

Appendix H Water Supply Assessment



Water Division

Water Supply Assessment – South Glendale Community Plan

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Introduction

The City of Glendale's Water & Power Department (GWP) provides electric and water services to the residents and businesses of Glendale. GWP's service territory encompasses approximately 31 square miles and serves nearly 200,000 people. GWP has four water supply sources: the San Fernando Basin, the Verdugo Basin, Recycled Water, and Imported Water supplied by the Metropolitan Water District of Southern California (MWD). Over time, the City's water supplies have evolved from primarily local groundwater to predominantly imported supplies. Today, the City relies on over 68 percent of its water from imported sources. As such, GWP has taken an active role in regional and statewide water management. The sustainability of Glendale's water supplies are dependent on the City's ability to maximize water conservation and increase recycled water use. This report discusses water supply availability to Glendale for the next 20 years and the ability to meet future water demands for the proposed South Glendale Community Plan.

Purpose

This water supply assessment (WSA) has been prepared to meet the applicable requirements of state law as set forth in California State Water Code Sections 10910-10915.

Significant references and data for this assessment are from the City's 25-year water resource plan, entitled City of Glendale 2015 Urban Water Management Plan (UWMP). The UWMP is incorporated by reference and is available for review through GWP's website, <http://www.glendaleca.gov/government/departments/glendale-water-and-power>.

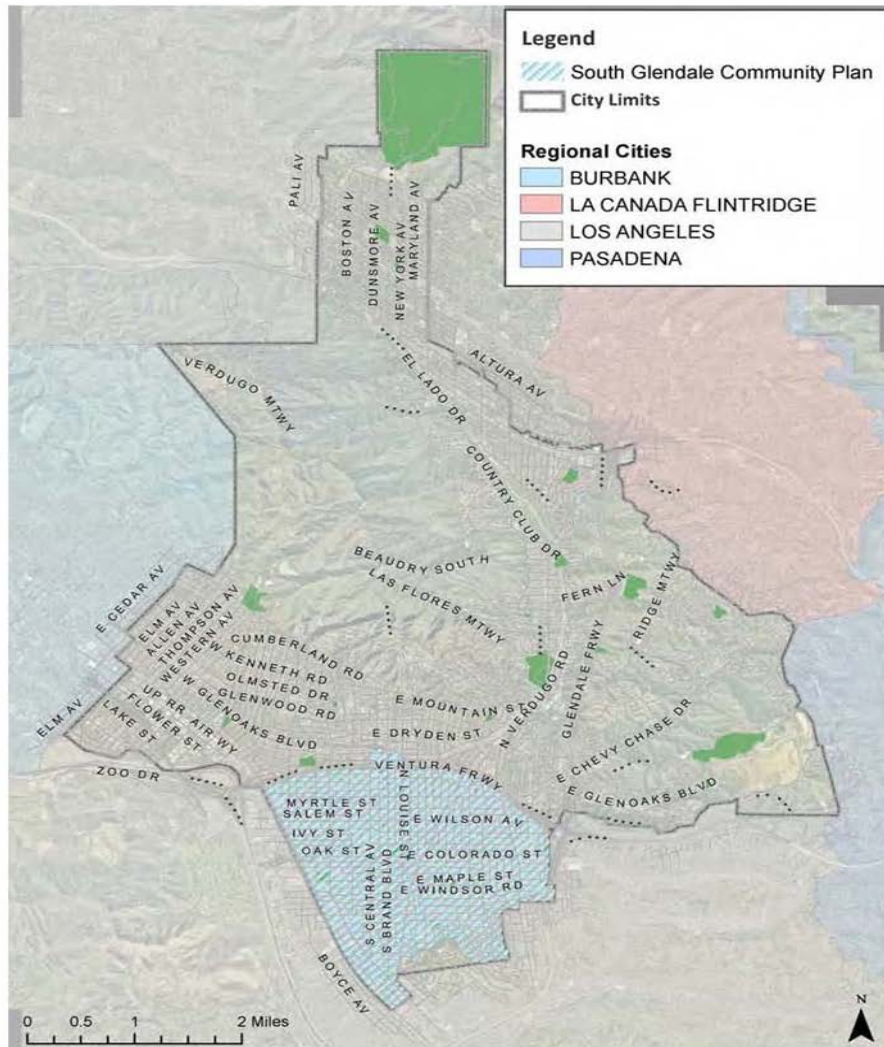
Under the California Environmental Quality Act (CEQA), a "Water Supply Evaluation" is required to be submitted with the Environmental Impact Report (EIR) for the South Glendale Community Plan. This report demonstrates that Glendale has adequate water supplies for the next 20 years for the proposed South Glendale Community Plan which is a mixed-use, urban design plan that establishes the desired physical vision for South Glendale through a clear and comprehensive set of policies.

