

Appendix H-b Water Supply & Demand Technical Report

Appendices

This page intentionally left blank.



CITY OF SANTA ANA GENERAL PLAN UPDATE

WATER SUPPLY & DEMAND TECHNICAL REPORT

City of Santa Ana
Orange County, California

Prepared For
PLACEWORKS
3 MacArthur Place, Suite 1100
Santa Ana, CA 92707
714.966.9220

Prepared By
Fusco Engineering, Inc.
16795 Von Karman, Suite 100
Irvine, California 92606
949.474.1960

Project Manager:
Ian Adam
Principal / Stormwater Manager

Date Prepared: May 29, 2020

CITY OF SANTA ANA GENERAL PLAN UPDATE

WATER SUPPLY & DEMAND TECHNICAL REPORT

CITY OF SANTA ANA
ORANGE COUNTY, CALIFORNIA

PREPARED FOR:

PLACEWORKS
3 MacArthur Pl, Suite 1100
Santa Ana, CA 92707

PREPARED BY:

FUSCOE ENGINEERING, INC.
16795 Von Karman, Suite 100
Irvine, CA 92606
949.474.1960
www.fuscoec.com

DATE PREPARED: MAY 29, 2020

TABLE OF CONTENTS

1.	INTRODUCTION & BACKGROUND	3
2.	CITY WATER SUPPLIES AND DEMAND	6
2.1	City Water Supplies	6
2.2	City Water Demands	12
3.	SANTA ANA GPU CURRENT WATER DEMANDS	14
4.	THRESHOLDS OF SIGNIFICANCE	16
4.1	Utilities and Service Systems Thresholds (CEQA Checklist Section XIX)	16
5.	CEQA IMPACT ASSESSMENT	17
5.1	Proposed Water Demands.....	17
5.2	Water Supply Findings	18
5.2.1	City of Santa Ana 2015 UWMP	18
5.2.2	OCWD 2018-19 Engineer’s Report	19
5.2.3	Metropolitan Water District Purchase Agreement	19
5.2.4	Water Supply Impacts	20
6.	CONCLUSION	21
7.	TECHNICAL APPENDICES.....	22

LIST OF FIGURES

Figure 1 City of Santa Ana and GPU Focus Areas Aerial Extent5

LIST OF TABLES

Table 1 City of Santa Ana GPU Focus Areas.....3
Table 2 City of Santa Ana Connections to Metropolitan Facilities.....6
Table 3 2015 Projected and Actual Water Supply and Demand (Acre-feet).....6
Table 4 City of Santa Ana Groundwater Production Data 2018-199
Table 5 City of Santa Ana Projected Total Water Demands13
Table 6 Existing Condition Average Daily Water Demand14
Table 7 Existing Condition to Proposed Condition Water Demand Increases.....17
Table 8 Water Demand Planning Document Comparison19

APPENDICES

Appendix A Water Demand Calculations

1. INTRODUCTION & BACKGROUND

The City of Santa Ana (“City”) is currently undergoing a General Plan Update (GPU) which is intended to shape development in the City over the next 30-plus years. A General Plan is the principal long-range policy and planning document for guiding the physical development, conservation, and enhancement of California cities and counties. As part of the California Environmental Quality Act (CEQA) process associated with General Plan Updates, water supplies that support the existing and proposed land uses will be analyzed at a level consistent with the city-wide program-level planning of an EIR.

The City is located in the center of Orange County and is bounded by the City of Orange to the north, the cities of Irvine and Tustin to the east, Fountain Valley and Westminster to the west, and Costa Mesa to the south. The GPU includes five “Focus Areas” throughout the City. Focus Areas will feature the majority of land use changes and proposed increases in land use density in addition to Citywide land use changes also proposed outside of the Focus Areas. Details of these Focus Areas are listed below and shown in Figure 1:

