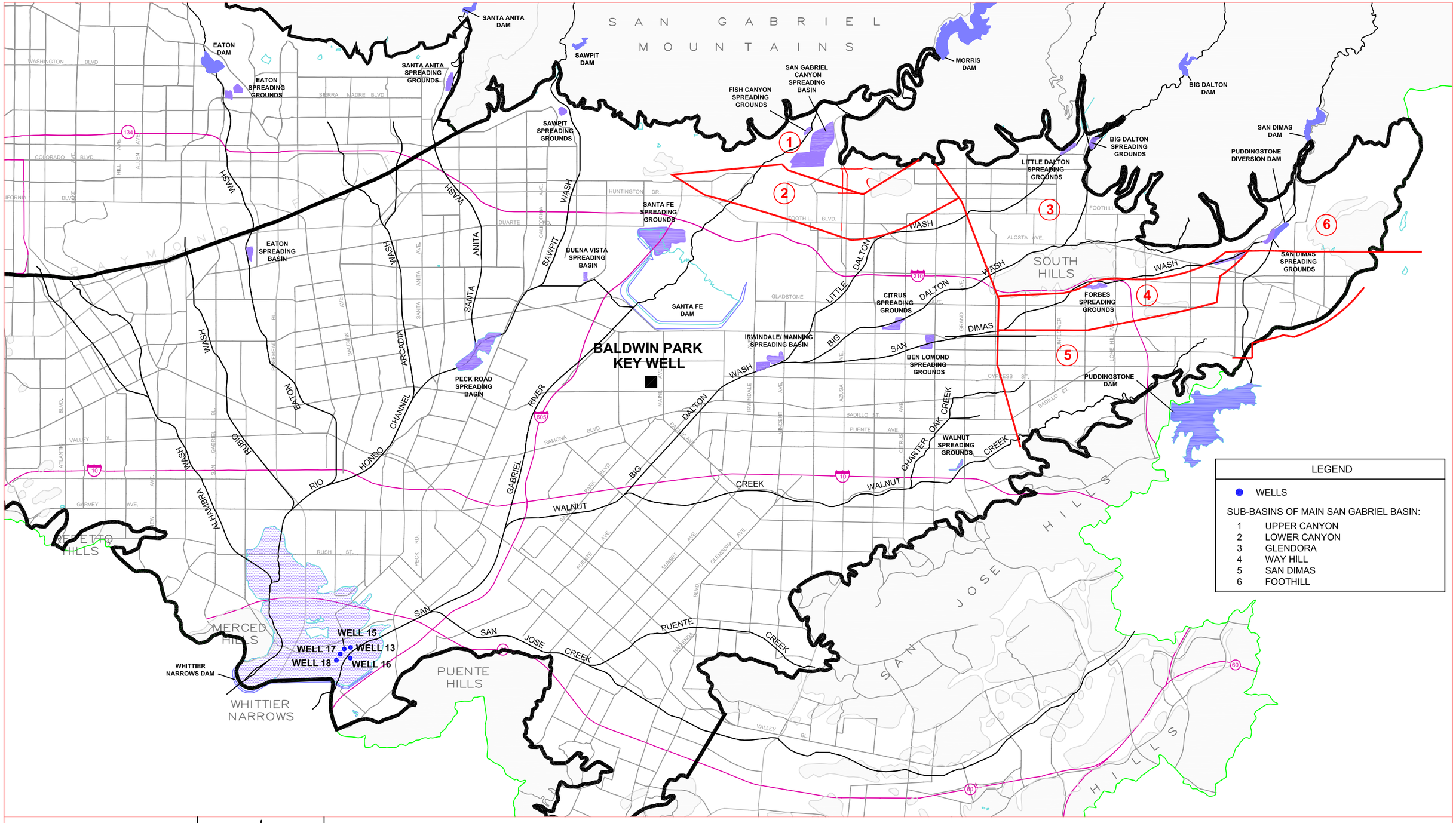
CITY OF GLENDORA

WATER DISTRICT BOUNDARIES
MAIN SAN GABRIEL BASIN

F:\JOBS\2360\Plates\PLATE 3.DWG
F:\JOBS\1046\1046-17\PLATE 1.PC2



LEGEND

- WELLS

SUB-BASINS OF MAIN SAN GABRIEL BASIN:

1 UPPER CANYON
2 LOWER CANYON
3 GLENDORA
4 WAY HILL
5 SAN DIMAS
6 FOOTHILL

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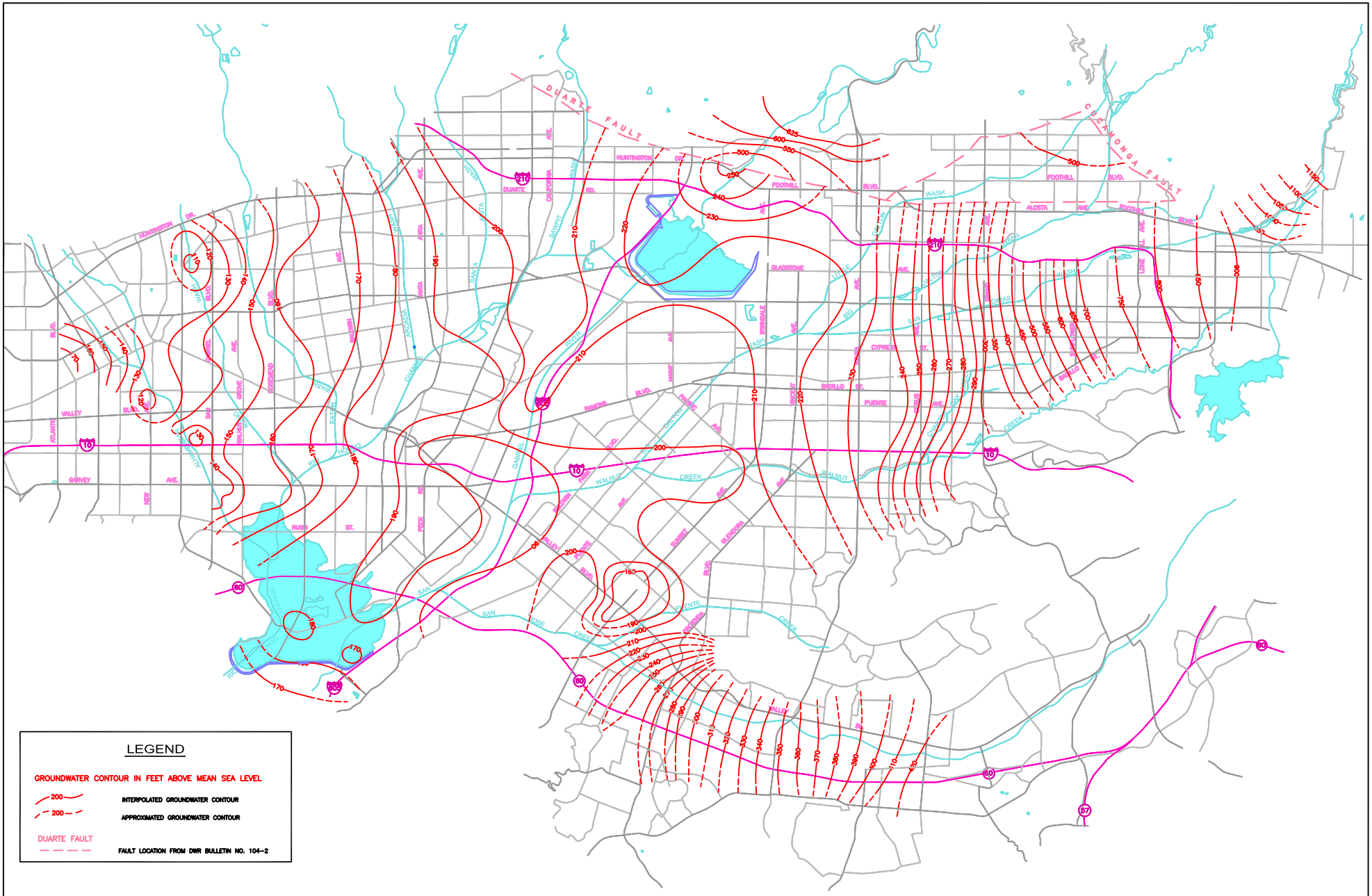
APPROXIMATE SCALE
0 4,000' 8,000'

CITY OF GLENDORA

LOCATION OF CITY WELLS, SPREADING GROUNDS AND WATER CHANNELS MAIN SAN GABRIEL BASIN

F:\JOBS\2360\Plates\PLATE 4.DWG



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N

APPROXIMATE SCALE
6,000' 0 6,000'

CITY OF GLENDORA

GROUNDWATER CONTOURS MAP FOR SAN GABRIEL BASIN - JULY 2010

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