



# Urban Water Management Plan

SEPTEMBER 2021

SAN ANTONIO WATER COMPANY





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SEPTEMBER 2021

Prepared by Water Systems Consulting, Inc.



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# ACRONYMS & ABBREVIATIONS

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°C	Degrees Celsius
°F	Degrees Fahrenheit
AB	Assembly Bill
AF	Acre Foot
AFY	Acre Feet per Year
AHHG	Area of Historic High Groundwater
AMR	Automatic Meter Reader
APA	Administrative Procedures Act
AWWA	American Water Works Association
BMP	Best Management Practice
CALWARN	California Water/Wastewater Agency Response Network
CAT	Climate Action Team
CCF	Hundred Cubic Feet
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Irrigation System
CUWCC	California Urban Water Conservation Council
DCR	DWR SWP Delivery Capacity Report
DDW	SWRCB Division of Drinking Water
DFW	California Department of Fish and Wildlife
DIP	Ductile Iron Pipe
DMM	Demand Management Measure
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
ERNIE	Emergency Response Network of the Inland Empire
ESA	Endangered Species Act
ET	Evapotranspiration
ETo	Reference Evapotranspiration



GAC	Granulated Activated Carbon
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
IX	Ion Exchange
KAF	Thousand Acre Feet
KAFY	Thousand Acre Feet per Year
LAFCO	Local Agency Formation Commission
MAF	Million Acre-Feet
MCL	Maximum Contaminant Level
MF	Multi-family
MG	Million Gallons
MGD	Million Gallons per Day
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MTBE	Methyl Tertiary Butyl Ether
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PCE	Perchloroethylene
PVC	Polyvinyl Chloride
QWEZ	Qualified Water Efficient Landscaper
RIX	Rapid Infiltration and Extraction
RPA	Reasonable and Prudent Alternative
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SAWCo	San Antonio Water Company
SBX7-7	Senate Bill 7 of Special Extended Session 7
SF	Single Family
SOI	Sphere of Influence
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TCE	Trichloroethylene
ULFT	Ultra-Low Flush Toilet

UV	Ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
VOC	Volatile Organic Compound
WBIC	Weather Based Irrigation Controller
WSCP	Water Shortage Contingency Plan
WFF	Water Filtration Facility
WSS	Water Sense Specification
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

# 1

## 2020 URBAN WATER MANAGEMENT PLAN

# Introduction and Lay Description

**This chapter provides a brief overview of the San Antonio Water Company (SAWCo) and the purpose of this Urban Water Management Plan (UWMP).**

SAWCo is a private non-profit Mutual Water Company formed in 1882 under the General Corporation Laws of the United States with the purpose to furnish, lease, or sell water for irrigation, milling, manufacturing and other purposes to the newly established Ontario irrigation colony. Land for the irrigation colony was sold primarily for the booming citrus industry at the time, and a share in SAWCo was included with every acre of land purchased. Each shareholder was entitled to a portion of available local water, distributed equally by SAWCo amongst shareholders on a non-profit basis. Today SAWCo retains the same purpose of providing beneficial water service to all shareholders based on established monthly entitlements and a fixed number of shares.

### IN THIS SECTION

- California Water Code
- UWMP Organization
- UWMP Relation to Other Efforts

## 1.1 The California Water Code

In 1983, the State of California Legislature (Legislature) enacted the Urban Water Management Planning Act (UWMP Act). The law required an urban water supplier, providing water for municipal purposes to more than 3,000 customers or serving more than 3,000 acre-feet (AF) annually, to adopt an UWMP every five years demonstrating water supply reliability under normal as well as drought conditions.

Since the original UWMP Act was passed, it has undergone significant expansion, particularly since the completion of the 2015 UWMP. Prolonged droughts, groundwater overdraft, regulatory revisions, and changing climatic conditions affect the reliability of water suppliers as well as the statewide water reliability overseen by California Department of Water Resources (DWR), the State Water Resources Control Board (State Water Board), and the Legislature. Accordingly, the UWMP Act has grown to address changing conditions and the current requirements are found in Sections 10610-10656 and 10608 of the California Water Code.

DWR provides guidance for urban water suppliers by preparing an Urban Water Management Plan Guidebook 2020 (Guidebook) (California Department of Water Resources, 2021), conducting workshops, developing tools, and providing program staff to help water suppliers prepare comprehensive and useful UWMPs, implement water conservation programs, and understand the requirements in the California Water Code. Suppliers prepare their own UWMPs in accordance with the requirements and submit them to DWR. DWR then reviews the plans to make sure they have addressed the requirements identified in the California Water Code and submits a report to the Legislature summarizing the status of the plans for each five-year cycle.

The purpose of the UWMP is for water suppliers to evaluate their long-term resource planning and establish management measures to ensure adequate water supplies are available to meet existing and future demands. The UWMP provides a framework to help water suppliers maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during drought conditions or other water supply interruptions.

**The UWMP is a valuable planning tool used for multiple purposes including:**

- Provides a standardized methodology for water utilities to assess their water resource needs and availability.
- Serves as a resource to the community and other interested parties regarding water supply and demand, conservation and other water related information.
- Provides a key source of information for cities and counties when considering approval of proposed new developments and preparing regional long-range planning documents such as city and county General Plans.
- Informs other regional water planning efforts.

This plan, which was prepared in compliance with the California Water Code, and as set forth in the Guidebook and format established by the DWR, constitutes the 2020 UWMP for SAWCo.

## 1.2 UWMP Organization and Lay Description

This UWMP is organized as follows:

### Chapter 1 – Introduction

The introduction provides a description of SAWCo and background on the UWMP and California Water Code. Water suppliers that serve more than 3,000 customers or 3,000 acre-feet-per-year (AFY) are required to prepare a UWMP. The UWMP is an important tool that details SAWCo's system and service area, estimates supply and demand over a twenty-five-year period, and analyzes reliability in terms of drought.

### Chapter 2 – Plan Preparation

The UWMP is prepared based on guidance from DWR. This UWMP provides information in terms of calendar year (January 1st – December 31st) and in units of AFY. While preparing this UWMP, SAWCo coordinated with other local agencies and sent notifications that the UWMP was being developed, available for review, and details pertaining to the public hearing and plan adoption meeting.

### Chapter 3 – System Description

This chapter summarizes SAWCo's service area, climate, demographics, and land use. SAWCo provides domestic service to the San Antonio Heights community with an estimated population of 3,000 people. SAWCo provides water based on entitlement and the number of shares. There are 6,389 shares in SAWCo. In 2020, only 6,178 shares were active.

### Chapter 4 – Water Use Characterization

This chapter summarizes historical and future water use. SAWCo provides water for domestic, municipal, and miscellaneous uses. In addition, SAWCo spreads water in the Chino, Cucamonga, and Six Basins groundwater basins for groundwater recharge. In 2020, the largest customer was the City of Upland's purchases for irrigation water, which accounted for 50% of the total water sales.

SAWCo's Basic Area is nearly built out. SAWCo's ongoing Master Plan effort identified seven parcels as possible future development and corresponding water demand factors. Using the information developed in the Master Plan, it is estimated that should these seven parcels develop, future demands on SAWCo will increase by approximately 30 AFY.

### Chapter 5 – Water Supply Characterization

SAWCo uses local groundwater from several groundwater basins and surface water to meet customer demands. Local groundwater is extracted from the Chino Basin, Cucamonga Basin, and Six Basins. The three groundwater basins are each adjudicated, and SAWCo's has water rights as defined by the various legal Judgements in place to protect and manage each basin. SAWCo also participates in groundwater recharge operations that enhance groundwater supply. Surface water from San Antonio Creek are pre-1914 water rights, and annual water availability is influenced by rainfall. The San Antonio Tunnel is a deep rock tunnel 100 feet below ground surface that collects naturally percolated groundwater.

