2020 Urban Water Management Plan

DRAFT

October 2021

Carpinteria Valley Water District

Prepared by:

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Draft
2020 Urban Water Management Plan

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COMM ITMENT & INTEGRITY DRIVE RESULTS

October 2021

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LIST OF ABBREVIATIONS

AB	Assembly Bill
AF	acre-foot
AFY	acre-foot per year
AMI	automated metering infrastructure
ASR	aquifer storage and recovery
AWWA	American Water Works Association
BMP	Best Management Practice
CADDW	California Division of Drinking Water
CalWEP	California Water Efficiency Partnership
CAP	Climate Action Plan
CAPP	Carpinteria Advanced Purification Project
CCR	Consumer Confidence Report
CCWA	Central Coast Water Authority
CEC	California Energy Commission
cf	cubic feet
cfs	cubic feet per second
CII	Commercial, Industrial, Institutional
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
COMB	Cachuma Operations and Maintenance Board
CSD	Carpinteria Sanitary District
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CVWD	Carpinteria Valley Water District (or District)
CWC	California Water Code
CY	calendar year
DEQ	Dwelling Unit Equivalency Charge
District	Carpinteria Valley Water District
DMM	demand management measure
DRA	Drought Risk Assessment
DWR	State of California Department of Water Resources
EPA	United States Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
ETo	evapotranspiration
F	Fahrenheit
FY	fiscal year
GHG	greenhouse gas
GIS	Geographic Information System
GPCD	gallons per capita per day
gpd	gallons per day
gpf	gallons per flush
gpm	gallons per minute

GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HCF	hundred cubic feet
kWh	kilowatt hour
M&I	municipal and industrial
MGD	million gallons per day
ml	milliliter
mm	millimeter
MOU	Memorandum of Understanding
MPN	Most Probable Number
NOAA	National Oceanic and Atmospheric Administration
PPIC	Public Policy Institute of California
REC	Residential Equivalency Charge
RHNA	Regional Housing Needs Assessment
RWEP	Regional Water Efficiency Partnership
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SBCAG	Santa Barbara County Association of Governments
SBCFC and WCD	Santa Barbara County Flood Control and Water Conservation District
SCC	South Coast Conduit
SDWA	Safe Drinking Water Act
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAP	Technical Assistance Program
ULFT	ultra-low flush toilet
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
WRCC	Western Region Climate Center
WSCP	Water Shortage Contingency Plan
WSST	WaterSense Specification Toilet
WTP	water treatment plant
WWTP	wastewater treatment plant
WY	water-year

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The Carpinteria Valley Water District (District) is pleased to release this 2020 Urban Water Management Plan (UWMP) Update. The District is required to prepare the UWMP as per requirements by the California Department of Water Resources (DWR). The UWMP elements comply with the requirements of California Water Code (§10610-10656). Furthermore, pursuant to the requirements of the California Water Code (CWC) §10630.5, this Executive Summary provides a simple lay description of the information needed to provide a general understanding of this 2020 UWMP and includes a description of the District's reliable water supplies, anticipated challenges, and strategies for managing system reliability risks.

ES.1.1 Urban Water Management Plan

Urban water suppliers in California serving more than 3,000 customers or providing more than 3,000 AF of water annually must prepare an UWMP to promote water demand management and efficient water use. This UWMP provides planning information on the reliability and future availability of the District's water supply. This UWMP is a public statement of the goals, objectives, and strategies needed to maintain a reliable water supply for the District's customers. It is important to understand that this UWMP should be viewed as a long-term, general planning document, rather than as policy for supply and demand management.

Primary objectives of this UWMP include the following:

- Quantify anticipated water demands over a 25-year period
- Identify and quantify water supplies over a 25-year period
- Summarize reliability of water supplies for existing and future demands, in normal, dry, and multiple dry years, over a 25-year period
- Summarize water conservation and efficient water use programs

This UWMP provides information on present and future water supplies and demands, and provides an assessment of the District's water resource needs. It serves as a long-range planning document for the District's water supply. Droughts, limited supplies, environmental demands - all of these factors must be taken into consideration to provide a safe and reliable water supply for the District's service area. The intention of the UWMP is to demonstrate the District's water supply reliability over the next 25 years, in 5-year increments. The UWMP addresses the District's water system and includes a description of available water supply sources, consequences of historical and projected water use, and a comparison of water supply to water demands during a normal water-year, single dry water-year, and multiple dry water-years. It also describes the District's efforts to implement water conservation measures and water efficient uses for urban and agricultural water supplies. The UWMP is the District's commitment to a long-term plan to ensure water reliability into the future. Additional details regarding the UWMP requirements are provided in Section 1.

ES.1.2 Public Notification

The District notified applicable local agencies and organizations regarding preparation of the UWMP and planned public meeting dates and times. The District encourages representatives from those organizations and the public to attend public meetings. The District provided notification via newspaper and via District website: http://www.cvwd.net/

The District invited comments from organizations and the public as well. The District held a public hearing on October 27, 2021 virtually due to the coronavirus pandemic (COVID-19). The Board of Directors adopted the UWMP following

the October public hearing. A copy of the Board Resolution is provided in **Appendix C**. The District will submit the adopted UWMP to DWR. A copy of the UWMP checklist is provided in **Appendix A**.

ES.2 SYSTEM DESCRIPTION

ES.2.1 Location of District

The District is located on the coast of California 80 miles north of Los Angeles and 12 miles southeast of Santa Barbara. Its service area encompasses an area extending along the south coast of the County of Santa Barbara, and contains approximately 11,098 acres (17.3 square miles).

ES.2.2 District Facilities

The District was established in 1941. The District owns and operates five (5) municipal wells with a combined capacity to produce approximately 3.98 million gallons per day (MGD). These wells are located central to the suburban section of Carpinteria. The District constructed a new well, Headquarters Well, and a replacement well for El Carro in the last 20 years. Both of these wells have the capability to extract as well as inject water. These wells will help meet the peak demands and provide some redundancy in the groundwater supply reliability. Additional details regarding District groundwater extractions are provided in **Section 4**. The District owns and operates three (3) potable water reservoirs with a combined storage capacity of approximately 10.68 acre-feet (AF). These reservoirs include Shepard Mesa (0.15 AF), Foothill (9 AF), and Gobernador (1.53 AF). The District owns and operates a total of 88.8 miles of distribution pipelines.

ES.2.3 Climate

Climate within the District's service area is Mediterranean in character. Summers are usually dry with generally mild temperatures and winters are cool and have light to moderate quantities of precipitation (predominantly in the form of rainfall) with cool temperatures. Annual variation in climate conditions is minimal within the District's service area. Cachuma Project water, stored in Lake Cachuma, is major source of surface water for the District. Water from the Cachuma Project is collected from the Santa Ynez mountain watershed, which is subject to its own local climatic variations. Rainfall in the Santa Ynez watershed is greater than that of local patterns due to the orographic effect created by the local mountains and the offshore winds. Average daily maximum air temperature varies between 64.9 and 77.1 degrees Fahrenheit with an average of 70.8 (WRCC, 2015). Annual rainfall for the area is 17.84 inches. Annual average evapotranspiration (ETo) for the area is 44.13 inches (CIMIS, 2020). Additional details regarding climate within the District are provided in **Section 2**.

ES.2.4 Land Use

Land use within the District includes agricultural, residential, and commercial properties. Much of the land within the City of Carpinteria limits is designated for residential or commercial use, along with some industrial and manufacturing. Almost all the agricultural land within the District's service area lies outside the City limits in unincorporated Santa Barbara County. Land use within the District is regulated by the City within its boundaries, and by the County of Santa Barbara for the unincorporated area of the District. Agricultural customers include approximately 3,105 acres of irrigated crops.

ES.2.5 Demographic Factors

Water service is provided to a current population within the District's service area of 15,966 and a total of 4,531 service connections. Population estimates were generated from the present to 2045 and include areas outside of the City limits but within the District service area. Population growth within the District is anticipated to be 2,880 persons over the next 25 years, and population is expected to reach 18,876 by 2045.

Approximately 90 percent of the entire service area population lives in the City of Carpinteria. An estimated 10 percent of the population lives below the poverty threshold, and the average median annual household income is approximately $78,900. The District does not have any significant demographic factors that would affect water resources management planning. Additional details regarding population within the District are provided in **Section 2**.