Regulatory Requirement

The WSA has been prepared pursuant to the requirements of Senate Bill 610 (Costa; Chapter 643, Stats. 2001) ("SB 610"), which requires public water agencies, parties or purveyors that may supply water to certain proposed development projects to prepare a WSA for use by the City in environmental documentation for such projects, pursuant to the California Environmental Quality Act ("CEQA"). This WSA contains information from the 2015 Glendale Urban Water Management Plan ("2015 UWMP"), which was adopted by the City Council and was submitted to DWR in June of 2016. The project site is contiguous with Glendale's existing service area and GWP is the operator of the public water system that will provide water to the proposed Plan.

Project Description

The South Glendale Community Plan (SGCP) comprises all of the neighborhoods in the City of Glendale south of SR 134, including Downtown Glendale, Adams Hill, and Tropico (see Map below). The Community Plan area (CPA) comprises 2,173 acres and includes one of the main retail hubs in the Los Angeles Metropolitan Area, featuring the Glendale Galleria, a major regional mall, and The Americana at Brand, a flagship mixed-use lifestyle center.



South Glendale Community Plan Area and surrounding context. Source: City of Glendale.

The CPA currently contains thirteen land use designations, as summarized in the table below (Summary of Existing Land Use from the SGCP Draft EIR).

Summary of Existing Land Use	
<i>Land Use Designation</i>	<i>Acres</i>
Low Density Residential	189
Moderate Density Residential	211
Medium Density Residential	459
Medium High Density Residential	300
High Density Residential	141
<i>Total Residential</i>	<i>1,301</i>
Neighborhood Commercial	31
Community Services	219
Regional Commercial	0
<i>Total Commercial</i>	<i>250</i>
Industrial	26
Mixed Use	179
Town Center Specific Plan	13
Downtown Specific Plan (DSP)	230
Cemetery	89
<i>Total Other</i>	<i>537</i>
<i>Total</i>	<i>2,173</i>

SOURCE: Glendale Community Development Department (2015).

As can be seen in the Figure below (Existing Land Use Designations), high-density residential uses are concentrated east and west of the boundaries of the DSP, industrial and mixed use to the east of San Fernando Road along its length, and commercial uses along the major north/south corridors of Glendale Avenue, Brand Boulevard, and South Central Avenue. Low-density residential is concentrated in a small portion of the southeast of the CPA, with medium- and medium-high-density residential south of the DSP, the Broadway Corridor, and in the northwest and northeast portions of the CPA.



Project Area ZONENUM		Gateway		R1R - Restricted Residential		R1650 P - Medium High Density Res. Parking Overlay		CA - Commercial Auto		IMU - Industrial/Comm. Mixed Use	
MX1	Alex Theater	Maryland	Mid Orange	R1 - Low Density Residential	R1250 - High Density Residential	CR - Commercial Retail	IMU R - Industrial/Comm.-Residential Mixed Use	CPD - Commercial Planned Development	IND - Industrial	IND - Industrial	IND - Industrial
MX2	Broadway Center	Orange Central	Town Center	R3050 - Moderate Density Residential	C1 - Neighborhood Commercial	CPD - Commercial Planned Development	MS - Medical Services	CE - Commercial Equestrian	T - Transportation	SR - Special Recreation	SR - Special Recreation
MX3	Civic Center	Transitional	ROS - Residential Open Space	R2250 - Medium Density Residential	C2 - Community Commercial	MS - Medical Services	CE - Commercial Equestrian	SPMU - Commercial/Residential Mixed Use	CEM - Cemetery	CEM - Cemetery	CEM - Cemetery
TOD I	East Broadway			R2250 P - Medium Dens. Res. Parking Overlay	C3 - Commercial Service	CE - Commercial Equestrian					
TOD II	Galleria			R1650 - Medium High Density Res.	CH - Commercial Hillside						

South Glendale Community Plan Water Demands

The existing water demand for the CPA is 4,542 acre-feet per year (AFY). The projected water demand for the CPA is 5,776 AFY based upon the potential development data provided by the City of Glendale Planning, which is included in the Appendix A. The proposed “new” Water Demand is 1,234 AFY. According to the 2015 Urban Water Management Plan the City delivered 22,154 AF of water throughout the City in 2015. The projected additional water demands of the proposed project represent approximately a 5.6 percent increase in total water use.