### Chapter 6 – Water Service Reliability and Drought Risk Assessment

Future demand and supply were analyzed to evaluate supply reliability over the planning period. The UWMP analyzed conditions for normal, or average, single-dry, and five-year consecutive dry periods. SAWCo aims to provide shareholders full entitlement, but in periods of drought, allocations per share may be reduced, depending on supply availability. In all scenarios, SAWCo expects to meet customer

demands based on shareholders full entitlement. In addition, a Drought Risk Assessment was performed to analyze anticipated supply and demand for the next five years (2021-2025). The Drought Risk Assessment analysis determines that SAWCo's supplies are able to reliably meet customer demands.

### **Chapter 7 – Water Shortage Contingency Plan**

The Water Shortage Contingency Plan (WSCP) provides guidance on declaring a water shortage stage and how to mitigate supply deficits. The WSCP defines four stages of water shortage and outlines the actions that will be required of customers during each stage. The complete WSCP is available in Appendix H.

### **Chapter 8 – Demand Management Measures**

This chapter summarizes the various demand management measures used to implement water conservation throughout SAWCo. To participate in any of the rebate programs, interested customers should contact SAWCo directly.

### **Chapter 9 – Plan Adoption, Submittal, and Implementation**

This chapter summarizes the various requirements to adopt and submit a UWMP and WSCP. Details on public hearing dates, notification letters to local agencies, and how to submit or amend a plan are discussed.

## **1.3 UWMP Relation to Other Efforts**

The UWMP characterizes water use, estimates future demands and supply sources, and evaluates supply reliability for normal, single-dry, and consecutive dry years. The UWMP Act also requires reevaluation of SAWCo's Water Shortage Contingency Plan (WSCP). Details on the WSCP are provided in Chapter 7.

Documents that were leveraged in preparation of this UWMP and how they overlap with the primary topics included in the UWMP are shown in Figure 1-1.



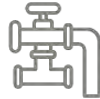


			PLAN TOPICS				
							
PLANNING DOCUMENT	PREPARED BY	DOCUMENT STATUS	SUPPLIES / RELIABILITY	DEMANDS / WATER USE EFFICIENCY	INFRASTRUCTURE	RISK & MITIGATION	EMERGENCY RESPONSE
Water Master Plan	WSC for SAWCo	■■■■□□ Under development	✓	✓	✓		
AWIA Risk and Resilience Assessment and Emergency Response Plan	WSC for SAWCo	■■■■■■ Complete	✓		✓	✓	✓
2017 Water Master Plan	Civiltec Engineering, Inc for SAWCo	■■■■■■ Complete	✓	✓	✓		
2017 Water Rate and Fee Study	Carollo Engineers for SAWCo	■■■■■■ Complete		✓			
2015 Urban Water Management Plan	Civiltec Engineering, Inc for SAWCo	■■■■■■ Complete	✓	✓		✓	✓

Figure 1-1. UWMP Relation to Other Planning Efforts.





# 2 2020 URBAN WATER MANAGEMENT PLAN

## Plan Preparation

**This plan was prepared using guidance from the Department of Water Resources' (DWR) Urban Water Management Plan Guidebook 2020 (2020 UWMP Guidebook). This chapter provides details regarding SAWCo's UWMP preparation and the coordination and outreach efforts conducted.**

A DWR review sheet checklist is provided in Appendix A.

### 2.1 Basis for Preparing a Plan

As mentioned in Chapter 1, the Water Code requires Suppliers with 3,000 or more service connections or water deliveries in excess of 3,000 AFY to prepare an UWMP every five years. Details pertaining to SAWCo's water system, such as public water system number, 2020 number of connections and volume of water supplied are provided in Table 2-1. In 2020, SAWCo delivered 16,345 AFY of water to nearly 1,210 service connections and in a wholesale capacity; therefore, SAWCo is required to prepare an UWMP. SAWCo included all 2020 data in the development of this UWMP.

#### IN THIS SECTION

- Basis for Preparing a Plan
- Coordination and Outreach

**Table 2-1. DWR 2-2 Plan Identification**

TYPE OF PLAN	MEMBER OF RUWMP	MEMBER OF REGIONAL ALLIANCE	NAME OF RUWMP OR REGIONAL ALLIANCE
Individual UWMP	No	No	

**Table 2-2. DWR 2-3 Agency Identification**

TYPE OF SUPPLIER	YEAR TYPE	FIRST DAY OF YEAR		UNIT TYPE
Wholesaler	Calendar Years	DD	MM	Acre Feet (AF)
		01	01	

## 2.2 Coordination and Outreach

The UWMP Act requires a water purveyor to coordinate the preparation of its UWMP with other appropriate agencies in and around its service area. This includes other water suppliers that share a common source, water management agencies, and relevant public agencies. All relevant entities, including the County of San Bernardino, were sent 60-day notices of preparation and consideration for adoption at a public hearing prior to the adoption of the 2020 UWMP. Copies of the letters and other correspondence are provided in Appendix B. Public hearing notices are also provided in Appendix B.

### 2.2.1 Wholesale and Retail Coordination

SAWCo provides water based on a fixed number of shares. Several local water suppliers own shares in SAWCo and are listed in Table 2-3.

**Table 2-3. DWR 2-4W Water Supplier Information Exchange**

Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with Water Code Section 10631. Complete the table below.

WHOLESALE WATER SUPPLIER NAME
Cucamonga Valley Water District
Monte Vista Water District
City of Ontario
City of Upland

### 2.2.2 Coordination with Other Agencies and the Community

CWC Section 10621 requires that suppliers notify cities and counties to which they serve water that the UWMP and WSCP are being updated. Notices should be provided at least 60 days prior to a public hearing. To fulfill this requirement, SAWCo notified local and regional agencies of preparation of its 2020 UWMP and WSCP, inviting these agencies to submit any comments. SAWCo provided notices to the agencies listed in Table 2-4.

**Table 2-4. Agency Coordination.**

AGENCY/ORGANIZATION	WAS NOTIFIED OF PLAN AVAILABILITY <sup>1</sup>	WAS SENT A NOTICE OF INTENTION TO ADOPT 60 DAYS PRIOR TO PUBLIC HEARING
<b>Water Suppliers</b>		
Cucamonga Valley Water District	X	X
Monte Vista Water District	X	X
<b>Public Agencies</b>		
City of Upland	X	X
City of Ontario	X	X
City of Pomona	X	X
County of San Bernardino	X	X
<b>Others</b>		
Chino Basin Watermaster	X	X

<sup>1</sup>Was notified of availability of Draft UWMP and directed to an electronic copy of the draft plan on SAWCo's website.



# 3 2020 URBAN WATER MANAGEMENT PLAN

## System Description

This section will describe SAWCo’s service area, climate, population, demographics, and land uses.

SAWCo is governed by a seven-person Board of Directors elected to four-year terms. Daily operations are overseen by the General Manager with support by the Assistant General Manager and Water Utility Superintendent. SAWCo employs approximately 10 staff members to manage operational and administrative services.

SAWCo is governed by bylaws. The purpose of SAWCo is to develop, distribute, supply, and deliver water to its shareholders for irrigation, domestic, and all other useful purposes, in proportion to the number of shares of stock held by them respectively, at actual cost, and is not organized for the private gain of any person (San Antonio Water Company).