ES.3 WATER DEMANDS

ES.3.1 Current Demands

Currently, the District serves water to 3,265 single-family residential accounts, 350 multiple- family accounts, 283 commercial/institutional accounts, 58 industrial accounts, 50 landscape irrigation accounts, 386 agricultural accounts, and 132 other (fire) accounts. All of the District's customers are metered accounts and billed monthly. According to the District's metering data, total water demand (including water loss) in 2020 was 4,105 AF. Details regarding the District's 2015 water demands are provided in **Table 1**. The District noted that the 2015 total water demand was 4,143 AF and 2010 total water demand was 3,718 AF. The 2020 demands are 38 AF (1 percent) lower than the 2015 demands and 387 AF (10 percent) higher than the 2010 demands. Agriculture demands accounted for highest category by volume used within the District at 2,093 AF (51 percent) in 2020. Municipal customers (including residential, commercial/institutional, industrial, and landscape uses) accounted for nearly 1,893 AF (46 percent) of the District's 2020 total water demand. A copy of the District's water audit summary for fiscal years 2015-2016 through 2019-2020 is provided in **Appendix G**. Additional details regarding current water demands are provided in **Section 3**.

Table 1: District Water Demands for 2020

Customer Classification	2020 Water Demand (AF)[1]	2020 Water Demand (Percent of Total)
Single Family Residential	915	22%
Multi-Family Residential	461	11%
Commercial/Institutional	245	6%
Industrial	61	1%
Institutional/Governmental	121	3%
Landscape Irrigation	90	2%
Agriculture	2,093	51%
Water Losses	119	3%
Total	**4,105**	**100**

Notes:
(1) CVWD, 2021a. All values rounded. 2020 demand does not necessarily represent the average water demand or distribution for the District.

ES.3.3 Future Water Demands

Projected water use estimates are based on the small increases to the District's customer base. Population growth within the District is anticipated to be 2,880 persons over the next 25 years (approximately 0.68 percent per year). All future new accounts will be metered and billed via volume-based rates. Total projected water demands will be approximately 4,111 AF in 2025 to 4,530 AF in 2045. Details regarding the District's projected water demands for 2025 to 2045 are provided in **Table 2**. Agriculture is projected to be the largest customer category by volume used (2,093 AF) through 2045. Residential accounts are projected to be the second largest customer category by volume used (1,257 to 1,567 AFY) through 2045. Additional details regarding future water demands are provided in **Section 3**.

Table 2: Projected District Total Water Demands 2025-2045 (AFY)

Customer Classification[1,2]	2025	2030	2035	2040	2045
Single Family Residential	793	788	857	855	856
Multiple-Family Residential	415	412	448	448	448
Commercial	261	260	282	281	282
Industrial	61	61	61	61	61
Institutional/Governmental	121	121	121	121	121
Landscape Irrigation	59	57	62	63	64
Agricultural	2,156	2,220	2,287	2,356	2,426
Water Losses[3]	245	251	263	267	272
Total	**4,111**	**4,170**	**4,381**	**4,452**	**4,530**

Notes:
(1) CVWD, 2020. All values rounded. Some differences may occur due to rounding.
(2) Projected total water use includes existing water use and projected water use from potential new development. New development based on Santa Barbara County Association of Governments forecast for 2025 to 2045 including 0.36 percent per year for 2021-2025, 0.2 percent per year for 2026-2040, and 0.08 percent per year for 2041-2045, and adjusted for RHNA housing projections. Source: SBCAG, 2019 and 2021.
(3) Assumes water losses are 6 percent of total water use, based on average water losses for the last five years.

ES.3.5 Water Conservation Act of 2009

In February 2008, Governor Arnold Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. A key component of this plan was a goal to achieve a 20 percent reduction in per capita water use statewide by the year 2020 (also known as the 20x2020 target).

The District's 2020 target is 117 GPCD and was established in the 2015 UWMP using target determination Method 3 - ninety-five percent (95%) of the applicable state hydrologic region target (Central Coast). The District's 2020 water use was 112 GPCD. Therefore, the District has met its 2020 water use target, and is in compliance with SBx7-7. Additional details regarding District compliance with SBX7-7 are provided in **Section 3**.

ES.4 WATER SUPPLIES

ES.4.1 Current Water Supplies

The District has a balanced water supply portfolio with surface water supplies from the Cachuma Project, surface water from the State Water Project (SWP), and groundwater from the Carpinteria Groundwater Basin. Potential maximum operational yield of groundwater by the District is approximately 2,839 AFY, while the long-term average will be approximately 1,200 AFY. The District's maximum local surface water allocation from the Cachuma Project is currently 2,813 AFY, while the long-term average will be approximately 1,970 AFY. Maximum allocation from the SWP is 2,200 AFY (including 200 AF of drought buffer), while the long-term average will be approximately 876 AFY. Each of these water supplies is described in detail in subsequent sections.

Table 3 summarizes the water supplies available in 2020 to meet demands within the District's service area (also see **Appendix D, Table 6-8**). Actual total District deliveries in 2020 were 4,105 AF.

Table 3: District Delivered Water Supplies for 2015

Water Supplies	2020 Water Supplies (AFY)	2020 Water Supplies (Percent of Total)
Groundwater[1]	794	19%
Cachuma Project	3,311	81%
State Water Project	0	0%
Recycled Water	0	0%
Desalination	0	0%
Transfers or Exchanges In/Out	0	0%
Other	0	0%
Total	**4,105**	**100%**

Source: CVWD, 2021a. All values rounded.

ES.4.1.1 Local Groundwater

The District overlays the Carpinteria Groundwater Basin (DWR Basin No. 3-018), a relatively large groundwater aquifer, that extends beyond the Ventura County line on the east, to Toro Canyon on the west, from the foothills of Santa Ynez Mountains to the north, and extending offshore to the southwest for over a mile. As noted above, the District relies on this basin as one of its local supplies.

The Basin includes approximately 16.6 square miles of surface area and multiple water bearing zones. Total storage in the aquifer is estimated to be approximately 700,000 AF (CVWD, 1986), while usable storage for the Basin recharge area was estimated to be nearly 38,926 AF (Marks, 2015). Estimated sustainable-yield of the Basin Unit No. 1 is approximately 4,000 AFY (CVWD, 2012). It is not anticipated that the District and the private well owners would operate above the Basin sustainable-yield on a long-term basis without implementing efforts to replenish the Basin. From WY2015 to WY 2019, the District pumped an average of 1,953 AFY from the groundwater basin, which represents approximately 46 percent of the District's total supplies over that period.

Groundwater rights in the Basin have not been adjudicated. The District adopted a Groundwater Management Plan in 1996 in order to establish its role as groundwater manager for the Carpinteria Groundwater Basin. The Groundwater Management Plan will ultimately be superseded by a Groundwater Sustainability Plan (GSP) in 2024, which is currently under development. Additional details can be found in Section 4.

ES.4.1.2 Surface Water Supplies

The District receives surface water supplies from the Cachuma Project and State Water Project (SWP Over the period 2016 to 2020, the District has received an annual average of 2,448 AFY (62 percent of District's water supplies) from these sources.

The Cachuma Project includes Lake Cachuma, Bradbury Dam, Tecolote Tunnel, and South Coast Conduit (SCC) and related distribution systems, which were constructed in the early 1950s. The lake includes a surface area of approximately 3,200-acres, 42 miles of coastline, and 195,600 AF of storage. Surface water stored in Lake Cachuma is treated at the City of Santa Barbara's Cater Water Treatment Plant (WTP), before being conveyed to the District . The District purchased an annual average of 1,594 AF from the Cachuma Project over the period 2016 to 2020. This amount represents 41 percent of the District's total water supplies.

The California State Water Project (SWP) is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973.

The SWP's Coastal Branch serves the San Luis Obispo and Santa Barbara counties. The Central Coast Water Authority (CCWA) was formed to finance, construct, manage, and operate the 42-mile extension of the SWP pipeline from Vandenberg to Lake Cachuma. CCWA contracts with the Santa Barbara County Flood Control and Water Conservation District (SBCFC and WCD) for SWP water. The SBCFC and WCD is a SWP Contractor, and has a SWP allocation of 45,486 AFY, which is divided across eight member agencies and five other entities (collectively, the "CCWA Participants"). The District contracts directly with CCWA for its SWP allocation, which is set at 2,000 AFY in a normal year.