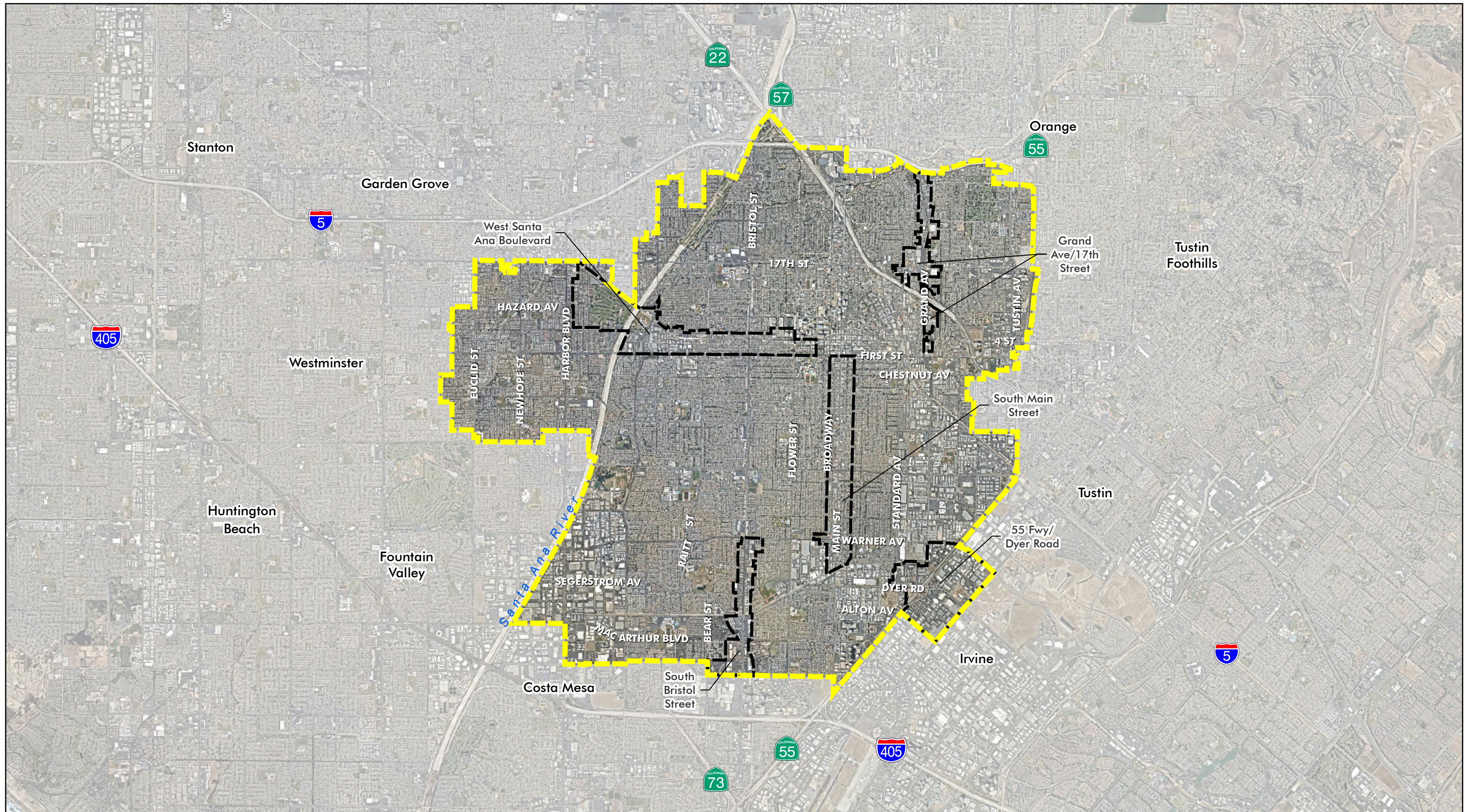
Table 1 City of Santa Ana GPU Focus Areas

Focus Area	Acreege	Location within the City	Primary Existing Land Uses
West Santa Ana Boulevard	604 acres	Central portion of the City between 1 st Street and 5 th Street	<ul style="list-style-type: none"> • Low density residential • Industrial • Open Space
South Bristol Street	236 acres	South central portion of City along Bristol Street	<ul style="list-style-type: none"> • General Commercial • South Bristol Street
Grand Avenue/17 th Street	202 acres	North east portion of City along 17 th Street	<ul style="list-style-type: none"> • General Commercial • Professional/Admin Office
South Main Street	408 acres	Central portion of City along the Main Street corridor	<ul style="list-style-type: none"> • Low density residential • General commercial
55 Freeway/Dyer Road	438 acres	South east portion of City off the 55 Freeway	<ul style="list-style-type: none"> • General Commercial • Professional/Admin Office

The proposed land use changes will increase residential land uses and commercial square footage. An estimated growth of 36,261 dwelling units is anticipated across the City as compared to existing land use, concentrated mainly among the five Focus Areas and additional specific plan and special zoning areas. Approximately 5.8 million square feet of additional commercial land uses are anticipated across the City as compared to existing land use, and a corresponding increase of 11,436 Citywide jobs is anticipated.

This report analyzes the impacts the proposed GPU will have on existing water supplies from anticipated increases in demands from residential and commercial land use increases. The report will include relevant details on the City’s existing and projected water demands, how these demands will be met with the City’s portfolio of various sources of water supply, and how the Santa Ana GPU will impact these available supplies. As water is supplied on a Citywide


scale and is consistent throughout the entire City as well as the Focus Areas, the analysis within this report focuses only on Citywide water demands and supplies. Any significant impacts will be identified by analyzing the CEQA thresholds of significance as they relate to water supply. The main documents to support this analysis include the City's 2015 Urban Water Management Plan, the Metropolitan Water District of Southern California (Metropolitan) 2015 UWMP, the 2018/19 Orange County Water District (OCWD) Engineer's Report and internal communication with City staff.



Aerial Date: 09/26/2018

Santa Ana GPU and Focus Areas Aerial Extent

City of Santa Ana General Plan Update

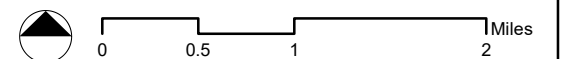
 Santa Ana City Boundary

 Focus Area



Figure 1

4/10/2020



2. CITY WATER SUPPLIES AND DEMAND

2.1 CITY WATER SUPPLIES

The City’s water supply comes from a combination of imported water, local groundwater and recycled water to satisfy water demands. The City receives water supplies from Metropolitan Water District of Southern California (Metropolitan) and the Orange County Water District (OCWD). The City is a member agency of Metropolitan and receives imported water from the State Water Project and the Colorado River under agreements with Metropolitan. OCWD manages the Orange County Groundwater Basin (“OC Basin” or “Basin”) and provides groundwater resources to the City.

The City maintains 444 miles of transmission and distribution mains, nine reservoirs with a storage capacity of 49.3 million gallons, seven pumping stations, 20 wells, and seven imported water connections. The seven imported water connections to the Metropolitan System are described in Table 2 below.