SAWCo contains a fixed number of shares at 6,389 shares. In 2020, 6,178 shares were actively taking water. Water is provided based on entitlement and the number of shares a customer holds. Shares may be divided or sold. In 2020, the total yearly entitlement was 13,000 AF; the yearly entitlement per share was equal to 2.03 AF/share.

### IN THIS SECTION

- Service Area
- Climate
- Population and Demographics
- Land Uses

### 3.1 Service Area

SAWCo's bylaws specify the service area is made up of a Basic Area and an Extended Area. The Basic Area generally coincides with the incorporated community of San Antonio Heights located north of the City of Upland in San Bernardino County, as shown in Figure 3-1. The Basic Area is bounded to the south by the City of Upland, to the north by the San Bernardino Mountains, to the west by the Los Angeles County Line and to the east by Cucamonga Creek. SAWCo provides retail service to all end users who reside in the Basic Area.

The Extended Area is identified as all lands not included in the Basic Area. Customers within the Extended Area are considered wholesale shareholders. There are however a limited number of retail customers in the Extended Area including the Upland Hills Golf course, the Red Hill Golf Course, Holliday Rock Company, and several grove irrigators.

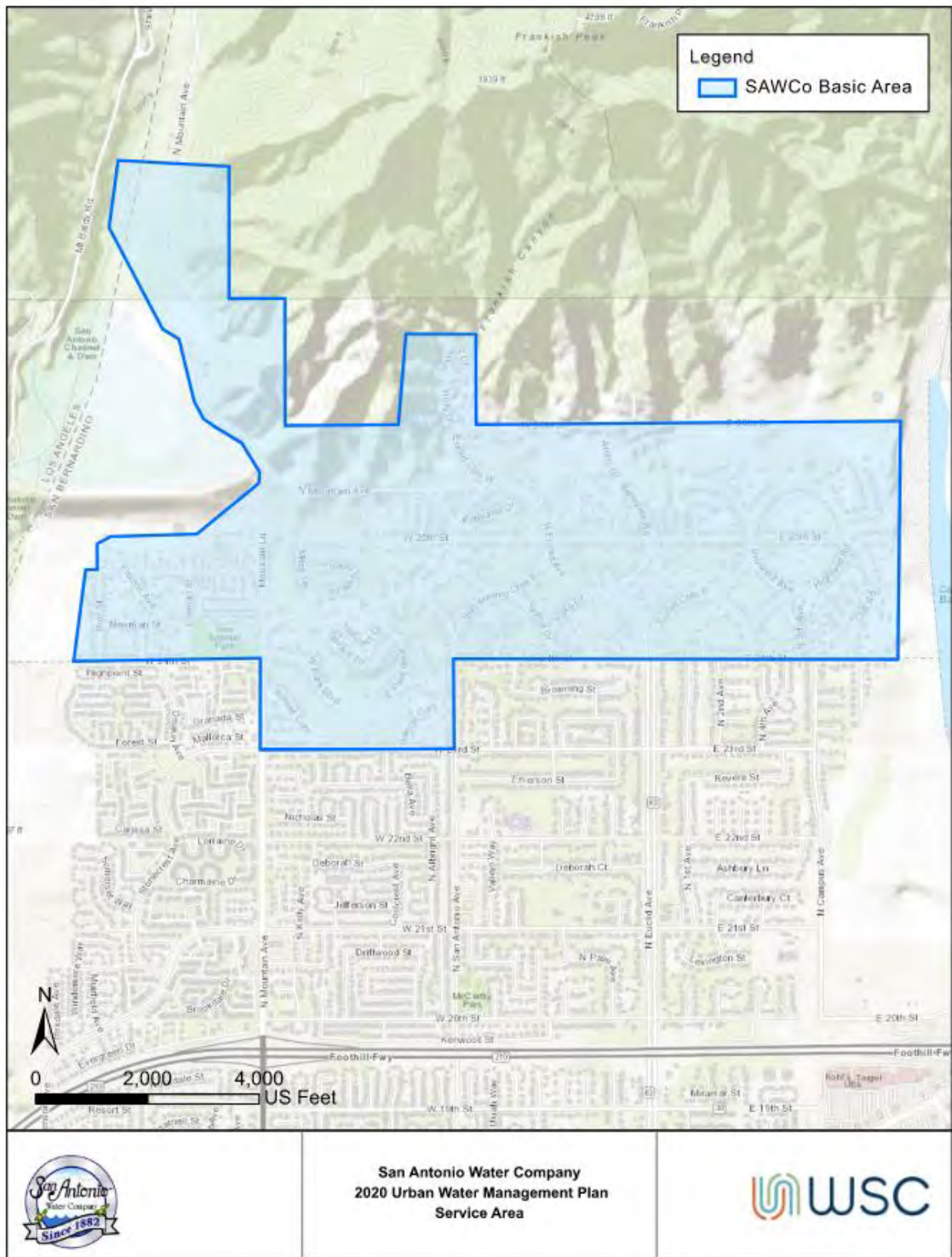


Figure 3-1. Service Area

## 3.2 Service Area Climate

Table 3-1 presents average climate data for the service area, including temperature, rainfall, and reference evapotranspiration (ET<sub>o</sub>) from the California Irrigation Management Information System (CIMIS). CIMIS data was used as it provided the most recent data pertaining to temperature, rainfall, and ET<sub>o</sub>. As shown in

Table 3-1, the warmest month of the year is typically August with an average temperature of 82.4 degrees Fahrenheit (°F), while the coldest month of the year is December with an average temperature of 58.5°F.

The annual average precipitation within SAWCo's service area is about 15.6 inches. As shown in Table 3-1, the majority of rainfall occurs in the months of October through March. December is typically the wettest month with an average rainfall of approximately 3.9 inches.

**Table 3-1. Average Climate** <sup>1</sup>

MONTH	AVERAGE TEMPERATURE (°F)	AVERAGE RAINFALL (INCH)	AVERAGE STANDARD ET <sub>o</sub> (INCH)
January	59.9	2.8	2.2
February	60.5	2.1	2.8
March	63.8	1.9	4.3
April	67.0	0.9	5.4
May	69.8	0.4	5.8
June	75.8	0.1	6.6
July	81.2	0.2	7.5
August	82.4	0.0	7.3
September	80.1	0.5	5.6
October	73.5	1.3	4.0
November	65.0	1.6	2.7
December	58.5	3.9	2.0
<b>ANNUAL AVERAGE</b>	<b>69.8</b>	<b>15.6</b> <sup>2</sup>	<b>4.7</b>

<sup>1</sup> Data based on CIMIS weather station 78 Pomona; <https://cimis.water.ca.gov/>. Averages calculated from 2010-2020 data.

<sup>2</sup> Annual total rainfall.



### 3.3 Service Area Population and Demographics

#### 3.3.1 Service Area Population

SAWCo’s Basic Service Area closely follows the boundaries of the census designated place of San Antonio Heights, which had a population of 3,092 in 2017, down from 3,371 in 2010 per the US Census (Datausa.io, 2017). To identify the population for 2020, the DWR population tool was used. Using a persons per connection factor of 2.73, it was estimated that the population within the Basic Area is 3,303 people.

San Antonio Heights is primarily residential and nearly built out. SAWCo has identified seven parcels that could potentially be developed and require water service. For this UWMP, it was assumed development would occur between 2025 and 2030. Therefore, future population was determined to increase to 3,322 people and remain constant throughout the planning horizon.

$$Future\ population = 2020\ population + 2.73 \frac{persons}{connection} * 7\ future\ connections = 3,322\ people$$

SAWCo also provides water for irrigation, industrial, agricultural, and wholesale in the Extended Area. Land use and planning in the extended area is under the jurisdiction of numerous cities and San Bernardino County and is addressed in their respective UWMPs.