Existing Water Sources and Supplies

The City of Glendale currently has four sources of water (see Map below) available to meet demands: the San Fernando Basin, the Verdugo Basin, the Metropolitan Water District of Southern California (imported water), and recycled water from the Los Angeles-Glendale Water Reclamation Plant (LAGWRP). Each of these sources are described below:

San Fernando Basin

The San Fernando Basin consists of 112,000 acres and it is bounded to the east and northeast by the San Rafael Hills, Verdugo Mountains, and San Gabriel Mountains; on the north by the San Gabriel Mountains and the eroded south end of the little Tujunga Syncline which separates Sylmar Basin; on the northwest and west by the Santa Susana Mountains and Simi Hills; and on the south by the Santa Monica Mountains.

The City’s water right to San Fernando Basin supplies is defined by the judgment entitled “Court Judgment on Groundwater Rights in the San Fernando Basin and Verdugo Basins”. Although the judgment awarded the water rights to Los Angeles, it did allow a return flow credit (a water right based on a percentage of water used in the City that is returned to the groundwater basin). The City is allowed to accumulate these credits if its water rights are not used. Currently the City has a surplus of accumulated credits. Also, there is a right to produce water beyond the city’s credits subject to a payment obligation to the City of Los Angeles based primarily on the cost of MWD alternative supplies. This right to produce water in excess of the return flow credit and the accumulated credits are significant to the operation of the Glendale Water Treatment Plant (GWTP), which is part of a U.S. Environmental Protection Agency (EPA) Superfund clean-up project in Glendale. The project is a 5,000 gallon-per-minute (gpm) facility and delivers approximately 7,800 AFY to the City (about 28 percent of the City’s total supply).

In summary the various San Fernando Basin supplies are:

- Return Flow Credit – Glendale is entitled to a return flow credit of 21 percent of all delivered water (including recycled water) in the San Fernando Basin and its tributary hill and mountain area. The credit is calculated by determining the amount of total water used in the City less 105 percent of the total sales by Glendale to the Verdugo Basin and its tributary hills. This credit ranges from about 5,000 AFY to 5,400 AFY depending on actual water use. This is the City’s primary water right in the San Fernando Basin.

- Physical Solution Water – Glendale has an agreement to extract excess water chargeable against the rights of the City of Los Angeles upon payment of specified charges generally tied to MWD’s water rates. Glendale’s physical solution right is 5,000 AFY.
- Pumping for Groundwater Cleanup – Section 2.5 of the Upper Los Angeles River Area’s Policies and Procedures, date July 1993, provides for the unlimited extraction of basin water for SUPERFUND activities, subject to payment of specified charges similar to physical solution water. This right became a significant factor with the completion of the Glendale Water Treatment Plant (GWTP) in 2000.

The Glendale treatment plant was established to remove VOCs in the groundwater supplies generally along San Fernando Road in the City of Glendale and along Goodwin Street in the City of Los Angeles. Two of the most prevalent VOCs are trichloroethylene (TCE) and tetrachloroethane (PCE). The source for the treatment plant consists of nine wells. The nine wells and the Glendale Water Treatment Plant together are referred to as the Glendale Operable Unit (GOU).

The treatment plant uses packed tower aeration (PTA) to remove the VOCs, followed by liquid phase granular activated carbon (GAC) treatment before the water is disinfected and sent to the Grandview pumping plant. The treatment plant is permitted to deliver up to 5,250 gpm. At the Grandview pumping plant, aqua ammonia is added to the water to form chloramines and the water is then blended with water purchased from MWD prior to entering the distribution system. The GOU provides about 7,700 AFY to the City and meets about 28 percent of the demand.

- Carry-over Extractions – In addition to current extractions of return flow water and stored water, Glendale may, in any one year, extract from the San Fernando Basin an amount not to exceed 10 percent of its last annual credit for import return water, subject to an obligation to replace such over-extraction by reduced extraction during the next water year. This provides important year-to-year flexibility in meeting water demands.

Verdugo Basin

The groundwater storage area of the Verdugo Basin, north and east of the Verdugo Mountains is 4,400 acres. It is bounded on the north by the San Gabriel Mountains; to the northwest by a groundwater divide, which separates it from the San Fernando Basin; on the east by a groundwater divide separating it from the Monk Hill Subarea of the Raymond Basin; on the southeast by the San Rafael Hills; and on the south and southwest by the Verdugo Mountains. All the surface water channels feed into the Verdugo Wash, which is located along the west side of the basin.

The groundwater storage capacity of the Verdugo Basin is approximately 160,000 acre-feet. The City of Glendale has rights to extract 3,856 AFY. Groundwater supplies from the Verdugo Basin contribute a portion of the City’s water supplies. Full use of these supplies has been limited because of water quality problems, declining groundwater levels, and limited extraction capacity. The three existing wells referred to as Glorietta

Wells 3, 4 and 6 alone do not utilize the City's entire water rights to the Verdugo Basin supplies. Therefore additional extraction capacity has been developed. The Foothill and Rockhaven Wells have been developed producing approximately 100 gpm and 250 gpm, respectively. The Rockhaven Well is currently being utilized by Crescenta Valley Water District (CVWD) due to nitrate detections above the maximum contaminant level (MCL), and CVWD's ability to treat for nitrates at an existing treatment facility. CVWD reimburses the City for their utilization of the Rockhaven Well. The existing wells produce about 2,000 AFY.