Table 2 City of Santa Ana Connections to Metropolitan Facilities

MWD Connection	Name of Connection	Normal Operating Capacity (MGD)	Design Capacity (MGD)
SA-1	Bristol	5.17	6.46
SA-2	First	5.17	9.69
SA-3	McFadden	5.17	6.46
SA-4	Warner	4.85	6.46
SA-5	Alton	4.85	12.93
SA-6	Santa Clara	7.76	12.93
SA-7	Red Hill	4.85	32.31

From 2005-2015, Metropolitan delivered between 3,000 AF or 2.6 MGD (2015, lowest delivery) to 13,000 AF or 11.6 MGD (2005, highest delivery) to the City.¹ The design capacity of the Metropolitan connections is more than adequate to deliver imported to the City as shown in the table above.

The City’s Water Utility provides water service within a 27-square mile service area. The service area includes the City of Santa Ana and a small neighborhood in the City of Orange, near Tustin Avenue and Fairhaven by the northeast corner of Santa Ana. See Table 3 which shows the City’s recent water supply to satisfy demands from 2015.

Table 3 2015 Projected and Actual Water Supply and Demand (Acre-feet)

Land Use Type	2010 UWMP Projected 2015 Demand	Actual 2015 Demand
Single Family	18,368	14,084
Multi-Family	13,563	10,399

¹ 2015 Metropolitan UWMP.

Other (CII)	15,684	12,025
Landscape	185	147
Total	47,800	36,656
Notes: Source: 2010 and 2015 City of Santa Ana UWMPs		

As shown in Table 3 above, there was a decrease in water supplied to the City in 2015 as to what was predicted to be delivered in the 2010 UWMP² (47,800 AF) by approximately 23%. This is likely due to Senate Bill (SB) x7-7 which requires the State of California to reduce urban water use by 20% by the year 2020 as described in more detail below. Similarly, the Executive Order mandated by California Governor Edmund “Jerry” Brown in April 2015 in response to the drought that started in 2011 further required a collective reduction in statewide urban water use of 25% which would also reduce Citywide demands. In addition, UWMPs are typically developed in a conservative manner and tend to overestimate future water demands.

As of 2018-19, 77% of the City’s water supply is from OC Basin groundwater and 23% is from Metropolitan imported water and recycled water.³

OCWD Groundwater

The primary source of water for the City is the Orange County Groundwater Basin (“OC Basin”) which is managed by the Orange County Water District (OCWD). The OC Basin underlies the north half of Orange County beneath broad lowlands. The OC Basin covers an area of approximately 350 square miles, bordered by the Coyote and Chino Hills to the north, the Santa Ana Mountains to the northeast, the Pacific Ocean to the southwest, and terminates at the Orange County line to the northwest, where its aquifer systems continue into the Central Basin of Los Angeles County.

The OC Basin storage capacity is estimated to be 66 million AF⁴, of which only a fraction is available for use to prevent against physical damage to the Basin such as seawater intrusion or land subsidence. To ensure the Basin is not overdrawn, OCWD recharges the Basin with local and imported water. The Basin is recharged primarily by four sources including local rainfall, storm and base flows from the Santa Ana River (SAR), purchased Metropolitan imported water; and highly treated recycled water. Basin recharge occurs largely in the following recharge basins that are located in or adjacent to the City of Anaheim:

- Warner Basin: A 50-foot-deep recharge basin located next to the SAR at the intersection of the 55 and 91 freeways;
- Burris Basin: Located between Lincoln Avenue and Ball Road in the City of Anaheim;
- Kraemer Basin: Located adjacent to Burris Pit;
- Santiago Creek: Located in the City of Orange between Villa Park Road and E. Bond Avenue.

² 2010 City of Santa Ana Urban Water Management Plan. Found here:
<https://water.ca.gov/LegacyFiles/urbanwatermanagement/2010uwmps/Santa%20Ana,%20City%20of/Santa%20Ana%20Final%202010%20UWMP.pdf>

³ 2018/2019 OCWD Engineer’s Report.

⁴ OCWD Groundwater Management Plan 2015 Update. June 17, 2015.

The OC Basin (also referred to as Basin 8-1) has been designated as a medium-priority basin. As mentioned, SGMA provides authority for agencies like OCWD to develop and implement Groundwater Sustainability Plans or alternative plans (“Alternatives”) that demonstrate the basin has operated within its sustainable yield over a period of at least 10 years. OCWD decided to submit an Alternative for evaluation by the California Department of Water Resources (DWR). An Alternative is required to be submitted to DWR for review no later than January 1, 2017, and every 5 years thereafter. In general, Alternatives must be consistent with one of the following (Water Code §10733.6(b)):

- A plan developed pursuant to Part 2.75 (commencing with Section 10750) or other law authorizing groundwater management.
- Management pursuant to an adjudication action.
- An analysis of basin conditions that demonstrates that the basin has operated within its sustainable yield over a period of at least 10 years. The submission of an alternative described by this paragraph shall include a report prepared by a registered professional engineer or geologist who is licensed by the state and submitted under that engineer’s or geologist’s seal.

OCWD prepared an Alternative that satisfies the third bullet point above to prove the OC Basin has operated within its sustainable yield over a period of at least 10 years. The Basin 8-1 Alternative can be found on OCWD’s website. The Alternative states that Basin 8-1 has operated within its sustainable yield for more than 10 years without experiencing significant and unreasonable (1) lowering of groundwater levels, (2) reduction in storage, (3) water quality degradation, (4) seawater intrusion, (5) inelastic land subsidence, or (6) depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water. In addition, Basin 8-1 has not been in conditions of critical overdraft. DWR has one year to evaluate the Basin 8-1 Alternative. The paragraphs below will further explain how OCWD successfully manages the OC Basin to meet these new groundwater monitoring and management requirements.