**Table 3-2. DWR 3-1W Current and Projected Population**

POPULATION SERVED	2020	2025	2030	2035	2040	2045
Basic Area - San Antonio Heights	3,303	3,303	3,322	3,322	3,322	3,322

#### 3.3.2 Other Social, Economic, and Demographic Factors

Based on 2015-2019 data, the United States Census Bureau (Census) estimates that households within the San Antonio Heights are composed of 2.69 people per household and approximately 64% of households are composed of married-couples with families. The median age of a resident within the San Antonio Heights is approximately 48 years old. Based on 2015-2019 Census data, 95% of people 25 years or older had at least graduated from high school and 42% obtained a bachelor’s degree or higher. It was estimated that 5% of people did not complete high school.

Throughout the San Antonio Heights, approximately 58% of the working population (people ages 16 and over) were employed. Approximately 75% held a private wage or salary position, and 16% were employed by the federal, state, or local government. Educational services, health care and social assistance (30%) is the most common industry that San Antonio Heights residents work in, followed by a retail trade (14%). The median household income was \$91,897, while the median earnings for a full-time, year-round worker was \$78,071 (United States Census Bureau, n.d.).

It was estimated that 5.2% of people within the San Antonio Heights were in poverty. 1.8% of households participated in government programs, such as the Supplemental Nutrition Assistance Program (SNAP). Of the households that received SNAP, 100% had children under the age of 18 within the household (United States Census Bureau, n.d.).

Census data reported that of the people identifying as one race alone, 79.7% were White. Approximately 4.5% identified as two or more races. Of the total population, an estimated 60.3% identified as White non-Hispanic and 27.8% as Hispanic. It was estimated that 18.9% of people at least

5 years or older spoke a language other than English at home. In addition to English, Asian and Pacific Islander languages were the most common languages spoken by San Antonio Heights residents. 7.4% of people stated that they did not speak English “very well” (United States Census Bureau, n.d.).

### 3.4 Land Uses within Service Area

As mentioned, SAWCo provides potable water service to the Basic Area, which incorporates the community of San Antonio Heights. This area consists of residential users only. There are only seven parcels currently identified as undeveloped. If they are developed, single-family residences will be established. Therefore, both current and future land uses within SAWCo’s Basic Area is residential only.

# 4

## 2020 URBAN WATER MANAGEMENT PLAN

# Water Use Characterization

**SAWCo provides potable and non-potable water to customers within its service area.**

SAWCo provides potable water to residents within the San Antonio Heights and on occasion, to the City of Upland. SAWCo provides non-potable water for irrigation to various local irrigators and other agencies, including the Cities of Upland and Ontario, Monte Vista Water District, and Cucamonga Valley Water District. Other large irrigation accounts include the Holiday Rock Company and Red Hill Golf Course and Homeowners Association.

SAWCo's bylaws outline the various water services provided, which include domestic, municipal, and miscellaneous uses, defined below (San Antonio Water Company):

**Domestic:** water treated by SAWCo and directly delivered to shareholders through SAWCo's distribution system.

**Municipal:** untreated water and delivered to shareholders who in turn treat the water for delivery of domestic, commercial, and other users through their delivery systems.

**Miscellaneous:** untreated water directly delivered to shareholders through SAWCo's distribution system for a variety of legal permissible uses, including farm irrigation, golf course watering, and rock company operations.

### IN THIS SECTION

- Non-Potable vs. Potable Water Use
- Water Use by Sector

### 4.1 Non-Potable Versus Potable Water Use

As mentioned, SAWCo serves both potable and non-potable water. Potable water is provided to residents within the San Antonio Heights and to the City of Upland. Non-potable water used for irrigation is also provided to several local irrigators and other nearby agencies, as mentioned above. Based on data for 2016 through 2020, SAWCo’s average non-potable deliveries account for 84% of the total water provided by SAWCo.

### 4.2 Past, Current, and Projected Water Use by Sector

SAWCo has provided potable and non-potable water to its customers and will continue to do so in the future. Past deliveries are shown in Figure 4-1.

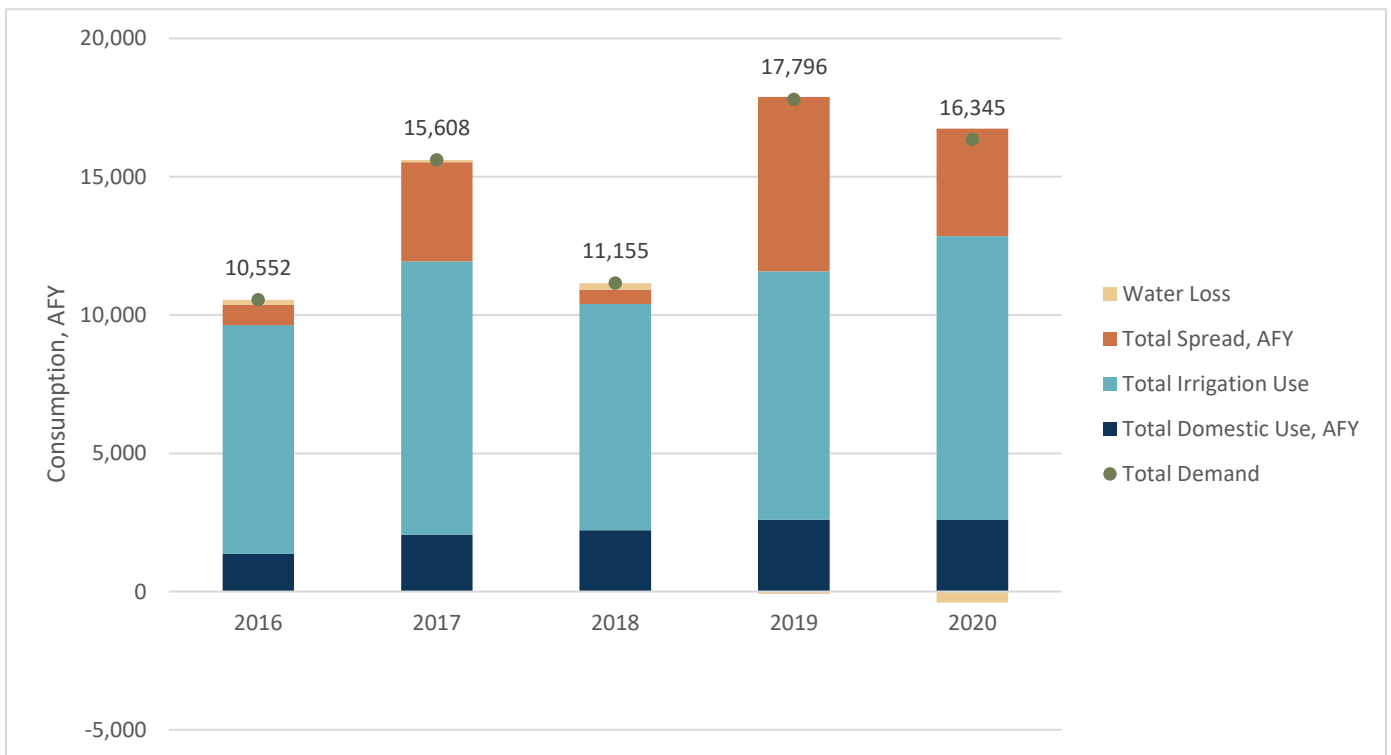


Figure 4-1. Water Demand for 2016-2020, AFY

#### 4.2.1 Distribution System Water Losses

Over the last few years, SAWCo has focused on mitigating water losses. Based on historical data, it was clear that SAWCo experienced meter inaccuracies throughout the system. As shown above in Figure 4-1, SAWCo experienced negative water losses, meaning SAWCo sold more water than produced. As a result, the volume of 2020 actual water use shown in Table 4-1 differs from the total supply shown in Table 5-6.