Imported Water

The City has access to imported water from the Metropolitan Water District of Southern California (MWD) which is a public agency organized in 1928 by a vote of the electorates of 13 Southern California cities, which include Glendale. The first function of MWD was building the Colorado River Aqueduct to import water from the Colorado River. Water deliveries through the aqueduct began in the early 1940's. This imported water supplemented the local water supplies of the original 13 Southern California member cities. In 1972, to meet growing water demands in its service area, MWD started receiving additional water supplies from the State Water Project (SWP). The SWP is owned and operated by the State of California Department of Water Resources (DWR). MWD currently imports water from these sources: (1) the Colorado River via the Colorado River Aqueduct and (2) the State Water Project via the California Aqueduct.

MWD's service area includes the Southern California coastal plain. It extends about 200 miles along the Pacific Ocean from the city of Oxnard on the north to the Mexico border on the south, and it reaches 70 miles inland from the coast. MWD is currently composed of 27 member agencies, including 14 cities, 12 municipal water districts, and one county water authority.

Colorado River Water

The Colorado River Aqueduct conveys water 242 miles from the W.P. Whisett Pumping Plant Intake Facility at Lake Havasu, on the Colorado River, to its point of termination at Lake Matthews Reservoir, near the City of Riverside. From this reservoir, water is distributed to its 27 Member agencies throughout Southern California.

California is one of the seven states that have rights to divert water from the Colorado River. MWD is one of six California entities that have rights to the Colorado River water. California has a right to the Colorado River at 4.4 million acre-feet per year. MWD's basic right to California's share of Colorado River water is 550,000 AFY year. A variety of programs have been designed to increase conservation of water supplies and storage supplies while still keeping the Colorado River Aqueduct full. Some of the programs are listed below.

- **Diamond Valley Lake** – the completion of Diamond Valley Lake nearly doubled the area's surface water storage capacity;
- **Groundwater Storage Program in Upper Coachella Valley;**
- **Water Conservation Program in the Imperial Valley** to improve irrigation efficiency in return for the right to divert water conserved by the programs;

- **Land Fallowing in the Palos Verde Valley;**
- **Demonstration Groundwater Storage Program in Central Arizona;**
- **Imperial Irrigation District – San Diego County Water Authority Transfer and Metropolitan – San Diego County Water Authority Exchange; and**
- **All American Canal and Coachella Canal Lining.**

State Water Project

The second source of imported water from MWD is the State Water Project (SWP). SWP facilities comprise of 32 storage facilities (reservoirs and lakes), 662 miles of aqueduct, and 25 power and pumping plants. The SWP originates at Lake Oroville, which is located on the Feather River in Northern California. That water, along with all additional unused water from the watershed flow into the Sacramento/San Joaquin Delta. Water from the Delta is then pumped to water users in the San Francisco Bay area, transported through the California Aqueduct to water users in California, or flows through the Delta to San Francisco Bay and ultimately the Pacific Ocean.

DWR contracted to deliver water to 29 SWP contractors, with an ultimate delivery of 4.23 million AFY. Currently, DWR is delivering water to 29 SWP contractors. MWD is the largest, with a contracted entitlement of 2,011,500 AFY or approximately 48 percent of the total contracted entitlement. MWD receives deliveries of SWP supplies via the California Aqueduct at Castaic Lake in Los Angeles County, Devil Canyon After bay in San Bernardino County, and Box Springs Turnout and Lake Perris in Riverside County. The first delivery of SWP water to MWD occurred in 1972.

The initial facilities of the SWP, completed in the early 1970's, were designed to meet the early needs of the SWP contractors. It was intended that additional SWP facilities, including water supply facilities, would be built over time to meet projected increases in contractors' delivery needs. Each contractor's SWP contract provided for a buildup in entitlement over time, with most contractors reaching their maximum annual entitlement by the year 1990. However, no major water supply improvements have been added to the project since the completion of the initial SWP facilities in the early 1970's primarily due to the environmental issues.

In particular, the Bay-Delta has limited the operations to pass water from Northern California through the Bay-Delta to the southern portion of the state. The California Bay-Delta Authority (previously known as CALFED) is an association of State and federal agencies. It has been assigned the task of balancing the competing needs and developing options to provide a long-term solution to the Bay-Delta Program and pledges to restore the Bay-Delta ecosystem, improve water quality, enhance water supply reliability and assure long-term stability for agriculture, urban and environmental uses.