OCWD manages the Basin through the Basin Production Percentage (BPP) which is determined each water year. The BPP is set based on groundwater conditions, availability of imported water supplies, water year precipitation, SAR runoff, and basin management objectives. The BPP represents an established percentage identifying the amount of groundwater all pumpers in the Basin can pump without paying a “pumping tax” or Basin Equity Assessment (BEA) to OCWD. For example, if the BPP is set to 75%, all pumpers within the Basin, including the City, can supply 75% of their water needs from groundwater supplies at a cost significantly less than the cost of imported water. If groundwater production is equal to or less than the BPP (i.e. less than 75% in the example above), all producers within the Basin pay a replenishment assessment (RA) fee which is used to fund groundwater replenishment and recharge programs aimed at ensuring the long-term viability and stability of the Basin. If groundwater production is greater than the established BPP for that water year (i.e. greater than 75% in the example above), the BEA is determined for the producer of that amount of groundwater provided in excess of the BPP. The BEA is an additional fee paid on each AF of water pumped above the BPP, making the total cost of that additional water equal to the higher cost of imported water from Metropolitan.

According to OCWD’s Engineer’s Report for fiscal year 2018/19, total water demands within the OCWD jurisdiction were 393,222 AF for the 2018-19 water year, and estimated to be 415,000 for the 2019-20 water year. Groundwater production totaled 303,496 AF. As shown in Table 4 below, the City utilized 25,512.4 AF of groundwater and 7,743.0 AFY of supplemental water in the 2018-19 water year.

Table 4 City of Santa Ana Groundwater Production Data 2018-19

Groundwater Producer	Groundwater	Supplemental Water (AF)	(AF)	Actual BPP
	Total	Deliveries	Grand Total	Non-Irrigation Only
City of Santa Ana	25,512.4	7,743.0	33,255.4	76.7

Source: OCWD 2018-19 Engineer’s Report

Over the recent past, production capability of the Basin has increased as a result of increased wastewater reclamation at the Groundwater Replenishment System (GWRS) located in Fountain Valley. The GWRS, which is designed to turn wastewater into drinking water, is one of the most technologically advanced wastewater treatment plants in the world. A treatment plant expansion of 30 million gallons per day was recently put on line by OCWD increasing the recharge capacity of the GWRS to 100 million gallons per day. This equates to the recycling of over 110,000 AFY of wastewater back into the Basin for future extraction and potable use. A final expansion of the treatment system has been designed and currently under construction to expand to a capacity of 130 million gallons per day. Expansion projects to the GWRS increase local water supply reliability and ensure low-cost water supplies throughout northern Orange County, including the City of Santa Ana.

Metropolitan Imported Water

The City of Santa Ana is one of only three retail member agencies of Metropolitan in Orange County. As a member agency, pursuant to the Metropolitan Act, the City has preferential rights to a certain percentage of water delivered to Metropolitan each year primarily from the State Water Project and/or the Colorado River Aqueduct as well as other Metropolitan storage programs. Being a member agency of Metropolitan puts the City in a better position relative to receiving water directly from Metropolitan, as opposed to other agencies in Orange County which obtain their imported Metropolitan water through MWDOC. The main sources of water Metropolitan provides to the City include water from northern California delivered via the State Water Project (SWP) and water from the Colorado River Basin delivered via the Colorado River Aqueduct. More details on these sources of imported water are explained below.

Colorado River

The Colorado River was Metropolitan’s original source of water after Metropolitan’s establishment in 1928. Lake Mead and Lake Powell, the two largest reservoirs in the United States, can store four times the annual flow of the Colorado River. River flows are primarily generated from snowpack in the Rocky Mountains. Colorado River water is allocated and delivered to seven states in the US including Colorado, Utah, Wyoming, New Mexico, Arizona,

Nevada and California. Mexico also has an allocation of 1.5 million acre-feet (MAF) along the Colorado River each year.

California's urban water allocation is managed by Metropolitan and imported from the Colorado River via the Colorado River Aqueduct (CRA) which is stored at Diamond Valley Lake and Lake Mathews in Riverside County. The CRA includes supplies from the implementation of the Quantification Settlement Agreement (QSA) and related agreements to transfer water from agricultural agencies in Imperial County to urban uses throughout Southern California including Los Angeles, Orange County and San Diego. The 2003 QSA enabled California to implement major Colorado River water conservation and transfer programs, stabilizing water supplies for 75 years and reducing the state's demand on the river to its 4.4 MAF entitlement. Colorado River transactions are potentially available to supply additional water up to the CRA capacity of 1.25 MAF on an as-needed basis.

California is apportioned the largest allocation on the River of 4.4 MAF of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California, and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to but not used by Arizona or Nevada. Metropolitan has a basic entitlement of 550,000 AFY of Colorado River water, plus surplus water up to an additional 662,000 AFY if certain conditions exist. The remainder of California's allocation goes to Imperial County, primarily to the Imperial Irrigation District, and is used mainly for agriculture production.