ES.4.1.3 Additional Existing Water Supply Projects

The District currently participates in two "out of District storage programs". The first program includes a cooperative arrangement for groundwater banking called "Short-Term Water Storage Partnership" (Rosedale-Rio Bravo Water Storage District and Irvine Ranch Water District), which the District has participated in since 2008. This program involves storage of SWP water in the groundwater basins managed by the Rosedale-Rio Bravo Water Storage District. The second program involves the District temporarily storing SWP carryover water in San Luis Reservoir. The groundwater banking program and storage in San Luis Reservoir are two programs made available to increase overall SWP supply reliability. Currently, the District has approximately 560 AF of deliverable water stored in these two out of District storage programs. Implementation of a portion of these arrangements, or any future potential water storage or banking arrangements, can reasonably be expected to provide up to 1,000 AF of supply in future years, and the District anticipates increasing this out of District storage amount between 2021 and 2045.

ES.4.1.4 Sales, Transfers, and Exchanges

The District participates regularly in a SWP exchange program with Santa Ynez Improvement District No. 1 (ID #1), located downstream of Lake Cachuma. Under the exchange program, the District typically purchases approximately 400 AF of SWP and supplies it to ID #1 for its use. In exchange, ID #1 supplies an equal amount of Lake Cachuma water to the District. In addition, the District can receive water from the Casitas Municipal Water District (CMWD), which is able to provide surface water from Lake Casitas via an 8-inch piped connection between CMWD and the District systems. If more flow is required than the capacity of the existing 8-inch pipeline can deliver, as was the case during the 1987 to 1991 drought, then an overland pipe can be installed to convey the additional flow. An emergency water exchange agreement remains in place with CMWD. For this reason, the District has considered this a limited potential water supply. The District also receives CMWD water for sale to CMWD customers adjacent to the District service area. CMWD, the Central Coast Water Authority, and the District are currently collaborating to implement the Ventura-Santa Barbara Counties Intertie Project (also known as the Casitas Intertie Project). The Project will construct 6,000 feet of bi-direction pipeline and two pump stations to convey water from the District to CMWD. Preliminary design and environmental documentation have been completed, and full design is currently underway. The project would provide a direct connection for delivery of imported water, with an estimated average yield of approximately 2,000 AFY over a period of four months. The Project is anticipated to be online by 2023.

ES.4.2 Water Quality

The District has both surface water and groundwater sources which present very different water quality issues. Surface water comes from SWP, which originates at the Delta and from Lake Cachuma, which originates from the Santa Ynez River watershed. The District meets all water quality requirements of the California Division of Drinking Water (CADDW, formerly Department of Public Health). A copy of the 2020 Consumer Confidence Report (CCR) is provided in **Appendix I**. Details for the District's water quality monitoring program are provided in **Appendix I**.

ES.4.3 Future Water Supplies

A variety of existing water sources will be used by the District to meet water demands for the period 2025 to 2045 including local groundwater, local surface water from Cachuma Lake, imported surface water from the SWP, and potable reuse via the Carpinteria Advanced Purification Project (CAPP). The CAPP will produce advanced treated recycled water that will be injected into the Carpinteria Groundwater Basin to be stored and later extracted to meet potable demands. The CAPP is expected to begin delivering water in 2026, and produce approximately 1,000 AFY of reliable, drought-proof local supply.

The projected maximum available water supplies for the period 2025 to 2045 to meet water demands within the District service area are summarized in **Section 4.4** (also see **Appendix D, Table 6-9**). Projected maximum available water supplies for the period 2025 to 2045 will be approximately 5,446 AFY, however this total is not sustainable over multiple consecutive years. Potential maximum short-term extraction of groundwater by the District is 3,000 AFY, while the long-term average (sustainable-yield) will be approximately 1,200 AFY. The District's maximum local surface water allocation from the Cachuma Project is currently 2,813 AFY, while the District understands that future deliveries will be less than the maximum allocation. Maximum allocation from the SWP is 2,200 AFY (including 200 AF of drought buffer), while the District understands that future deliveries will be less than the maximum allocation.

Table 4 summarizes the projected long-term available water supplies for the period 2025 to 2045 to meet water demands within the District service area (also see **Appendix D, Table 6-9**). As shown in that table, the District's projected conservative long-term groundwater extractions are anticipated to be approximately 1,200 AFY (consistent with Basin sustainable-yield). The District's projected long-term available deliveries of local surface water from the Cachuma Project are anticipated to be approximately 1,970 AFY (including conservative estimate of average annual delivery of 70 percent of allocation due to sedimentation in the lake, releases for fish species, and downstream water rights). The District's projected long-term available deliveries from the SWP are anticipated to be approximately 1,250 AFY (including conservative estimate of average annual delivery of 58 percent of allocation) with approximately 400 AFY exchanged with ID#1. The District's CAPP will begin delivering 1,000 AFY starting in 2026, and will be available at that level through the life of the project.

There are several alternatives that the District may consider for increasing future water supplies for the period 2025 to 2045 including, but not limited to, the following: additional groundwater supplies, groundwater banking, conjunctive use, maximize use of surface water rights, transfer or exchange of water rights, use of recycled water, groundwater or ocean desalination, and additional support for water demand management programs (see Section 7).

Table 4: Projected Long Term Available Water Supplies 2020-2040 (AFY)

Water Supplies (AFY)	2020	2025	2030	2035	2040
Groundwater[1]	1,200	1,200	1,200	1,200	1,200
Cachuma Project[2]	2,110	2,110	2,110	2,110	2,110
State Water Project[3]	876	876	876	876	876
Recycled Water[4]	0	1,000	1,000	1,000	1,000
Desalination	0	0	0	0	0
Transfers or Exchanges In/Out[5]	400	400	400	400	400
Other[6]	0	0	0	0	0
Total	**4,586**	**5,586**	**5,586**	**5,586**	**5,586**

Notes:
Source: CVWD, 2020. All values rounded.
(1) Conservative estimate of long-term average for District pumping is approximately 1,200 AFY which is consistent with the Basin sustainable-yield; current annual average District groundwater pumping is approximately 1,500 AFY (1984-2020); pumping can be increased up to the District's operational yield (3,000 AFY) to offset demands. (McDonald, 2020)
(2) The District's current maximum allocation is 2,813 AFY. However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using of a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045. (McDonald, 2020).
(3) District's conservative long-term planning estimate assumes delivery of 1,276 AFY (58 percent delivery of 2,200 AFY allocation) of SWP Table A water with 400 AFY exchanged with the ID #1. (McDonald, 2020; DWR, 2020)
(4) District is currently evaluating potential long-term use of recycled water.(Conservative estimate assumes recycled water available starting in 2026.
(5) District approved up to 400 AF of SWP water for exchange with ID #1.
(6) District has banked and utilized 1,000 AFY of State Water Project water. District anticipates utilizing banking programs again between 2021and 2045.

ES. 4.4 Energy

Water production and movement is a significant energy demand within the State and within the State and within the Carpinteria Valley. In 2019, the District developed a Draft Climate Action Plan (CAP) to provide an inventory the current energy intensity and corresponding greenhouse gas (GHG) emissions associated with District operations. Although the CAP relies on some estimates of GHG production, the District used the best available information in order to estimate its water services' operational energy intensity (CVWD, 2019a). Operational energy intensity is defined as the total amount of energy expended by the District on a per acre-foot basis to take water from where the District acquires water to its point of delivery to customers.

The energy required for conveyance, treatment, extraction, and distribution is described in Section 4. Consistent with the UWMP Guidebook, the District is only considering the energy demands of the portions of its system within its operational control. For the purposes of this UWMP, extraction and diversion includes pumping of groundwater by the District, conveyance is the movement of water via the Shepard Mesa Pump Station, treatment includes District-operated treatment at wellheads and District-owned reservoirs, and distribution is movement of water from the District's reservoirs to customers. **Table 5** provides a summary of total energy intensity of water supplies. In total, the District's water deliveries are estimated to have an energy intensity of 349 kWh per AF.