Investigation helped SAWCo identify a substantial area of water losses, located at a flow meter at the Basin 6 settling ponds. In early 2021, SAWCo fixed this meter, and since then, water losses have

remained consistent. Based on data for January through April 2021, water losses have been recorded as 0.9% within the domestic system and 1% within the irrigation system.

In addition, SAWCo has replaced customer meters with Automated Meter Reading (AMR) to improve data collection and response.

### 4.2.2 Current Water Use

In 2020, SAWCo provided 16,746 AF of water to its customers or spread into groundwater storage. The City of Upland’s irrigation system consumed 50% of SAWCo’s total water produced. The second largest water use was for spreading, accounting for 23% of the total water produced. Potable deliveries for SAWCo’s domestic system within the San Antonio Heights accounted for 8%. A breakdown of water used in 2020 is provided in Figure 4-2.

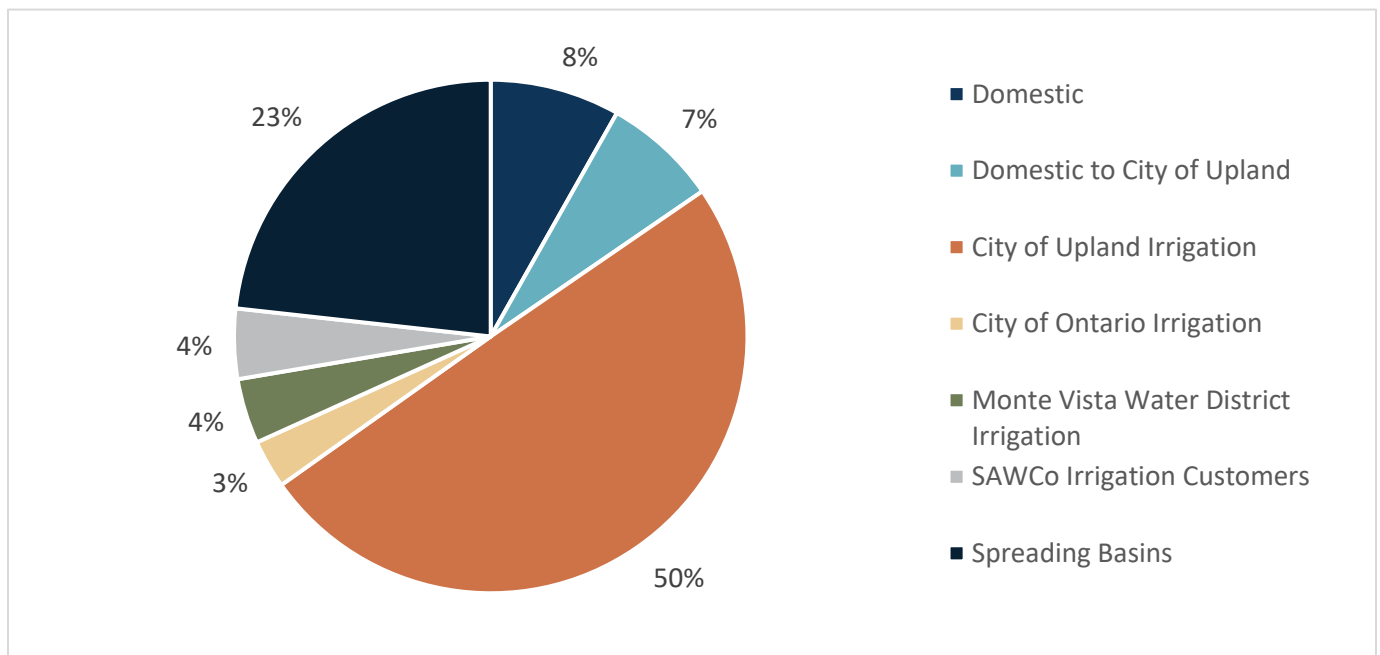


Figure 4-2. 2020 Water Use

**Table 4-1. DWR 4-1W Actual Demands for Water, AFY**

USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2020 VOLUME
Single Family	SAWCo Domestic Customers	Drinking Water	1,371
Sales/Transfers/Exchanges to Other Agencies	City of Upland	Drinking Water	1,213
Sales/Transfers/Exchanges to Other Agencies	City of Upland	Raw Water	8,332
Sales/Transfers/Exchanges to Other Agencies	Monte Vista Water District	Raw Water	687
Sales/Transfers/Exchanges to Other Agencies	City of Ontario	Raw Water	511
Landscape	Minor Irrigators	Raw Water	740
Groundwater Recharge	Spreading Basins	Raw Water	3,893
-		<b>TOTAL:</b>	<b>16,747</b>

### 4.2.3 Projected Water Use

SAWCo's system is very close to buildout and therefore, demands are expected to increase minimally. The majority of the San Antonio Heights area is already developed and any new development, should it occur, is expected along Holly Drive. These developments are anticipated to be single family residential and require potable service only.

Future demands were estimated as part of SAWCo's 2020 Master Plan, using a factor calculated from 2019 consumption and parcel acreage. This factor was applied to areas identified as possible development within the 2017 Water Master Plan and added to current demand to determine the total future demand for SAWCo's potable system. Areas for possible development are identified in Figure 4-3 below and corresponding demand for each parcel is summarized in Table 4-2.