Over the past 19 years (2000-2018), there have only been three years when the Colorado River flow has been above average.⁵ On May 20, 2019, the Department of the Interior, Bureau of Reclamation and representatives from all seven Colorado River Basin states and signed completed drought contingency plans for the Upper and Lower Colorado River basins. These completed plans are designed to reduce risks from ongoing drought and protect the single most important water resource in the western United States. In addition to the voluntary reductions and other measures to which the basin states agreed, Mexico has also agreed to participate in additional measures to protect the Colorado River Basin.⁶

State Water Project

The State Water Project (SWP) collects water from rivers in Northern California and redistributes it to the water-scarce but populous central and southern portions of California through a network of aqueducts, pumping stations and power plants. Approximately 70% of the water provided by the SWP is used for urban areas and industry in Southern California and the San Francisco Bay Area, and 30% is used for irrigation in the Central Valley. The availability of water supplies from the SWP can be highly variable. A wet water year may be followed by a dry water year which restricts the amount of water that can be delivered throughout California. Metropolitan's SWP imported water is stored at Castaic Lake on the western side of Metropolitan's service area and at Silverwood Lake near San Bernardino, as well as in Diamond Valley Lake.

⁵ USBR Lake Mead at Hoover Dam Water Elevation Data. Found here:
<https://usbr.gov/lc/region/g4000/hourly/mead-elv.html>

⁶ USBR News Releases. Found here: <https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=66103>

The Sacramento-San Joaquin River Delta (Delta) is key to the SWP's ability to deliver water to its agricultural and urban contractors. The Delta faces many challenges concerning its long-term sustainability such as climate change posing a threat of increased variability in floods and droughts. Sea level rise complicates efforts in managing salinity levels and preserving water quality in the Delta to ensure a suitable water supply for urban and agricultural use. Furthermore, other challenges include continued subsidence of Delta islands, many of which are below sea level, and the related threat of a catastrophic levee failure as the water pressure increases, or as a result of a major seismic event.

Metropolitan's Board approved a Delta Action Plan in June 2007 that provides a framework for staff to pursue actions with other agencies and stakeholders to build a sustainable Delta and reduce conflicts between water supply conveyance and the environment. The Delta action plan aims to prioritize immediate short-term actions to stabilize the Delta while an ultimate solution is selected, and mid-term steps to maintain the Delta while a long-term solution is implemented. Currently, Metropolitan is working towards addressing three basic elements: Delta ecosystem restoration, water supply conveyance, and flood control protection and storage development.

In April 2015, the Brown Administration announced California WaterFix, as well as a separate ecosystem restoration effort called California EcoRestore. Together, the California WaterFix and California EcoRestore will make significant contributions toward achieving the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The WaterFix is aimed at making physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, south-of-Delta SWP water supplies, and water quality. The WaterFix includes the construction of two tunnels up to 150 feet below ground and three new intakes, each with 3,000 cubic-feet per second (cfs) capacity and an average annual yield of 4.9 million acre-feet designed to protect California's water supplies. These proposed upgrades would provide protection against water supply disruption from failure of aging levees due to sea-level rise, earthquakes and flood events.

In May 2019, the Newsom Administration revised their stance on the WaterFix in response to multiple legal challenges. The revised project would include the construction of one tunnel instead of the previously proposed two-tunnel system. At this time, the DWR and the US Bureau of Reclamation (BOR) have withdrawn their water rights petition (the WaterFix Petition) and the project has been postponed indefinitely.

Recycled Water

The City depends on OCWD for its recycled water supply for non-potable uses such as irrigation. OCWD provided 352 AF of recycled water to the City of Santa Ana in 2015 as part of the Green Acres Project (GAP). OCWD owns and operates the GAP, a water recycling system that provides up to 8,400 AFY of recycled water as an alternate source of water that is mainly delivered to parks, golf courses, greenbelts, cemeteries, and nurseries in the cities of Costa Mesa, Fountain Valley, Newport Beach, in addition to Santa Ana. The City maintains an agreement with OCWD to supply GAP water to customers where available. It is anticipated that recycled water supplied to the City will maintain around 300 AFY through 2040.

2.2 CITY WATER DEMANDS

The City's Water Utility provides water service within a 27-square mile service area to a population of approximately 335,299 as of 2015.⁷ The City is almost completely built-out. Approximately 67% of the City's water demand is residential including single family and multi-family residential units. Commercial land uses, including dedicated landscape, accounts for the remaining 33% of the total demand. The 2015 UWMP⁸ highlighted that water demands throughout the City were 36,656 AF from July 2014 to June 2015. The 2010 UWMP anticipated water demands in 2015 to be much larger at 47,800 AF. As mentioned, the difference is likely because of the mandatory water restrictions from the Governor's Executive Order and the fact that UWMPs are typically developed in a conservative manner and tend to overestimate future water demands.

In April 2015 Governor Brown issued an Executive Order as a result of one of the most severe droughts in California's history, requiring a collective reduction in statewide urban water use of 25% by February 2016, with each agency in the state given a specific reduction target by DWR. In response to the Governor's mandate, the City began to track its water wasting prohibition enforcement activities. On June 2, 2015, the City declared a Phase 2 water supply shortage in Resolution No. 2015-025 by formally requiring all water consumers to reduce use by 12% relative to their 2013 consumption. Additionally, on August 4, 2015, a water wasting penalty rate was established by Resolution No. 2015-047. This new penalty rate permits City staff to penalize those users not meeting their water use reduction targets of 12%. The City of Santa Ana as a whole met its State mandated target; and as a result the City did not have to impose any monetary penalties on any of its users.