As a CALFED Implementing Agency, MWD had implemented a number of CALFED programs to improve the SWP delivery, reliability and quality, such as:

- **Delta Improvement Package (DIP)** allows SWP to increase its permitted export pumping capacity from the existing 6,680 to 8,500 cubic feet-per-second (cfs) at the Banks Pumping Plant in the Delta, a key factor in MWD's supply reliability

goal. It also increases water supply for regional groundwater and surface water storage initiatives to 130,000 AFY; and

- **CALFED Levees Program** coordinates Delta levee maintenance and improvement activities. Its goal is to protect water supplies needed for the environment, agriculture and urban uses by reducing the threat of levee failure and seawater intrusion.

MWD also initiated many programs to improve the reliability of the State Water Project supplies outside of the CALFED process. Some are:

- **Semi-tropic Water Storage Desert Agreement** to store SWP supplies in Semi-tropic groundwater basins. The water is stored during times of surplus and withdrawn during times of drought in the MWD service area; and
- **Arvin Edison Water Management Program** operates similar to the Semi-tropic Program.

To date, MWD has stored significant quantities of water in these San Joaquin Valley groundwater basins storage projects, with more planned.

Glendale-MWD Delivery Points

The City relies on imported water from MWD for the majority of its potable supplies, about 69 percent of the total supplies between 2005 and 2014. The City’s potable water distribution system delivers water from three imported water connections: MWD G-1, MWD G-2, and MWD G-3. **Table 1** lists the capacities of the City’s imported connections:

Table 1: Imported Connections with MWD

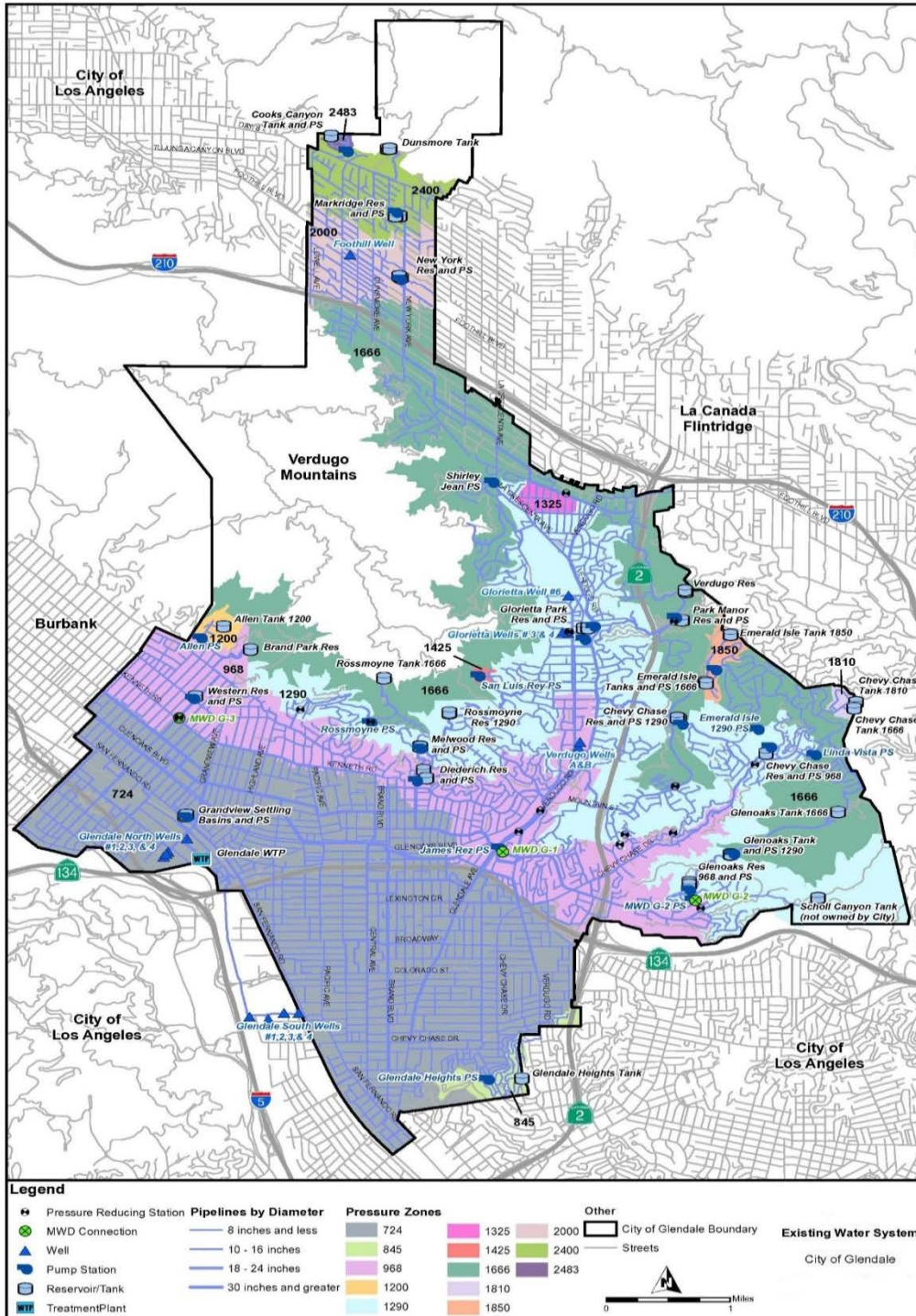
Description	Capacity (MGD)	Capacity (AFY)
MWD G-1	31	34,751
MWD G-2	6.5	7,240
MWD G-3	12.9	14,480