Table 5: Total Energy Intensity

Water Delivery Type	Production Volume (AF)	Total Utility (kWh/AF)
Retail Potable Deliveries	4,105	349
Retail Non-Potable Deliveries	0	0
All Water Delivery Types	**4,105**	**349**

ES.4.5 Climate Change

Current climate change projections suggest that California will continue to enjoy a Mediterranean climate with the typical seasonal pattern of relatively cool and wet winters and hot, dry summers. However, climate patterns are different now and may continue to change at an accelerated pace. Increases in global GHG emissions are leading to serious consequences for California including, but not limited to: higher air and water temperatures, rising sea levels, variable precipitation patterns, increased wildfires, increased droughts and floods, decreased amount and duration of snow pack, and extreme variability in weather patterns (CVWD, 2019a; DWR, 2013a; CANRA, 2009). These changes are anticipated to intensify over the 20-year planning horizon of this assessment. Even if all emissions of GHG ceased today, some of these developments would be unavoidable because of the increase in GHG recorded over the last 100 years and the fact that the climate system changes slowly. (PPIC, 2011) Many of these climate changes would affect the availability, volume, and quality of California water supplies.

As climate change continues to unfold in the coming decades, water agencies may need to mitigate and adapt to new strategies, which may require reevaluating existing agency missions, policies, regulations, facilities, funding priorities, and other responsibilities. Current environmental regulations place a very high priority on releasing additional water for endangered species (e.g., Sacramento Delta and Santa Ynez River) and the environment, which could reduce availability of surface water supplies for the District. In an effort to reduce the District's GHG emissions and mitigate climate change impacts, the District developed the Draft CAP in 2019 to estimate the District's current GHG emissions and establish strategies for reduction of these emissions. Additional details regarding climate change are provided in Section 4.6.

ES.5 WATER SUPPLY RELIABILITY

Water supply reliability is a measure of a water service system's anticipated success in managing water shortages. Analysis of water supply reliability is one of the primary requirements of the UWMP (Water Code §10635(a)). This assessment includes a Drought Risk Assessment (DRA) to evaluate the reliability of each supply source under a five-year drought. In order to plain for a reliable water supply District staff examined both the possibility of short-term and long-term shortages. A short-term water shortage could result from a disaster such as an earthquake, flood, or even a widespread power outage. A long-term water shortage would result from a long period of drought in the region. Of the District's supplies, groundwater is the primary one affected by water quality concerns when the District is determining how much to use during drought. To maintain long-term sustainability of the groundwater basin, the District must monitor groundwater levels to avoid sea water intrusion, which can occur when groundwater elevation drops too low for too long a period.

The reliability assessment also includes comparison of the total projected water supplies available with the projected water demands through the year 2045 for the following conditions: (1) normal/average water-year, (2) single dry water-year, and (5) multiple consecutive dry water-years, Results for the assessment for each of these conditions are described below. Additional details regarding water supply reliability are provided in Section 5.4.

ES.5.2 Normal Water-Year Assessment

Local groundwater, Cachuma surface water, and SWP surface water, and recycled water for potable reuse are anticipated to be the primary water supplies through 2045. **Table 6** (also see **Appendix D, Table 7-2**) indicates that total water supplies available in normal water-years is projected to be 4,586 AF for 2025 and 5,586 AF for the period 2030 to 2045. Total water demands are projected to be 4,111 to 4,530 AFY for the period 2025 to 2045. **Table 6** indicates that the District will have an estimated net positive supply ranging from approximately 475 AFY in 2025 to approximately 1,416 AFY in 2030 and 1,056 in 2045. Thus, no deficit is expected during normal water-years.

Table 6: Projected Normal Water Year Supply and Demand 2025-2045

	2025	2030	2035	2040	2045
Groundwater[1]	1,200	1,200	1,200	1,200	1,200
Cachuma Project[2]	2,110	2,110	2,110	2,110	2,110
State Water Project[3]	876	876	876	876	876
Exchange[3]	400	400	400	400	400
Other[4,5]	0	0	0	0	0
Supply Total	**4,586**	**5,586**	**5,586**	**5,586**	**5,586**
Demand Total[6]	**4,111**	**4,170**	**4,381**	**4,452**	**4,530**
Difference[7]	**475**	**1,416**	**1,205**	**1,134**	**1,056**

Source: CVWD 2021. All values in AFY and rounded. Table assumes normal water year precedes normal water year.
Notes:
(1) Current conservative estimate of long term average for District pumping is approximately 1,200 AFY which is consistent with the Basin sustainable yield of around 4,000 AFY, annual average District groundwater pumping is approximately 1,500 AFY (2016-2020);
(2) The District's current maximum allocation is 2,813 AFY. However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using of a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045. In addition, the District could use Cachuma Project carryover water if available.
(3) SWP delivery may be 1,256 AFY which represents the most current understanding of the normal water-year yield from the SWP (58% delivery of max allocation at 2,200 AFY). In addition, the District could use SWP carryover water. The projected SWP value of 876 AFY reflects the average delivery (1,276 AFY) minus the ID#1 exchange volume of 400 AF. District's current maximum SWP allocation is 2,200 AFY (includes 200 AFY drought buffer program). However, the District understands that future deliveries will be less than the maximum allocation.
(4) The District is currently evaluating potential long-term use of recycled water However, the District understands that future deliveries will be less than the maximum allocation.
(5) The District has banked and utilized 1,000 AFY of State Water Project water. The District anticipates utilizing banking programs in a normal year.
(6) Demand total does not include potential additional reduction of demand of 10 percent for period 2025-2045 utilizing water enhanced demand management measures for urban and agricultural customers.
(7) The difference represents the sum of supplies minus demands. The District desires to maintain a positive supply or contingency of a minimum of 200 to 400 AFY in order to account for unforeseen changes in supplies or demands. In years where supply exceed demand, the District will reduce groundwater pumping or diversions from Cachuma Project and State Water Project.

ES.5.3 Single Dry Water-Year Assessment

In a single dry year, the District's demands are expected to increase over normal year demands, and range from 4,281 AFY in 2025 to 4,719 AFY in 2045, an increase of 15 percent compared to normal years. **Table 7** (also see **Appendix**

D, Table 7-3) indicates that total water supplies available in single dry water-years is projected to be 4,280 AF for the period 2025 and 4,719 AF by 2045. As shown in **Table 7,** the District is expected to have an estimated water supply equal to or greater than water demand from 2025 to 2045. A small surplus is seen in 2030, when potable reuse supplies (recycled water) become available.

Table 7: Projected Single Dry Water Year Supply and Demand 2025-2045

	2025	2030	2035	2040	2045
Groundwater[1]	2,017	1,200	1,307	1,385	1,455
Cachuma Project[2]	2,110	2,110	2,110	2,110	2,110
State Water Project[3]	154	154	154	154	154
Recycled Water[4]	0	1,000	1,000	1,000	1,000
Other[5]	0	0	0	0	0
Supply Total	**4,281**	**4,464**	**4,571**	**4,649**	**4,719**
Demand Total[6]	**4,281**	**4,345**	**4,571**	**4,649**	**4,719**
Difference[7]	**0**	**119**	**0**	**0**	**0**

Source: CVWD, 2021a. All values in AFY and rounded. Assumes normal water-year precedes single dry year.
Notes:
(1) The District anticipates that pumping could be increased up to the operational yield of 2,800 AFY to offset demands in a shortage condition. Current conservative estimate of long-term average for District pumping is approximately 1,200 AFY which is consistent with the Basin sustainable-yield of 4,000 AFY; annual average District groundwater pumping is approximately 1,500 AFY (2016-2020, a dry period).
(2) The District's current maximum allocation is 2,813 AFY. However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using of a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045. In addition, the District could use Cachuma Project carryover water.
(3) Projected SWP delivery is 154 AFY which represents the most current understanding of the single dry water- year yield from the SWP (7% delivery of maximum allocation at 2,200 AFY). In addition, the District could use SWP carryover water if available. District's current maximum SWP allocation is 2,200 AFY (includes 200 AFY drought buffer program). However, the District understands that future deliveries will be less than the maximum allocation. The District anticipates no exchange with the ID#1 in a single dry water-year.
(4) The District is currently planning for the potential long-term use of recycled water. Conservative estimate assumes 1,000 AF of recycled water will be available annually for indirect potable reuse starting in 2026.
(5) The District has banked and utilized 1,000 AFY of State Water Project water. However, the District anticipates that accessing water in banking programs between 2025 and 2045 will be considered as the final option before purchasing supplemental water.
(6) Does not include potential additional reduction of demand of 10 percent for period 2020-2040 utilizing water enhanced demand management measures for urban and agricultural customers.
(7) The difference represents the sum of supplies minus demands. The District desires to maintain a positive supply or contingency of a minimum of 200 to 400 AFY in order to account for unforeseen changes in supplies or demands.