As of April 7, 2017, Governor Brown ended the drought State of Emergency in most of California, while maintaining water reporting requirements and prohibitions on wasteful practices such as watering during or right after rainfall.⁹ The City continues to promote water use efficiency and currently has a goal to continue to reduce water demands by 3% compared to 2013 consumption. In addition, the City only allows outdoor watering to every other day or Monday, Thursday, and Saturday and only between the hours of 6 PM and 6 AM.¹⁰

Such restrictions have significantly reduced water demands throughout California. In addition to these mandated restrictions, cities must follow the Water Conservation Act of 2009, also known as Senate Bill (SB) x7-7. This law required the State of California to reduce urban water use by 20% by the year 2020. The City must determine baseline water use during their baseline period and water use targets for the years 2015 and 2020 to meet the state's water reduction goal. The City's 2015 target was 123 gallons per capita per day (GPCD) and the 2020 target is 116 GPCD. The 2015 UWMP reported that the City has already met both the 2015 and 2020 water use targets with an actual use in 2015 of 83 GPCD. This is likely due to increased

⁷ Center of Demographics Research (CDR) at California State University, Fullerton

⁸ 2015 City of Santa Ana Urban Water Management Plan. Found here: https://www.santa-ana.org/sites/default/files/Documents/urban_water_management_plan.pdf

⁹ SWRCB Water Conservation Portal – Emergency Conservation Regulation, accessed on 10/01/2019. Found here: http://www.waterboards.ca.gov/water_issues/programs/conservation_portal/emergency_regulation.shtml

¹⁰ City of Santa Ana – Water Conservation Website, accessed 10/01/2019. Found here: https://www.santa-ana.org/sites/default/files/Documents/Drought_Flyer_Final_Eng_No_Cropmarks.pdf

conservation as required by the Governor’s Executive Order during severe drought conditions throughout California.

The City’s water demand has been decreasing in recent years due to the combination of the Governor’s Executive Order and SBx7-7 goals. More recently, the City has documented a per capita usage of 66 gpcd¹¹ which highlights the continued conservation efforts.

The City’s water demands are then expected to increase by approximately 8% from 2015 to 2040 as shown in the table below.

Table 5 City of Santa Ana Projected Total Water Demands

Water Demand Type	2015	2020	2025	2030	2035	2040
Potable and Raw Water	36,656	36,678	39,397	39,669	39,658	39,716
Recycled Water	352	320	320	320	320	320
Total Water Demand	37,008	36,998	39,717	39,989	39,978	40,036

Source: 2015 City of Santa Ana UWMP

As shown above, it is projected that water demands will increase from 37,008 AF in 2015 to 40,036 AF in year 2040 representing an increase of 3,028 AF. These estimates are approximately 10,000 AF less than what was predicted in the 2010 UWMP further highlighting the conservative nature of UWMP preparation.

The 2015 Metropolitan UWMP stated that Metropolitan would be able to meet the demands of its member agencies, including the City of Santa Ana, through 2040. Therefore, imported water demands for the City are projected to be met through the 20-year requirements of SB 610 and beyond. The City of Santa Ana 2015 UWMP also confirmed the ability of the local supplies and the OC Basin to meet the growing demands of the City. The ability for the City to meet these growing demands in multiple climate scenarios is explained in the sections below.

¹¹ City of Santa Ana Website: Water Conservation. Found here: <https://www.santa-ana.org/pw/water-conservation>

3. SANTA ANA GPU CURRENT WATER DEMANDS

As UWMPs typically overestimate water demand projections, as identified above, the City provided water use data to update water demands estimates since the 2015 UWMP. This assisted in developing an updated estimate for current water demands throughout the City.

For each land use in the City of Santa Ana and its Focus Areas, water demand estimates were developed to provide a baseline condition and to allow for comparisons against any proposed land use changes. Water demands were estimated using the average gallons per capita water use estimate of 66 gallons per capita per day (gpcd).¹² This gpcd estimate was then multiplied by dwelling unit buildout estimates and residents per dwelling unit assumptions provided by Placeworks. Commercial water demand factors were provided from the City of Santa Ana Guidelines for Water and Sewer Facilities (2017). In addition, the City provided data for 2018/2019 water use from irrigation that was also used to establish a total baseline existing condition water demand for 2020.

Table 6 provides a summary of the existing condition water demand for the City. Detailed calculations are provided in Appendix A.

Table 6 Existing Condition Average Daily Water Demand

Land Use	Land Use Count	Residents Per Dwelling Unit	Water Demand Factor	Water Demands (AFY)
Single Family Residential	56,782 DUs	4.60	66 gpcd	19,323
Multifamily Residential	22,010 DUs	3.60	66 gpcd	5,862
Commercial	1,541 acres (67 million sf)	--	2,500 gpd/acre	4,318
Potable and Recycled Irrigation	--	--	--	1,648
Citywide Total	78,792	--	67,118,596	31,151
<i>Notes: Land use data supplied and dwelling unit residence assumptions provided by Placeworks, 2020</i>				

Under the existing conditions, average daily water demands are estimated at 31,151 AFY through the City. Based on correspondence with City staff, the existing water demand estimate is within range of actual water use based on 2018/19 data thereby confirming this methodology is appropriate in estimating water demands.

It is important to note that the 2015 UWMP projected water demands to be 36,998 AFY in 2020 based on previous population projections. This is nearly 6,000 AFY greater than actual water use within the City within the same time frame. This is likely due to the conservative nature of UWMPs as well as ongoing water conservation efforts employed by the City to reduce potable water demands.

¹² City of Santa Ana Website: Water Conservation. Found here: <https://www.santa-ana.org/pw/water-conservation>

Existing water demands for the City can be compared to proposed increases in land uses under the Santa Ana GPU to determine if adequate supplies are available to meet increased water demands. See below for the proposed water demand calculations, ability of the City to meet projected water demand increases and the CEQA impact assessment.