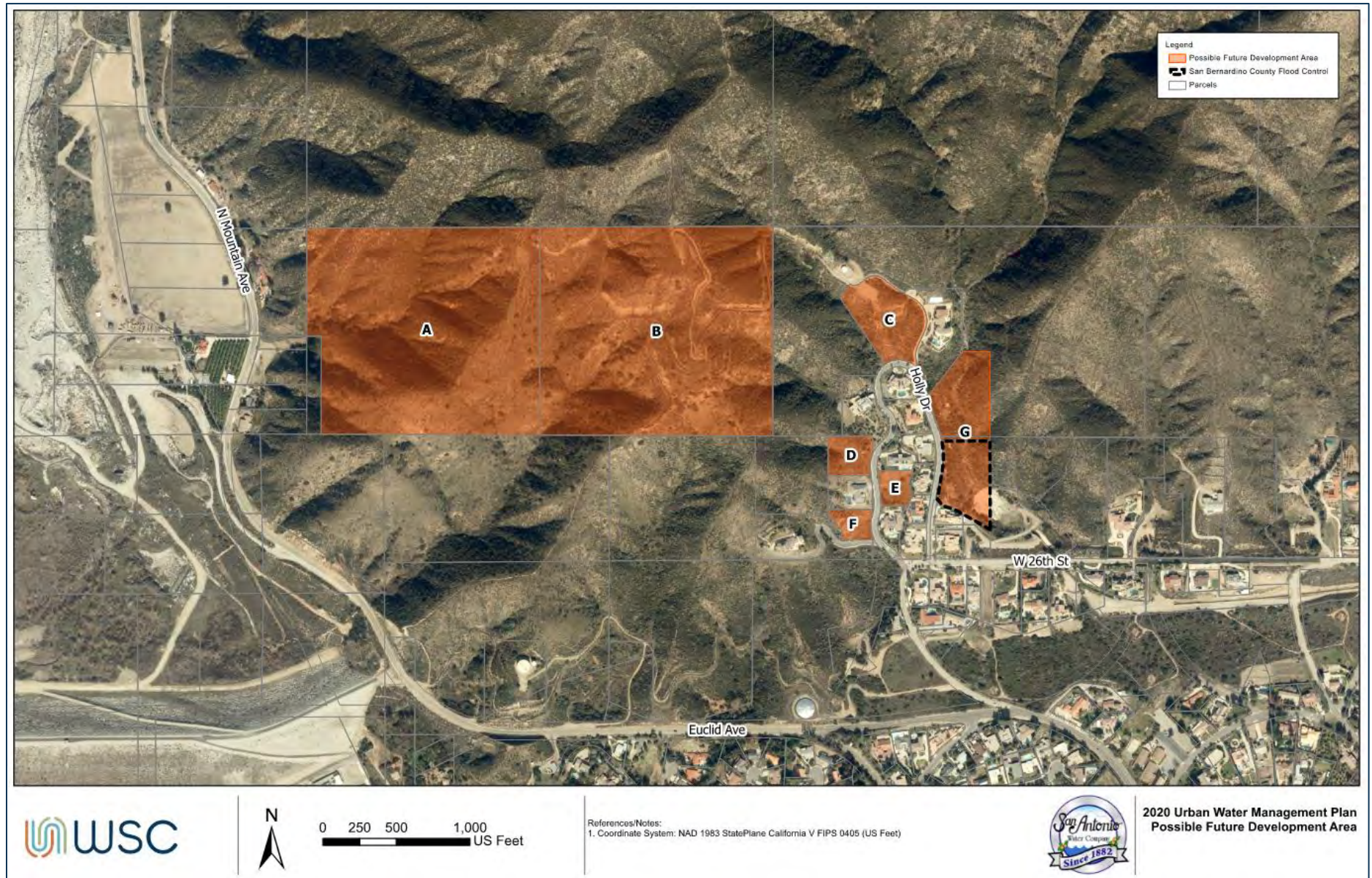


Figure 4-3. Areas Identified as Possible for Future Development

**Table 4-2. Future Potable Demand from Future Development**

AREA	ACRES	WATER DEMAND FACTOR (GPM/ACRE)	WATER DEMAND (GPM)	WATER DEMAND (AFY)
A <sup>1</sup>	33.8	1.036	17.53	10.9
B <sup>1</sup>	35.2	1.036	18.23	11.3
C	3.4	1.036	3.54	2.2
D	1.2	1.036	1.28	0.8
E	0.8	1.036	0.81	0.5
F	0.8	1.036	0.82	0.5
G <sup>2</sup>	5.9	1.036	6.09	3.8
<b>ADDITIONAL FUTURE DEMAND, AFY</b>				<b>29.9</b>

Notes:

<sup>1</sup>If developed, parcel expected to be half developed. Half of total parcel acreage used to determine future demand.

<sup>2</sup>Half of area identified as future development is highly unlikely to be developed. Southern portion of Area G owned by San Bernardino County Flood Control. Dashed lines in Figure 4-3 delineate area owned by San Bernardino County Flood Control.

### 4.2.4 Characteristic Five-Year Water Use

As outlined in SAWCo’s Bylaws, SAWCo provides water to its shareholders and expects its customers to maximize their shares. Therefore, SAWCo projects future water uses based on total shares and entitlement for each customer.

**Table 4-3. DWR 4-2W Projected Demands for Water**

USE TYPE	ADDITIONAL DESCRIPTION	PROJECTED WATER USE				
		2025	2030	2035	2040	2045
Single Family	SAWCo Domestic Customers	1,270	1,270	1,270	1,270	1,270
Sales/Transfers/Exchanges to Other Agencies	City of Upland	9,186	9,186	9,186	9,186	9,186
Sales/Transfers/Exchanges to Other Agencies	Monte Vista Water District	671	671	671	671	671
Sales/Transfers/Exchanges to Other Agencies	Cucamonga Valley Water District	8	8	8	8	8
Sales/Transfers/Exchanges to Other Agencies	City of Ontario	601	601	601	601	601
Industrial	Holiday Rock Company	269	269	269	269	269
Landscape	Red Hills Golf Course	444	444	444	444	444
Other	Red Hill HOA	20	20	20	20	20
Other	Minor Irrigators	102	102	102	102	102
Groundwater Recharge	Spreading Basins	2,000	2,000	2,000	2,000	2,000
-	<b>TOTAL:</b>	<b>14,571</b>	<b>14,571</b>	<b>14,571</b>	<b>14,571</b>	<b>14,571</b>



**Table 4-4. DWR 4-3W Total Gross Water Use**

	2020	2025	2030	2035	2040	2045
<b>Potable and Raw Water</b> From Table 4-1W and 4-2W	16,747	14,571	14,571	14,571	14,571	14,571
<b>Recycled Water Demand*</b> From Table 6-4W	-	-	-	-	-	-
<b>Total Water Demand:</b>	<b>16,747</b>	<b>14,571</b>	<b>14,571</b>	<b>14,571</b>	<b>14,571</b>	<b>14,571</b>

### 4.3 Climate Change Considerations

It is anticipated that SAWCo’s shareholders will continue to use water based on their share’s entitlement. Demands may decrease as the result of water supply shortage and drought messaging, as discussed in SAWCo’s Water Shortage Contingency Plan.



# 5 2020 URBAN WATER MANAGEMENT PLAN

## Water Supply Characterization

**This section describes the existing and projected supplies for SAWCo. SAWCo currently receives all its water supply from local sources including the San Antonio Creek, groundwater from the San Antonio Tunnel, and three groundwater basins: Chino Basin, Cucamonga Basin, and Six Basins.**

Surface water from San Antonio Creek are pre-1914 water rights, and annual water availability is influenced by rainfall. The San Antonio Tunnel is a deep rock tunnel 100 feet below ground surface that collects naturally percolated groundwater. The three groundwater basins are each adjudicated, and SAWCo's water rights are defined by the various legal Judgements in place to protect and manage each basin. SAWCo also participates in groundwater recharge operations that enhance groundwater supply.

SAWCo provides water from the San Antonio Tunnel (Tunnel), the Chino Basin, and the Cucamonga Basin to its domestic customers. During times of large flows from the Tunnel, potable water overflows into the irrigation system through the Forebay Pump Station. This provides SAWCo with the opportunity to avoid large water losses within the domestic system and decrease groundwater extraction for the irrigation system.

### IN THIS SECTION

- Purchased Water
- Groundwater
- Wastewater and Recycled Water
- Future Projects
- Summary of Existing and Planned Supplies
- Energy Intensity

## 5.1 Water Supply Analysis Overview

SAWCo currently relies on local supply sources to meet its shareholder needs. Supplies include local surface water from the San Antonio Creek and groundwater from several basins. SAWCo expects to continue using these local sources throughout the future.

**Surface Water:** SAWCo may obtain up to 13,864 AFY of surface water from the San Antonio Creek. However, the actual volume received depends on minimum stream flowrates and can vary significantly based on rainfall. Water from the San Antonio Creek is used to meet irrigation demands and also conveyed to the City of Upland’s water treatment plant for treatment and subsequent distribution by the City of Upland.

**Tunnel Water:** SAWCo may obtain all the volume of water in the San Antonio Tunnel (Tunnel). The Tunnel is supplied by naturally percolated groundwater, which can vary year to year based on rainfall and snowpack. SAWCo may also divert water from the San Antonio Creek spreading grounds north of the San Antonio Tunnel, where it is percolates into the tunnel and is conveyed to SAWCo’s Forebay Tank and can be used in either the domestic or irrigation system.