ES.5.3 Multiple Dry Water-Year Assessment

Under a multiple dry year scenario, the District anticipates some years will require the use of supplemental water. **Table 8** (also see **Appendix D, Table 7-4**) shows the projected supply totals, demands, and differences (surplus or shortages) under five consecutive dry years for the planning period. In the first dry year of the multiple dry water-year assessment, the District is projected to have between 4,280 and 4,719 AFY of water. In the second dry year, the District would have between 4,578 AFY and 5,047 AFY of supplies, and would need to use supplemental water in all years. During the third dry year, the District would have between 4,274 to 4,712 AFY of supplies. Supplemental water would be used in the third dry year under the 2025 scenario, but not used in any of the other planning years. Demand is expected to decrease in the third dry year because the District assumes drought messaging would be implemented and conservation would occur, consistent with the 2012-2016 reference period. In the fourth dry year, the District's supplies are projected to range from 3,905 AFY to 4,306 AFY, and supplemental water used in the 2025 and 2045 scenarios. Similarly, the fifth dry year, the District's supplies are projected to range from 3,637 AFY to 4,010 AFY, and supplemental water used in the 2025 and 2045 scenarios. Additional analyses are provided in **Appendix J**.

With the use of supplemental water, no deficit was observed during the assessment of multiple dry water year supplies and demands. The District desires to have a minimum water supply surplus or contingency of approximately 200 to 400 AF each year in the event of an interruption of water supply due to operational or climate adversity. The District anticipates that groundwater pumping within the basin would be increased to offset increased water demands. However, but the District will closely manage groundwater pumping for long-term sustainability of the basin (i.e., groundwater levels must remain high enough to avoid sea water intrusion). In addition, the District could implement additional programs to increase supplies and/or water conservation/demand management measures to reduce demands. These programs are highlighted in the Water Shortage Contingency Plan (WSCP) (see **Section 6**), and would be implemented during a drought declaration. In addition, the District could implement additional programs to increase supplies and/or water conservation/demand management measures to reduce demands.

Table 8: Projected Multiple Dry Water Years Supply and Demand 2025-2045

	AFY	2025	2030	2035	2040	2045
Year 1	Supply Total[1,2,3,4,5]	4,280	4,345	4,571	4,648	4,719
	Demand Total[6]	4,280	4,345	4,571	4,648	4,719
	Difference[7]	0	0	0	0	0
Year 2	Supply Total[1,2,3,4,5]	4,578	4,647	4,888	4,972	5,047
	Demand Total[6]	4,578	4,647	4,888	4,972	5,047
	Difference[7]	0	0	0	0	0
Year 3	Supply Total[1,2,3,4,5]	4,274	4,338	4,563	4,641	4,712
	Demand Total[6]	4,274	4,338	4,563	4,641	4,712
	Difference[7]	0	0	0	0	0
Year 4	Supply Total[1,2,3,4,5]	3,905	3,964	4,170	4,241	4,306
	Demand Total[6]	3,905	3,964	4,170	4,241	4,306
	Difference[7]	0	0	0	0	0
Year 5	Supply Total[1,2,3,4,5]	3,637	3,691	3,883	3,949	4,010
	Demand Total[6]	3,637	3,691	3,883	3,949	4,010
	Difference[7]	0	0	0	0	0

Source: CVWD, 2021a. All values in AFY and rounded. See **Appendix J** for derivation of each value.

Notes:

(1) Maximum groundwater production is 2,800 AFY. Current conservative estimate of long term average for District pumping is approximately 1,200 AFY which is consistent with the Basin sustainable-yield of 4,000 AFY; the District anticipates that pumping could be increased up to the operational yield of 2,800 AFY to offset demands, and would be used more in the later dry years, when carry-over storage from surface water is depleted.

(2) Projected Cachuma Project delivery is 0 to 2,110 AFY for future years. The District's current maximum allocation is 2,813 AFY. However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using of a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045.

(3) Projected SWP delivery ranges from 134 AFY to 317 AFY, which is based on a conservative estimate of both SWP availability and demands that cannot be met with District's local supplies. Current maximum SWP allocation is 2,200 AFY (includes 200 AFY drought buffer). However, the District understands that future deliveries will be less than the maximum allocation.

(4) The District is currently planning for the potential long-term use of recycled water. Conservative estimate assumes 1,000 AF of recycled water will be available annually for indirect potable reuse starting by 2026.

(5) The District has banked and utilized 1,000 AFY of State Water Project water. The District anticipates utilizing banking programs again between 2020 and 2045. Historically, the District has also been able to purchase supplemental water from CMWD and other State Water Contractors.

(6) Does not include potential additional reduction of demand of 10 percent for period 2025-2045 utilizing water enhanced demand management measures for urban and agricultural customers, but does assume some demand conservation in response to drought restrictions.

(7) The difference represents the sum of supplies minus demands. The District desires to maintain a positive supply or contingency of a minimum of 200 to 400 AFY in order to account for unforeseen changes in supplies or demands.

ES.5.4 Drought Risk Assessment

Per UWMP requirements, the UWMP must also include a five-year Drought Risk Assessment (DRA) to evaluate the reliability of each supply source under a long-term drought.

The District evaluated water supply reliability over a five-year dry period from 2021 to 2025, shown in **Table 9**. The DRA analysis reflects the District's current supply projections, given existing drought conditions that began in 2020. 2025 would represent a sixth consecutive dry year. The DRA analysis assumes that WSCP actions would be triggered starting with Stage 1 (declared in July 2019), increased to Stage 2 in Fall 2021 through WY 2023, and increased to Stage 3 in Fall 2024 through WY 2025, resulting in the ability to meet demands during the five-year drought, with periodic acquisition of supplemental water. It is likely the District will escalate conservation measures should the current drought be ongoing, so the demands presented are considered conservative. The District would have a five-year minimum water supply total ranging from approximately 3,200 AF in 2022 to 3,745 AF in 2025. Additional details are in **Section 5**.

Table 9: Five-Year Drought Risk Assessment (2021-2025)

Supplies	2021[4]	2022	2023	2024	2025
Supply & Demand					
Total Water Use[1] (Demand)	4,000	4,000	4,000	4,000	4,000
Cachuma Project	*1,969*	*746*	*927*	*2,345*	*745*
State Water Project	*598*	*396*	*0*	*0*	*0*
Groundwater	*1,969*	*1,600*	*1,600*	*1,200*	*2,000*
Recycled Water	*0*	*0*	*0*	*0*	*0*
Supplemental Water	*1,131*	*458*	*673*	*0*	*1,000*
Total Supplies[2]	5,667	3,200	3,200	3,545	3,745
Surplus/Shortfall without WSCP Action[3]	1,667	-800	-55	145	-55
Planned WSCP Actions (Demand Reduction and Supply Augmentation)					
WSCP - Supply Augmentation Benefit	0	0	0	0	0
WSCP - Use Reduction Savings Benefit	800	800	800	1,200	1,200
Revised Surplus/(Shortfall)	2,467	0	0	754	945
Resulting % Use Reduction from WSCP Action	20%	20%	20%	30%	30%

Source: CVWD, 2021a. All values in AFY and rounded.
Notes:
(1) Total water use based on typical annual demand of 4,000 AFY, and does not reflect conservation savings.
(2) Total supplies include a mix of surface water (Cachuma Project and SWP), groundwater, advanced treated recycled water for potable reuse, and supplemental water.
(3) District entered WSCP Drought Response Level 1 in 2019, and is expected to enter WSCP Drought Response Level 2, which calls for 20% demand reduction, in October 2021. This analysis assumes the District stays in Drought Response Level 2 through 2023 and increases to WSCP Drought Response Level 3 in 2024 through 2025.
(4) Surplus will contribute to carryover storage, for use in later dry years.