4. THRESHOLDS OF SIGNIFICANCE

California Environmental Quality Act (CEQA) significance criteria are used to evaluate the degree of impact caused by a development project on environmental resources such as water supply reliability. According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would impact any of the items listed below.

4.1 UTILITIES AND SERVICE SYSTEMS THRESHOLDS (CEQA CHECKLIST SECTION XIX)

Would the Project:

- B. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Should the answers to these environmental factors prove to be a potentially significant impact, mitigation measures would be required to reduce those impacts to a less-than-significant threshold.

5. CEQA IMPACT ASSESSMENT

The purpose of the proposed conditions evaluation is to determine potential impacts under CEQA related to water supply from the proposed Santa Ana GPU.

5.1 PROPOSED WATER DEMANDS

Under the proposed land use changes, water demands will increase throughout the City of Santa Ana due to increases in dwelling units and commercial land uses. A total increase of 36,261 dwelling units and increase of approximately 5,849,220 sf of non-residential uses are proposed.

Methodology to estimate increases in water demands is similar to the methodology utilized for establishing the existing condition baseline. However, a 20% reduction factor was employed to the gpcd multi-family residential water demands to account for required reductions in water demands associated with new developments including the California Green Building Code standards (e.g. mandatory low flow toilets and efficient fixtures) as well as model efficiency landscape guidelines. A factor of 53 gpcd was utilized to project multi-family water demands into the future associated with the Santa Ana GPU. A slight decrease in single family residences is anticipated; this decrease assumed 66 gpcd associated with higher usage, older homes. The City has noted that the reduction in per capita water use proposed here has already been observed during recent years (2019-2020) and ranges between 44 gpcd – 58 gpcd based on water usage reporting requirements the City must send to the California Department of Water Resources each month. The commercial water demand factor of 2,500 gpd/acre remained consistent with existing water demand factors although this approach is likely overestimated and therefore conservative.

Table 7 shows the proposed water demands associated with each land use change. Detailed calculations and associated exhibits are included in Appendix A.

Table 7 Existing Condition to Proposed Condition Water Demand Increases

Land Use	Land Use Count	Residents Per Dwelling Unit	Water Demand Factor	Water Demands (AFY)
Single Family Residential	-590 DUs	4.30	66 gpcd	-188
Multifamily Residential	+36,851 DUs	3.10	53 gpcd	6,761
Commercial	+134 acres (+5.85 million sf)	--	2,500 gpd/acre	376
Citywide Total Projected Increase in Demands				+6,950
Existing Condition Total Demands				31,151
Proposed Condition Total Demands				38,101
Notes: Land use data supplied and dwelling unit residence assumptions provided by Placeworks, 2020				

Full implementation of the Santa Ana GPU has the potential to increase water demand by 6,950 AFY within the City.

5.2 WATER SUPPLY FINDINGS

As shown above, the proposed GPU will likely increase demands on existing water supplies. As part of proposed GPU impact analysis, existing and proposed water demands were estimated using a combination of City of Santa Ana commercial water demand factors and City-specific per capita water demand data as shown in Table 7. As shown, an increase in 6,950 AFY was estimated from existing land use to the land use under the proposed GPU. The following section highlights the ability of the City to adequate supply water resources to support the increases in demands proposed under the GPU.

5.2.1 City of Santa Ana 2015 UWMP

The findings of the proposed increases in water demands as compared to current water demands were compared to the 2015 UWMP findings for normal, single dry year and multiple dry year water supply/demand scenarios. To determine increases in water supply needed to support anticipated increases in water demands through 2040, the 2015 UWMP utilizes best available buildout data and population projections from a variety of planning documents, including data from Center for Demographic Research, and water supply and climate models.

Forecast Year	2020	2025	2030	2035	2040
Normal Year					
Supply totals	36,998	39,717	39,989	39,978	40,036
Demand totals	36,998	39,717	39,989	39,978	40,036
Single -Dry Year					
Supply totals	39,218	42,100	42,388	42,377	42,438
Demand totals	39,218	42,100	42,388	42,377	42,438
Multiple-Dry Year					
<i>First year</i>					
Supply totals	39,218	42,100	42,388	42,377	42,438
Demand totals	39,218	42,100	42,388	42,377	42,438
<i>Second year</i>					
Supply totals	39,218	42,100	42,388	42,377	42,438
Demand totals	39,218	42,100	42,388	42,377	42,438
<i>Third year</i>					
Supply totals	39,218	42,100	42,388	42,377	42,438
Demand totals	39,218	42,100	42,388	42,377	42,438
Source: 2015 City of Santa Ana UWMP					

As shown above, in all climate scenarios analyzed in the 2015 UWMP, available water supplies are projected to meet demands. Reliability of local water supplies will be ensured through

continued implementation of the City, OCWD and Metropolitan water supply and demand management strategies.

See below for a summary of 2015 UWMP findings as well as water demands calculated as part of this EIR technical report for existing and proposed GPU water use.