Recycled Water

The City of Glendale co-owns the Los Angeles-Glendale Water Reclamation Plant (LAGWRP) with the City of Los Angeles and has been delivering recycled water from LAGWRP since the late 1970’s. The facility is a 20 million gallon-per-day (MGD) plant. Per the 1970 contract between Glendale and Los Angeles, Glendale is entitled to 50% of any effluent produced at the plant. This amount is more than sufficient for all recycled water use within the City of Glendale.

As of 2014, the City serves recycled water to seventy-two (72) service connections with a combined demand of nearly 1,694 AF or roughly 1.5 MGD. Recycled water is used for landscape irrigation to cemeteries, schools, parks, golf courses and high rise buildings.

To utilize additional recycled supplies from LAGWRP, the City has developed a future recycled water system layout that will serve new customers. These new connections will shift existing use from the potable water system to the recycled water system.



Projected Water Demand in Glendale

Water demand has been trending downward in the City, primarily due to increased awareness of conservation and stricter City ordinances. However due to the recent drought water consumption increased from 2011-2014, prior to Governor Brown’s State of Emergency declaration in 2014 and mandated conservation in 2015 in which potable demand diminished as indicated in Table 2, below.

Table 2: Five-Year Water Use

Year	Potable Demand (AF)
2015	22,154
2014	25,731
2013	26,580
2012	25,932
2011	24,439
2010	24,233
Average:	24,845
2005-2009 Average:	31,255

Since May of 2015, GWP’s customers have saved 2.9 billion gallons of water. In May of 2015 – 2 Day Per Week Watering Was Implemented – Summer Monthly Conservation Was 24% to 27%. In July of 2016 – 3 Day Per Week Watering Was Implemented – Summer Monthly Conservation Stayed Between 18% and 21%.

The number of dwelling units receiving water in Glendale has increased between 2012 and 2016 by 1,299 units, which represents a 1.9% increase in dwelling units. Total citywide water use has decreased by 17% over the same period.

The City maintains records of water consumption and bills its customers on a bi-monthly basis for its water service. The City maintains approximately 34,011 service accounts with a mixture of residential, commercial, institutional, and landscape accounts. The current number of accounts is show in Table 3 below.

Number of Potable Water Accounts

The City’s 2014 customer billing records included a total of 34,572 accounts. A breakdown of the number of accounts by customer class in 2014 is included as Table 3. As listed, Single Family Residential and Multi-Family Residential have 23,215 and 7,490

accounts, respectively. The City's residential potable water accounts totals to 30,705 accounts or about 89 percent of the City's potable water accounts.

Table 3: Current Number of Accounts

Customer Category	Number of Accounts	Percentage
Single Family Residential	23,215	67.1%
Multi-Family Residential	7,490	21.7%
Commercial	3,183	9.2%
Public	266	0.8%
Irrigation	283	0.8%
Industrial	131	0.4%
No Facility	4	<0.1%
Total	34,572	100%

Water Demand by Category

The water used by each customer category annually for 2014 is listed in Table 4 below.

Table 4: Annual Potable Water Consumption for 2014

Customer Category	Category Abbreviation	Billing Class Grouping	Annual Demand		
			AFY	MGD	%
Single Family	S	S	10,453	9.3	41%
Multi-Family	M	M, CD, A, MW, MM	9,533	8.5	38%
Commercial	C	C, SB, CA, CM	3,256	2.9	13%
Public	P	PA, G	589	0.5	2%
Irrigation	IR	IR	877	0.8	3%
Industrial	I	I	677	0.6	3%
No Facility	F	F	21	0.0	< 1%
Total	N/A	N/A	25,407	22.7	100%

The City has 15 billing classifications which are summarized into seven customer categories as follows:

- Single Family Residential Accounts: This category includes Single Family (S).
- Multi-Family Residential Accounts: This category includes Multi-Family (M), Condo (CD), Commercial Apartment (A), Master Meter Water (MW), and Master Meter (MM).
- Commercial Accounts: This category includes Commercial (C), Small Business (SB), Commercial Use Business (CA), and Commercial Master Meter (CM).
- Public Accounts: This category includes Public Authority (PA), and Glendale City Accounts (G).
- Irrigation Accounts: This category includes Irrigation Meters (IR).
- Industrial Accounts: This category includes Industrial (I).
- No Facility Accounts: This category includes No Facility (F).