ES.6 WATER SHORTAGE CONTINGENCY PLANNING

ES.6.1 Mandatory Prohibitions on Water Wasting

Prohibition on waste of water usage was originally enacted in Ordinance No. 90-1 and has been restated in Ordinance No. 15-2, 19-2, and 21-1 (copies provided in **Appendix K**). Examples of specific restrictions and prohibited wasteful practices include, but are not limited to, the following: no use of running water for hosing or washing down driveways, walkways, and buildings; restaurants are to refrain from serving water unless requested by customers; no outside watering between 10:00 a.m. and 4:00 p.m. by hand or moveable landscape irrigation system; no outside watering between 8:00 a.m. and 6:00 p.m. by a fixed landscape irrigation system; no watering after measurable rainfall events; controls on boat and vehicle washing; no use of water which results in runoff beyond the immediate area of use; and leaks must be repaired within seventy-two (72) hours of discovery or notification by the District.

ES.6.2 Water Shortage Contingency Planning

In order to plan for a reliable water supply District staff examined both the possibility of short- term and long-term shortages. A short-term water shortage could result from a disaster such as an earthquake, flood, or even a widespread power outage. A long-term water shortage would most likely result from a long period of drought in the region. Durations of severe droughts in this region have historically lasted 3 to 5 years. The District's Board of Directors declared a Stage 2 Drought Level on October 13, 2021, via Resolution 21-1. Stage 2 requires conservation actions to reduce demands by 20 percent (copy provided in **Appendix K**).

ES.6.4 Stages of Action and Reduction Goals

The District will use a six-stage rationing plan to invoke during declared water shortages. Per the 2020 UWMP guidelines, suppliers are now required to include six standard shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages, and greater than 50 percent shortage compared to the normal reliability condition in their WSCPs. The rationing plan includes voluntary and mandatory rationing, depending on the causes, severity, and anticipated duration of the water supply shortage. **Table 10** summarizes the District's water rationing stages and reduction goals which range from 10 percent to 50 percent. A summary of the water shortage actions called for in each Stage is provided in **Table 11**. Triggers for declaring a water shortage and enacting the conservation measures of the WSCP are provided in **Section 6**.

Table 10: Water Shortage Stages and Goals

Shortage Condition	Stage	Customer Reduction Goal	Type of Rationing Program
Less than 10 Percent	1	10%	Voluntary
10 to 20 Percent	2	20%	Mandatory
20 to 30 Percent	3	30%	Mandatory
30 to 40 Percent	4	40%	Mandatory
40 to 50 Percent	5	50%	Mandatory
More than 50 Percent	6	>50%	Mandatory

Table 11: Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions
1	Up to 10%	Limit landscape irrigation, restrict water use for decorative features, repair leaks and malfunctions, prohibit water use for washing vehicles and hard surfaces.
2	Up to 20%	Limit landscape irrigation to no more than three days per week, prohibit irrigation of turf or landscapes during and 24 hours following a measurable rainfall, implement water use efficiency devices for residential and CII, restrict water use for decorative features, repair leaks and malfunctions within 72 hours of notification, prohibit water use for washing vehicles and hard surfaces, restrict water use for recreational purposes.
3	Up to 30%	Limit landscape irrigation to no more than two days per week, prohibit irrigation of turf or landscapes during and 48 hours following a measurable rainfall, implement water use efficiency devices for residential and CII, restrict water use for decorative features, repair leaks and malfunctions within 72 hours of notification, and prohibit water use for washing vehicles and hard surfaces.
4	Up to 40%	Prohibit all landscape irrigation to no more than one day per week, prohibit irrigation of turf or landscapes during and 48 hours following a measurable rainfall, prohibit watering of turf, implement water use efficiency devices for residential and CII, restrict water use for decorative features and recreational purposes, repair leaks and malfunctions within 48 hours of notification, prohibit water use for washing vehicles and hard surfaces, consider a moratorium of new meters.
5	Up to 50%	Prohibit all landscape irrigation to no more than one day per week, prohibit irrigation of turf or landscapes during and 48 hours following a measurable rainfall, prohibit watering of turf, implement water use efficiency devices for residential and CII, restrict water use for decorative features and recreational purposes, repair leaks and malfunctions within 48 hours of notification, prohibit water use for washing vehicles and hard surfaces, consider a moratorium of new meters.
6	>50%	Prohibit all landscape irrigation to no more than one day per week, prohibit irrigation of turf or landscapes during and 48 hours following a measurable rainfall, prohibit watering of turf, implement water use efficiency devices for residential and CII, restrict water use for decorative features and recreational purposes, repair leaks and malfunctions within 48 hours of notification, prohibit water use for washing vehicles and hard surfaces, consider a moratorium of new meters, consider a water budget.

ES.6.7 Annual Supply and Demand Assessment

Beginning 2022, the District will prepare and submit an annual water supply and demand assessment (Annual Assessment) to DWR by July 1 of every year to evaluate actual forecasted near-term water supply conditions (for the next 12 months), followed by a dry year, and determine if a water shortage is imminent. If the Annual Assessment anticipates that demands will exceed available supply, the District's Board will vote to determine the appropriate water shortage level and associated actions necessary to reduce demand to ensure adequate supply. The process for preparing the Annual Assessment is outlined in **Section 6.6.1**.

ES.7 DEMAND MANAGEMENT MEASURES

"Demand management," as applied to water conservation, refers to the use of measures, practices, or incentives implemented by water utilities to permanently reduce the level or change the pattern of demand for a utility service. Historically, the District has actively pursued water demand management. The Urban Water Management Planning Act requires the UWMP include a description of 7 specific demand management categories (DMMs). (CWC, 10631(f)(1)) These categories include the following: water waste prevention ordinances, metering, conservation pricing, public education and outreach, programs to assess and manage distribution system real loss, , conservation program coordination and staffing, and other demand management measures that significantly impact water use.

The District administers several demand management programs for residential, commercial, and agricultural customers. These measures include the following categories as required by the UWMP (CWC, 10631(f)(1)):

- Water waste prevention ordinances
- Metering
- Conservation pricing
- Public education and outreach
- Programs to assess and manage distribution system real loss
- Conservation program coordination and staffing
- Other demand management measures that significantly impact water use.

Details related to the District's current and future urban demand management programs are provided in **Section 7.3**. Details related to the District's current and future agricultural demand management programs are also provided in **Section 7.3**.

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1. INTRODUCTION

The Carpinteria Valley Water District (District or CVWD) is pleased to release this 2020 Urban Water Management Plan (UWMP) Update. This UWMP complies with the *Guidebook for Urban Water Suppliers – 2020 Urban Water Management Plans* (2021) as prepared by DWR.

This section presents a summary of the Objectives, Scope of Work, and Authorization for this report.

1.1 UWMP REQUIREMENTS

This section includes the following:

- Basis for Preparing a Plan (CWC §10617; 10620; 10621)
- Individual or Regional Planning and Compliance
- Fiscal or Calendar Year and Units of Measure (CWC §10608.20(a)(1))
- Coordination and Outreach (CWC §10631(h)

1.2 OBJECTIVES AND PLAN PREPARATION

The District's UWMP was prepared in compliance with California Water Code (§10610- 10656; Urban Water Management Planning Act). The California Water Code requires urban water suppliers serving more than 3,000 customers or water suppliers providing more than 3,000 AF of water annually to prepare a UWMP. This UWMP provides planning information on the reliability and future availability of the District's water supply. This UWMP is a public statement of the goals, objectives, and strategies needed to maintain a reliable water supply for the District's urban customers. This UWMP should be viewed as a long-term, general planning document, rather than as policy for supply and demand management. Additional details regarding the Urban Water Management Planning Act and California Water Code §10600-10656 are provided in Section 1.8.

Primary objectives of this UWMP include the following:

- Quantify anticipated water demands over a 25-year period
- Identify and quantify water supplies over a 25-year period
- Summarize reliability of water supplies for existing and future demands, in normal, dry, and multiple dry years, over a 25-year period
- Summarize water conservation and efficient water use programs

This UWMP provides information on present and future water supplies and demands, and provides an assessment of the District's water resource reliability and needs. It serves as a long-range planning document for District's water supply. Droughts, limited supplies, environmental demands - all of these factors must be taken into consideration to provide a safe and reliable water supply for the District's customers. The intention of the UWMP is to demonstrate the District's water supply reliability over the next 25 years in 5-year increments. The plan addresses the District's water system and includes a description of available water supply sources, consequences of historical and projected water use, and a comparison of water supply to water demands during a normal water-year, single dry water-year, and multiple dry water-years. It also describes District's efforts to implement water conservation and water efficient uses for urban and agricultural water supplies. This UWMP is the District's commitment to a long-term plan to ensure water reliability into the future.