**Groundwater:** SAWCo has groundwater rights in the Chino, Cucamonga, and Six Basins, as summarized in Table 5-1 below.

**Table 5-1. SAWCo's Groundwater Rights**

GROUNDWATER BASIN	SAWCO RIGHTS, AFY	NOTES
Chino Basin	1,234	
Cucamonga Basin	4,500 – 8,500	SAWCo may obtain up to 6,500 AFY of groundwater from the Cucamonga Basin, provided 2,000 AF is spread each year. If SAWCo spreads less than 2,000 AFY, SAWCo may only extract 4,500 AFY. If SAWCo spreads an excess of 2,000 AFY, SAWCo may extract up to 95% of the total spreading surplus amount, but not more than 8,500 AFY.
Six Basins	932	

## 5.2 UWMP Water Supply Characterization

Details on SAWCo’s various supply sources are described in this section.

### 5.2.1 Purchased or Imported Water

SAWCo does not currently purchase or import water.

### 5.2.2 Groundwater

SAWCo obtains groundwater from the Chino, Cucamonga, and Six Basins groundwater basins. Groundwater extracted from the Chino Basin is used for potable demands only. Groundwater from the Cucamonga Basin and Six Basins is used within SAWCo’s irrigation system. Figure 5-1 shows the various groundwater basins SAWCo utilizes and their boundaries.

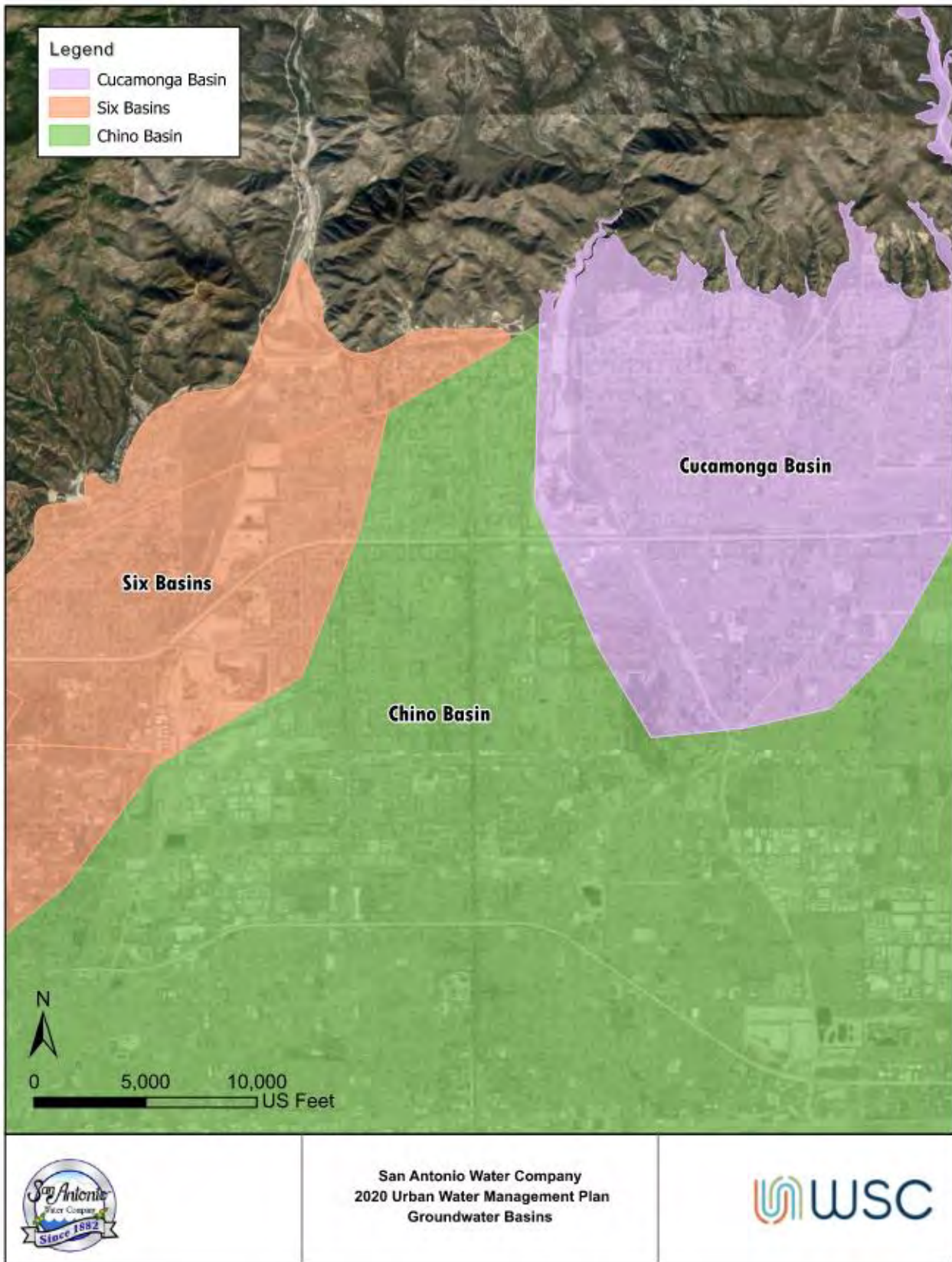


Figure 5-1. Groundwater Basins

### 5.2.2.1 Chino Basin

The Chino Basin is a subbasin to the Upper Santa Ana Valley Groundwater Basin and is designated by DWR as Basin 8-002.01. The Chino Basin underlies southeast Los Angeles County, northwest Riverside County, and southwest San Bernardino County. It is bound to the northwest by the San Jose fault, to the north by the Cucamonga fault and impermeable rocks that make up the San Gabriel Mountains. To the east, the Chino Basin is bounded by the Rialto-Colton fault, to the southeast by the Jurupa, Pedley, La Sierra Hills as well as the Santa Ana River. It is bounded to the southwest by the Chino and Puente Hills (California Department of Water Resources, 2016). The Chino Basin is considered a very-low-priority basin under the Sustainable Groundwater Management Act (SGMA).

The Chino Basin is governed by the Chino Basin Watermaster. The Chino Basin Watermaster serves to enforce the provisions of the 1978 Judgment in Chino Basin Municipal Water District vs. City of Chino et al (Judgment) and any other orders from the Court, as well as develops an Optimum Basin Management Program. Under the 1978 Judgment, the Chino Basin's safe yield was established as 140,000 AFY. The safe yield is defined in the Chino Basin Judgment as "the long-term average annual quantity of groundwater (excluding replenishment of stored water but including return flow to the Basin from use of replenishment or stored water) which can be produced from the Chino Basin under conditions of a particular year without causing an undesirable result" (Chino Basin Municipal Water District v. City of Chino, et al., 1978). The 1978 Chino Basin Judgment's allocation of the safe yield of the Chino Basin includes three separate Pools: The Overlying Agricultural Pool, Overlying Non-Agricultural Pool, and the Appropriative Pool. SAWCo is a member of the Appropriative Pool and has an appropriative right of 2.748 percent of the total appropriative rights in the Chino Basin. Under the 1978 Judgment, SAWCo was entitled to 1,506.888 AF. A copy of the 1978 Judgment is provided in Appendix D.

In 2020, the Safe Yield was recalculated to better manage the Basin and ensure sustainability. As established in the 2000 Optimum Basin Management Program (OBMP), the safe yield of the Chino Basin must be recalculated every 10 years, commencing in 2011. The Watermaster evaluated the safe yield recalculation using a groundwater flow model to redetermine the net recharge into the Chino Basin and identify any factors that could create undesirable results. The resulting Safe Yield was estimated at 135,000 AF (Chino Basin Watermaster, 2020). As a result, starting on June 30, 2020, SAWCo is entitled to 1,232.038 AF.