As listed in Table 4, the City’s Single Family Residential demand contributes to the majority of the potable water demands at 41 percent of the City’s overall demands, which amounts to 10,453 AFY. The demands are highest from May through August when the temperatures are much warmer and the demands are lower in the cooler months.

The table below comes from GWP’s 2015 UWMP and was called Table 4.7 in the report. Listed in the table are the projected water demands by customer type up through 2040. These demand projections use historical consumption patterns and then project future increases based on population projections, and they incorporate individual water efficiency increases due to legislative mandates and increased customer awareness. The population increases were generated “theoretically” by calculating the average population growth factor for years (2000-2015) and multiplying the population of the previous year by the growth factor moving forward, but specifically would be driven by future redevelopment activities, like those that could come from “community” or “area” plans. So, some of the specific projected demand increases of the South Glendale Community Plan, as discussed in the previous sections, was implicitly considered in the demand projections of the UWMP.

Table 4.7 Projected Water Demand by Sector

Sector	2020	2025	2030	2035	2040
Water Service Area Population	199,606	202,574	205,586	208,643	211,745
Demands					
Single Family Residential	12,485	12,670	12,859	13,050	13,244
Multi-Family Residential	11,876	12,052	12,231	12,413	12,598
Commercial/Institutional	4,568	4,635	4,704	4,774	4,845

Industrial	761	773	784	796	808
Landscape Irrigation	700	711	721	732	743
Other	61	62	63	64	65
Subtotal:	30,450	30,903	31,362	31,829	32,302

**Based on consumption rate of 136 gallons per capita daily water use (GPCD) (Historical GPDC from 2005 to 2015). The estimated consumption rate not only accounts for the City's SBx7-7 goals, but also accounts for changes in water use trends in the City due to the City's own policies, codes, ordinances and planning efforts related to land use. These are known as "passive savings".*

Water Supply

As population and land-use densities increase, the City understands the need to discover and support local water supply projects to augment imported supplies. The objective of the City's Water Resource Plan, first prepared in 1985, is to develop more local supplies and identify the facilities to increase the use of local resources thereby reducing the need for imported water.

Glendale foresees very little change in available sources and the amount of water supply needed to meet water demands. In the next 25 years, we expect the same amount of supply from the San Fernando Basin. On the other hand, we plan to utilize the City's full water rights in the Verdugo Basin with the addition of new wells. In 2017, approximately 55 AFY of potable water will be shifted to recycled water when the Hoover, Keppel, Toll Recycled Main Extension Project is completed. Additional recycled water projects are anticipated to further reduce potable water demands by up to 300 AFY.

The City obtains potable water from three sources:

- Groundwater wells in the Verdugo Basin, which include the Foothill Wells, Glorietta Wells, and Verdugo Wells.
- Groundwater wells in the San Fernando Basin, which includes the Glendale North Wells and the Glendale South Wells.
- Imported water from Metropolitan Water District of Southern California.

The historical potable water production from 2005 to 2014 is presented by potable water source in Table 5.

Table 5: Annual Potable Water Supply

Year	San Fernando Basin	Verdugo Basin	Imported Water	Total
2005	6,380	2,286	22,479	31,145
2006	6,523	2,648	22,324	31,495
2007	7,178	2,575	22,748	32,501
2008	7,282	2,431	21,406	31,118
2009	6,799	2,311	18,633	27,742
2010	7,839	1,911	15,873	25,623
2011	6,618	2,048	17,629	26,296
2012	7,526	2,014	17,699	27,239
2013	6,780	1,311	19,420	27,511
2014	5,992	1,299	19,275	26,566
Average (AFY)	6,892	2,083	19,749	28,724
Percent	24%	7%	69%	100%

As shown in Table 5, the City’s water production gradually decreased between 2008 and 2010 with the lowest production in 2010, which may be attributed to the recession. During this period of water production decline, the City also experienced a decline in the population according to California Department of Finance Office of Demographic Research data.

Imported water from MWD accounts for the majority of the City’s potable water supplies at about 69 percent of the total supplies between 2005 and 2014. The San Fernando Basin and Verdugo Basin contribute about 24 percent and 7 percent, respectively.