The District provided water service to 4,524 connections in 2020 and qualifies as an "urban water supplier" in accordance with the California Water Code (§10617). As an urban water supplier, the District is required to prepare, adopt, and submit to DWR an UWMP every five years. Information on the District's system is provided in **Table 12**.

Table 12: Carpinteria Valley Water District Public Water System

Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020[1]
4210001	Carpinteria Valley Water District	4,524	4,105
	TOTAL	**4,524**	**4,105**

Notes:
(1) Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP.

The District is a water retailer. This UWMP has been prepared as an individual UWMP, and all figures and data in the 2020 UWMP are reported in calendar year (CY) and acre-feet (AF). See **Table 13**.

Table 13: Plan and Agency Identification

Plan Information	
Name of Agency	Carpinteria Valley Water District
Type of Plan	Individual UWMP
Type of Supplier	Retailer
Fiscal or Calendar Year?	Calendar Year
Units of Measure in UWMP	Acre-feet (AF)

1.3 FORMAT OF URBAN WATER MANAGEMENT PLAN

This UWMP is divided into seven primary sections. Section 1 includes an introduction to the UWMP and procedures for public review, adoption, and submittal of the UWMP. Section 2 describes the District's water service area. Section 3 defines the District's water demands. Section 4 defines the District's water supplies and discusses climate change and energy use. Section 5 describes the District's water supply reliability. Section 6 defines the District's water shortage contingency planning. Section 7 describes the District's water demand management (i.e., water conservation) activities. References are provided following Section 7. A list of frequently used abbreviations and acronyms is included at the end of the Table of Contents. A copy of the District's UWMP checklist is provided in **Appendix A**.

1.4 URBAN WATER MANAGEMENT PLANNING ACT

This document meets the requirements of the UWMP Act as per California Water Code (§10610-10656) which requires urban water suppliers to prepare an UWMP to promote water conservation and efficient water use. A copy of the revisions to UWMP Act since the last UWMP Guidebook was prepared in 2015 is provided in **Appendix B**.

1.4.1 History of UWMP Act

In 1983, the California Legislature enacted the Urban Water Management Planning Act (AB 797; Water Code, Division 6, Part 2.6, §10610-10656). This Urban Water Management Planning Act requires water suppliers serving more than 3,000 customers or water suppliers providing more than 3,000 AF of water annually to prepare an UWMP to promote water demand management and efficient water use. Currently, the District serves more than 3,000 customers and provides more than 3,000 AF of water per year. The Urban Water Management Planning Act also required water suppliers to develop, adopt, and file an UWMP (or update) every five years until 1990. In 1990, the Legislature deleted this sunset provision (AB 2661). Accordingly, the UWMP must be updated a minimum of once every five years on or before July 1 in the years ending in 1 and 6. The Legislature has enacted multiple measures that modified the Urban Water Management Planning Act since its inception in 1983. Some changes to the Urban Water Management Planning Act in the last 15 years are described here, with updates since the 2015 UWMP described in the following section.

There were many new requirements adopted by the State over the period 2005 to 2015, that must be included in the District's UWMP. The following items were added during this period:

- 20x2020 analysis and compliance with Water Conservation Act of 2009 required of retail water suppliers.
- Water supplier must give at least 60-days advance notice to any city or county within which the supplier provides water supplies to allow opportunity for consultation on the proposed plan.
- Requires plan to include water use projections for single-family and multiple-family residential housing needed for lower income and affordable households.
- Conditions eligibility for a water management grant or loan by DWR, SWRCB, or California Bay-Delta Authority on compliance with water demand management measures.
- Exempts projects funded by the American Recovery and Reinvestment Act of 2009 from the conditions placed on state funding for water management to urban water suppliers regarding implementation of water conservation measures that were implemented under AB 1420.
- Water suppliers that are members of the CUWCC and comply with the amended MOU, will be in compliance with the UWMP water demand management measures.
- Clarifies that "indirect potable reuse" of recycled water should be described and quantified in the plan.
- Requires urban wholesale water suppliers to include in UWMPs an assessment of present and proposed future measures, programs, and policies to achieve water use reductions.
- Grants urban water suppliers an extension for submission of UWMPs due in 2010 to July 1, 2011.
- Water suppliers are required to provide narratives describing their water demand management measures, as provided. Requires retail water suppliers to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets.
- Urban water suppliers are required to submit their UWMPs to the DWR by July 1, 2021.
- The UWMP, or amendments to the plan, must be submitted electronically to the DWR.
- Requires the UWMP, or amendments to the plan, to include any standardized forms, tables, or displays specified by the DWR.
- Requires a UWMP to quantify and report on distribution system water loss.
- Water use projections must display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.
- Urban water suppliers must include certain energy related information, including, but not limited to, an estimate of the amount of energy used to extract or divert water supplies.
- Urban water suppliers must analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.

1.4.2 Recent Changes to the UWMP Act

Since adoption of the 2015 UWMP, additional UWMP requirements have been added. Recent changes to the UWMP include, but are not limited to, the following:

- Expansion of the multiple dry water-years analysis from three to five consecutive dry years

- Addition of a Drought Risk Analysis and Annual Water Supply and Demand analysis
- Incorporation of the Water Shortage Contingency Plan, with six levels of shortage
- Description of seismic risk to water system facilities and supply
- Energy use information for supply extraction, treatment, distribution, storage, and conveyance
- Water loss reporting for five years
- Coordination with local Groundwater Sustainability Agencies and consistency with applicable Groundwater Sustainability Plans
- Inclusion of a Lay Description (included in this 2020 UWMP as the Executive Summary) for the key findings of the UWMP, including supply reliability, future challenges, and strategies for managing reliability risks.

A copy of the current updates to the Urban Water Management Planning Act is provided in **Appendix B**. Copies of the District's required data tables are provided in **Appendix D** (UWMP tables) and **Appendix F** (SBx7-7 tables).

1.5 DISTRICT COMPLIANCE WITH UWMP ACT

In preparing for this update, the District has reviewed and updated its UWMP, as originally adopted by the District in December 1985, and as updated by the District in 1988, 1992, 1997, 2001, 2007, 2011, and 2015. A copy of the UWMP Checklist that identifies where each of the UWMP Act requirements is addressed in this 2020 UWMP is included as **Appendix A**. The District is a Member Agency of the Central Coast Water Authority. The District has coordinated its supplies and demands with the Central Coast Water Authority (see DWR Table 2-4 in **Appendix D**).

1.6 PUBLIC REVIEW, ADOPTION, AND SUBMITTAL

Preparation of the UWMP requires the following coordination and outreach:

- Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets. (CWC §10608.26(a))
- Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. (CWC §10621(b))
- Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR. (CWC §10635(b))
- Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. (CWC §10642)
- Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan. (CWC §10642)
- Water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. (CWC §10642)
- Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption. (CWC §10644(a)(1))

- Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours. (CWC §10645)
- Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable. (CWC §10620(d)(2))

The District provided a 60-day advanced notification letter regarding an update of the UWMP and a public hearing to the following:

- Cachuma Operations and Maintenance Board (COMB)
- Casitas Municipal Water District
- Central Coast Water Authority (CCWA)
- City of Carpinteria
- City of Santa Barbara
- County of Santa Barbara Water Agency
- County of Santa Barbara Planning and Development
- County of Santa Barbara Executive Officer
- Montecito Water District

Follow up notification was provided to these entities with the date of the public hearing for the 2020 UWMP. Copies of the notification are provided in **Appendix C**.