The Chino Basin Watermaster has also developed an updated 2020 OBMP that outlines how the Chino Basin should be managed over the next 20 years. The 2020 OBMP, provided as Appendix E, also includes the storage management plan that encompasses the recalculated safe yield.

The Chino Basin Watermaster also reallocates the unused portion of the Chino Basin safe yield from to the Overlying Agricultural Pool to the Appropriative Pool members as a supplement to the Appropriative Pool share of OSY rights in any year. These transfers are permanent if agricultural land has been converted to non-agricultural use, or temporary if agricultural pool extractions are less than their share of the safe yield. As agricultural production declines within the Chino Basin, the reallocation of water to the Appropriative Pool is expected to increase. Appropriators, like SAWCo, who are party to the Chino Basin Judgment are authorized to continue to produce groundwater while exceeding their water rights. Such extractions result in assessments by the Chino Basin Watermaster to pay for water to replenish the basin, through imported surface water recharge. Water to replenish the Chino Basin is purchased from Metropolitan Water District of Southern California (Metropolitan) by Chino Basin Watermaster in coordination with the Inland Empire Utilities Agency (IEUA) or from Appropriation Pool participants (Civiltec Engineering Inc. for San Antonio Water Company, June 2016).

### 5.2.2.2 Cucamonga Basin

The Cucamonga Basin is a subbasin to the Upper Santa Ana Valley Groundwater Basin and is designated by DWR as Basin 8-002.02. The Cucamonga Basin is bounded to the north by the San Gabriel Mountains and bounded by the Red Hill fault to the west, east and south (California Department of Water Resources, 2016). The Cucamonga Basin is considered a very-low-priority basin under the Sustainable Groundwater Management Act (SGMA).

In 1958, the Cucamonga Judgement was established and outlined water rights for individual groundwater producers, how much can be exported to non-overlying areas, and specific requirements for spreading (San Antonio Water Company vs Others, 1958). The Cucamonga Judgment stipulates production for all stakeholders of 22,721 AFY, with SAWCo's water production right of 6,500 AFY, provided SAWCo spreads 2,000 AFY of water from the San Antonio Canyon. If the annual spreading is less than 2,000 AFY, SAWCo's water rights may be reduced to a minimum amount of 4,500 AFY. However, if the spreading exceeds 2,000 AFY, SAWCo can credit 95% of the excess up to a maximum of 8,500 AFY production. From 2010-2019, SAWCo spread an average of 1,500 AFY; however, spreading between 2012 through 2018 were less than 2,000 AFY. As a result, SAWCo's 2020 production right from the Cucamonga Basin was limited to approximately 6,000 AF (4,500 AF plus the 10-year average spread). A copy of the Cucamonga Judgement is provided in Appendix F.

### 5.2.2.3 Six Basins

The Six Basins are a part of the Main San Gabriel Basin, designated by DWR as Basin 4-013 and as a very low priority basin. The Six Basins area consists of six interconnected groundwater basins: Canyon, Upper Claremont Heights, Lower Claremont Heights, Live Oak, Ganesha, and the Pomona Basins. The Six Basins area is bounded by the San Jose Hills to the south, the Chino Basin to the east, the San Gabriel Mountains to the north, and the Main San Gabriel Basin to the west.

The Six Basins are further broken down into the Four Basins and Two Basins. The Four Basins include the Canyon, Upper Claremont Heights, Lower Claremont Heights and Pomona Basins. The Two Basins refer to the Live Oak and Ganesha Basins. Water within the Two Basins is used solely by the City of La Verne (Jericho Systems, Inc. and Tom Dodson & Associates for Three Valley Municipal Water District, May 2021). SAWCo is entitled up to 7.166 percent of the OSY of the Four Basins. For 2020, SAWCo was entitled to 932.10 AFY with 2,643.30 AFY available from storage.

The Six Basins is managed by the Six Basins Watermaster. The Six Basins were adjudicated in 1998 through the stipulated judgement "Southern California Water Company vs. City of La Verne et al." known as the Six Basins Judgement, provided in Appendix G. The Six Basins Judgement specified a safe yield of 19,300 AFY and the Six Basins Watermaster establishes operating safe yields (OSY) annually. In additions, water users within the Six Basins may obtain "carryover rights" for unused production (Southern California Water Company vs. Others, 1998).

The Six Basins Watermaster is currently developing a Six Basins Strategic Plan (Strategic Plan). The Strategic Plan's Draft Program Environmental Impact Report (PEIR) is currently in a public review period. This Strategic Plan will become the conjunctive water management program utilized by the Six Basins Watermaster to implement water supply and conservation projects in coordination with others and to optimize conjunctive water management activities within the Six Basins (Jericho Systems, Inc. and Tom Dodson & Associates for Three Valley Municipal Water District, May 2021). Specifically, the Strategic Plan aims to:

- Enhance water supplies
- Enhance basin management
- Protect and enhance water quality
- Equitably finance the Strategic Plan implementation

5.2.2.4 Past Five Years

Groundwater extractions by basin over the past five years are provided in Table 5-2.

**Table 5-2. DWR 6-1W Groundwater Volume Pumped**

All or part of the groundwater described below is desalinated.

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Chino Basin	897	393	487	477	738
Alluvial Basin	Cucamonga Basin	6,281	5,761	6,407	5,340	4,945
Alluvial Basin	Six Basins	757	884	969	1,180	1,252
-	<b>TOTAL:</b>	<b>7,935</b>	<b>7,038</b>	<b>7,863</b>	<b>6,997</b>	<b>6,935</b>

**Table 5-3. DWR 6-1W Groundwater Volume Pumped: Potable**

All or part of the groundwater described below is desalinated.

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Chino Basin	897	393	487	477	738
Alluvial Basin	Cucamonga Basin	116	42	1	-	13
-	<b>TOTAL:</b>	<b>1,013</b>	<b>435</b>	<b>488</b>	<b>477</b>	<b>751</b>

**Table 5-4. DWR 6-1W Groundwater Volume Pumped: Non-Potable**

All or part of the groundwater described below is desalinated.

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Cucamonga Basin	6,165	5,720	6,406	5,340	4,933
Alluvial Basin	Six Basins	757	884	969	1,180	1,252
-	<b>TOTAL:</b>	<b>6,922</b>	<b>6,604</b>	<b>7,375</b>	<b>6,520</b>	<b>6,185</b>

5.2.2.5 San Antonio Tunnel

SAWCo is entitled to all water supplied through the San Antonio Tunnel (Tunnel). The Tunnel is a deep rock tunnel located 100 feet below ground surface and is supported by redwood beams and solid rock. Groundwater naturally percolates into the Tunnel and can vary year to year based on rainfall and snowpack. SAWCo may also divert water from the San Antonio Creek spreading grounds north of the Tunnel, where it is percolates into the tunnel and used primarily as a potable supply. The Tunnel deliveries this supply at SAWCo’s Forebay station. In times of high Tunnel flows and low domestic demand, Tunnel water overflows into the irrigation system to avoid water losses. The average supply from the Tunnel since 1999 is 2,443 AFY and ranged from only 727 AF in 2015 to 3,682 AF in 1996.

5.2.3 Surface Water

SAWCo has rights for up to 13,864 AFY of surface water from the San Antonio Creek. However, the actual volume received depends on minimum stream flowrates and can vary significantly based on rainfall. SAWCo’s supply from the San Antonio Creek since 1999 ranged from a low of 1,181 AF in











































































# E

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## Appendix E. Chino Basin 2020 Optimum Basin Management Program

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## Appendix F. Cucamonga Judgment



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## Appendix G. Six Basins Judgment

# H

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## Appendix H. Water Shortage Contingency Plan