Table 2.6 presents, from GWP’s 2015 UWMP, the City's projected water supplies available from all sources from 2020-2040. As noted, there is no anticipated reduction in

the water supplies available. In fact, the projection is conservative, to the extent that increases in recycled water uses, as noted above, are not included.

Table 2.6 Projected Water Supply Available

Year	Imported (AF)	*Ground (AF)	Recycled (AF)	Total (AF)
2020	26,222	11,656	1,662	39,540
2025	26,222	11,656	1,662	39,540
2030	26,222	11,656	1,662	39,540
2035	26,222	11,656	1,662	39,540
2040	26,222	11,656	1,662	39,540

**Groundwater includes San Fernando (7,800 AFY) and Verdugo (3,856 AFY) Basins.*

Conclusion

The Water Supply Assessment illustrates that the Glendale Water and Power has enough water supplies (39,540 AFY) to meet the requirements of the City including the South Glendale Community Plan. Currently MWD has water supplies available to meet all projected water demands under various hydrological conditions. Additional sources of water, such as the emergency water service connections with neighboring cities, Los Angeles and Burbank will add to the reliability of the system and ensure that GWP will meet the future water demands of the SGCP project. In addition, Glendale is committed to aggressively advocating the use of recycled water for irrigation and for the use of dual-plumbing in large commercial buildings located near existing and planned recycled water mains. GWP’s conservation education and outreach efforts, and the conservation related rebates provide by MWD, also help customers conserve. During MWD’s recent turf removal program, over 400 GWP customers received rebates and removed nearly 52 acres of ornamental turf. This one program is estimated to conserve up to 300 AFY of water. As a result, this will help increase the conservation of potable water and reduce the dependency on imported supplies.

Appendix A

**SOUTH GLENDALE COMMUNITY PLAN
ANNUAL POTABLE WATER DEMAND ESTIMATION**

Land Use	Existing (2016)				Proposed (2040)				Difference (Existing vs Proposed)				
	Proportion of Total Historic Demand (1)	Water Use Factor (3)	Proportion of Existing Population (2)	Daily Demand (Gal/Day)	Annual Demand (Gal/Year)	Annual Demand (AF/Year) (5)	Proportion of Proposed Population (2)	Daily Demand (Gal/Day)	Annual Demand (Gal/Year)	Annual Demand (AF/Year) (5)	Daily Demand (Gal/Day)	Annual Demand (Gal/Year)	Annual Demand (AF/Year) (5)
	Unit												
Single Family Residential	41.0%	51.7 GPCD	38,388	1,983,172	723,857,606	2,221	48,815	2,521,853	920,476,467	2,824	538,682	196,618,861	603
Multi-Family Residential	39.0%	49.1 GPCD	36,514	1,794,299	654,919,103	2,009	46,432	2,281,678	832,812,444	2,555	487,379	177,893,341	546
Commercial/Industrial	15.0%	18.9 GPCD	14,043	265,390	96,867,421	297	17,857	337,477	123,179,174	378	72,087	26,311,752	81
Industrial	2.5%	3.2 GPCD	2,342	7,382	2,694,582	8	2,978	9,388	3,426,502	11	2,005	731,920	2
Landscape Irrigation	2.3%	2.9 GPCD	2,153	6,237	2,276,477	7	2,738	7,931	2,894,828	9	1,694	618,351	2
Other	0.2%	0.3 GPCD	186	47	17,002	0	237	59	21,620	0	13	4,618	0
TOTAL USE				4,056,527	1,480,632,192	4,542		5,158,386	1,882,811,035	5,776	1,101,860	402,178,843	1,234

NOTES

1. Demand proportions by sector based on Table 4.7, City of Glendale 2015 Urban Water Management Plan
2. Build out figures by City of Glendale Community Development Department, Urban Design and Mobility
3. Assumes consumption rate of 126 GPCD (Historical GPCD from 2005 to 2015) per City of Glendale 2015 Urban Water Management Plan
4. Demand Estimation Methodology in 2015 UWMP per SBx7-7 (2009) Guidance
5. Assumes 1 acre-foot equals 325963.1228 US gallons per Downtown Specific Plan Water Supply Analysis
6. Assumes California Department of Finance 2016 Vacancy Rate for City of Glendale (5%)
7. Assumes 2010-2014 ACS 5-year Estimates Mean Household Size for City of Glendale (2.60)

KEY PROJECT AREA INPUTS

	DW Units (2' HHs (6)	Pop (7)
Existing (2016)	37,905	36,010
Proposed (2040)	48,201	45,791
Difference	10,296	9,781
Alternative 2 2040	46383	44,064
Alternative 1 2040	43014	40,863
No Project 2040	40451	38,428