Table 8 Water Demand Planning Document Comparison

Source	Water Demand Scenario	Water Demand Estimate
EIR Tech Report	Existing Water Demands Estimate	31,151 AFY
EIR Tech Report	Proposed GPU Water Demand Estimate	36,377 AFY
2015 UWMP	Projected 2020 Water Demands (Normal – Multiple Dry Year)	36,998 – 39,218 AFY
2015 UWMP	Projected 2040 Water Demands (Normal – Multiple Dry Year)	40,036 – 42,438 AFY

As shown above, the projected water demands from the proposed GPU is well within the projected total water demands for 2040 in the 2015 UWMP for normal, dry year and multiple dry year scenarios. It is not anticipated that implementation of the GPU will exceed projected long term water supplies. This is further supported by OCWD and Metropolitan regional water projections and purchase agreements as summarized below.

5.2.2 OCWD 2018-19 Engineer’s Report

The 2018-19 OCWD Engineer’s report provides data on groundwater usage across its service area, including the City of Santa Ana. Water production for the City consisted of 77% groundwater for the 2018-19 year, with the remaining 23% consisting of imported and recycled water. Total groundwater production for the 2018-19 year was 302,756 AF, which falls within OCWD’s sustainable groundwater management goals. Population within OCWD’s service area is expected to increase from the current 2.28 million people (based on Census 2010 demographic data) to approximately 2.59 million people by the year 2035. This population growth is expected to increase water demands from the current 393,222 AF per year to 447,000 AF per year in 2035 (a water demand projection that takes into consideration future water conservation savings). This yields an anticipated increase in water demand of 53,779 AFY. The proposed increase of 6,950 AFY under implementation of the Santa Ana GPU is well within the planned increase in water demands from OCWD projections.

5.2.3 Metropolitan Water District Purchase Agreement

In addition to Metropolitan’s 2015 UWMP statement that Metropolitan would be able to meet the demands of its member agencies, including the City of Santa Ana, through 2040, a 2014 Purchase Order between the City of Santa Ana and Metropolitan Water District further establishes adequate water supplies to meet current and future demands. The Purchase Order sets terms for maximum deliveries of imported water over a 10 year period, from January 1 2015 through December 31, 2024. Among the stipulations of the purchase agreement was a maximum annual delivery of 19,617 AFY. As noted in the OCWD 2018-19 Engineer’s Report, the City of Santa Ana utilized 25,512.4 AF of groundwater further supporting the ~75% groundwater to ~25% imported water supply portfolio for the City. As noted in the City’s

UWMP, this ratio of groundwater and imported water is anticipated to continue through 2040. Therefore, an available 11,874 AF of water delivered by Metropolitan is still available if ever needed. This surplus alone is sufficient to meet the proposed increase in demands of 6,950 AFY under implementation of the proposed GPU. When combined with anticipated increases in OCWD groundwater supply capacity, it is not anticipated that the proposed increase in water demands will adversely impact regional water supplies.

5.2.4 Water Supply Impacts

The following impact assessments are based on the significance criteria established in Section 4.1 for water systems.

Impact B **Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?**

Impact Analysis: Under full buildout of the proposed land use changes as part of the GPU, water demands would increase from approximately 31,151 AFY to 38,101 AFY. The 2015 UWMP projected a 2040 total water demand of 40,036– 42,438 AFY (depending on climate conditions) which is greater than the total of 38,101 AFY associated with the implementation of the proposed GPU. OCWD and Metropolitan both have concluded adequate supplies to meet the growing demands of their member agencies, including the City of Santa Ana. The proposed water demand increases documented in this report as a result of the Santa Ana GPU are within the planned supplies from the City, OCWD and Metropolitan during normal dry and multiple dry year scenarios.

6. CONCLUSION

The City of Santa Ana works together with OCWD and Metropolitan to provide water supply to its various customers. The City, OCWD and Metropolitan have managed regional and local water supplies successfully for decades and water management documentation summarized above conclude that there are adequate supplies to meet increased water demands from the proposed Santa Ana GPU. There are adverse supply effects anticipated related to water supply in normal, single dry and multiple dry year climate scenarios associated with the implementation of the Santa Ana GPU.

7. TECHNICAL APPENDICES

Appendix A Water Demand Calculations

APPENDIX A

WATER DEMAND CALCULATIONS

Santa Ana GPU Area Existing Condition Water Demands

	Building(s)		Building	Flow	Unit of Measure	Total Demands	Total Demands
	Units	People Per Household	Acres			GPD	GPD
Residential							
Single Family Residential	56,782		4.6	0.00	66 /capita	17,239,015	19,323
Multi Family Residential	22,010		3.6	0.00	66 /capita	5,229,576	5,862
Business and Commerce							
Commercial	-		1540.83		2500 /acre	3,852,077	4,318
Other Water Demands							
Potable and Recycled Irrigation							1,648
Citywide Total	78,792	-	1540.83	--	--	26,320,669	31,151

*Residential demand factors based on average per capita water use estimates

**Commercial demand factors based on City of Santa Ana Guidelines for Water and Sewer Facilities (2017)

Santa Ana GPU Area Proposed Condition Water Demand Increases

	Building(s)		Building	Flow	Unit of Measure	Total Demands	Total Demands
	Units	People Per Household	Acres			GPD	GPD
Residential							
Single Family Residential	(590)		4.3	0.00	66 /capita	-167,442	-188
Multi Family Residential	36,851		3.1	0.00	53 /capita	6,031,772	6,761
Business and Commerce							
Commercial	-		134.28		2500 /acre	335,699	376
Citywide Increases	36,261	-	134.28	--	--	6,200,029	6,950
						Existing Condition Total Demands	31,151
						Proposed Condition Total Demands	38,101

*Proposed residential demand factors based on average per capita water use estimates with a 20% efficiency demand reduction

**Commercial demand factors based on City of Santa Ana Guidelines for Water and Sewer Facilities (2017)