In addition to the notification provided to the entities listed above, the District encouraged participation in the UWMP process from its stakeholders and members of the public by holding a public hearing on October 27, 2021, prior to adoption of the 2020 UWMP. In support of the public hearing, which was noticed twice in the Coastal View newspaper, consistent with Government Code Section 6066's noticing requirements, the District made the Draft UWMP available for public review and comment at the District's office, 1301 Santa Ynez Ave, Carpinteria, California, 93014, during normal business hours and the District's website (http://www.cvwd.net/) . A copy of this newspaper notice is included in **Appendix C**. The Draft UWMP was available from October 13, 2021 to October 27, 2021 for public review. Public comments are being received via email and will be received at the public hearing. The District plans to adopt the UWMP at a Board Meeting on October 27, 2021. A copy of the District's resolution adopting the UWMP will be provided in **Appendix C** of the adopted 2020 UWMP prior to submittal to DWR. The adopted 2020 UWMP will be available at the District's office within 30 days of adoption, as well as posted to the District's website. Within 30 days of adoption of the 2020 UWMP, the District will provide a copy to DWR through the WUE Database portal, submit a copy to the State Library, and notify the City of Carpinteria and County of Santa Barbara of availability of the 2020 UWMP.

As part of the 2020 UWMP public review and adoption process, the District also made its updated 2020 Water Shortage Contingency Plan (WSCP) available for public review in advance of adoption, adopted it concurrently with the 2020 UWMP, and submitted the WSCP to DWR as required in CWC §10644(b). The WSCP, included here as Chapter 6, can be updated at any time by the District separately from updates to the UWMP.

Should the District amend its 2020 UWMP or WSCP, it will follow the same notification, public hearing, adoption, and submittal procedures required for the original 2020 UWMP and WSCP, as described above.

1.7 CONTACT INFORMATION

Questions regarding this UWMP should be directed to Bob McDonald, General Manager, (805) 684-2816 x123 or bob@cvwd.net.

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2. SYSTEM REQUIREMENTS

2.1 UWMP REQUIREMENTS

This section will include the following:

- Describe the water supplier service area. (CWC §10631(a))
- Describe the climate of the service area of the supplier. (CWC §10631(a))
- Indicate the current population of the service area. (CWC §10631(a))
- Provide population projections for 2025, 2030, 2035, 2040, and 2045 (optional). (CWC §10631(a))
- Describe other demographic factors affecting the supplier's water management planning. (CWC §10631(a))

2.2 LOCATION OF DISTRICT

The District is located on the coast of California 80 miles north of Los Angeles and 12 miles southeast of Santa Barbara (see **Figure 1**). The District's service area encompasses an area extending along the south coast of the County of Santa Barbara easterly from the Toro Canyon area to the Ventura County line. See **Figure 2** for a map of the District boundary. The Foothills of the Santa Ynez Mountains lay to the north and the ocean to the south of the valley. The District's service area contains approximately 11,098 acres (17.3 square miles).

2.3 HISTORY OF DISTRICT

The Carpinteria Valley Water District was established in 1941. In order to provide more reliable service to its customers, the District acquired three different water companies within its boundaries. The first water company the District acquired was the Shepard Mesa Mutual Water Company on February 8, 1955. Subsequently, Ocean Oaks Water Company was transferred to the District on July 6, 1957. Carpinteria Water Company, founded in 1919 by Frank L. Stewart, was the third and largest water company to be acquired by the District. At the time of purchase and transfer of the Carpinteria Water Company to the District on July 1, 1964, active service connections totaled approximately 1,600 (CCWA, 2011).

2.4 DISTRICT FACILITIES

The District owns and operates five (5) municipal wells with a combined capacity to produce approximately 3.98 millions of gallons per day (MGD) (4,459 AFY). These wells are located central to the suburban section of Carpinteria. **Figure 3** displays the CVWD facilities, including general locations of wells. The District constructed a new well, Headquarters Well, and a replacement well for El Carro in the last 20 years. Both of these wells have the capability to extract as well as inject water. These wells will help meet the peak demands and provide some redundancy in the groundwater supply reliability. Additional details regarding District groundwater extractions provided in **Section 4**.

The District owns and operates three (3) potable water reservoirs with a combined storage capacity of approximately 10.68 AF. These reservoirs include Shepard Mesa (0.15 AF), Foothill (9 AF), and Gobernador (1.53 AF). **Figure 3** displays the CVWD facilities including general locations of the reservoirs. USBR owns two additional reservoirs in the area including Ortega Reservoir (60 AF) and Carpinteria Reservoir (44 AF). These are operated by Cachuma Operations and Maintenance Board (COMB) on behalf of the USBR

The District owns and operates a total of 88.8 miles of distribution pipelines. These pipelines include concrete (51%), steel (36%), and other materials (13%). **Figure 3** displays the general locations of the District's distribution facilities.

Figure 1: Vicinity Map

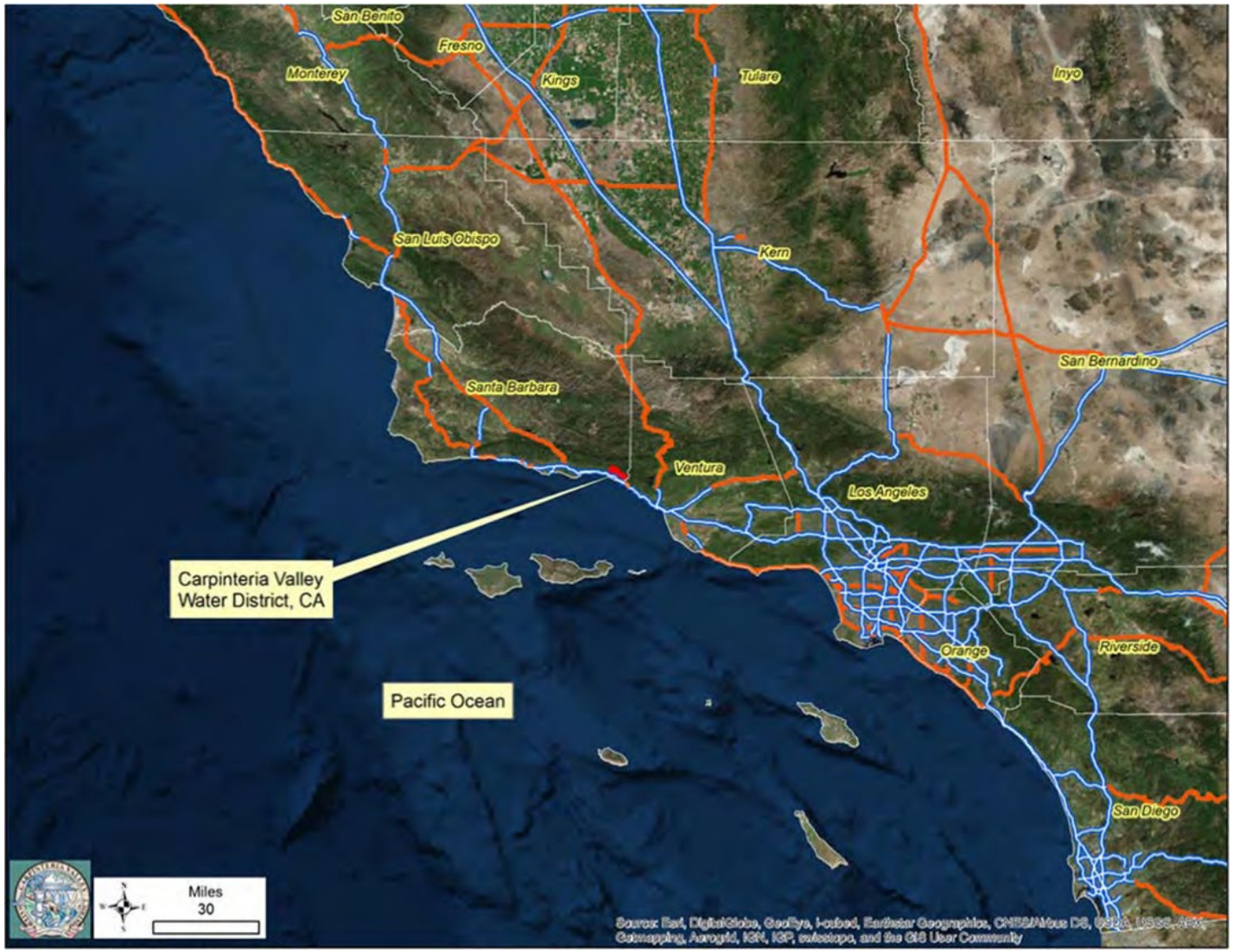


Figure 2: District Boundary

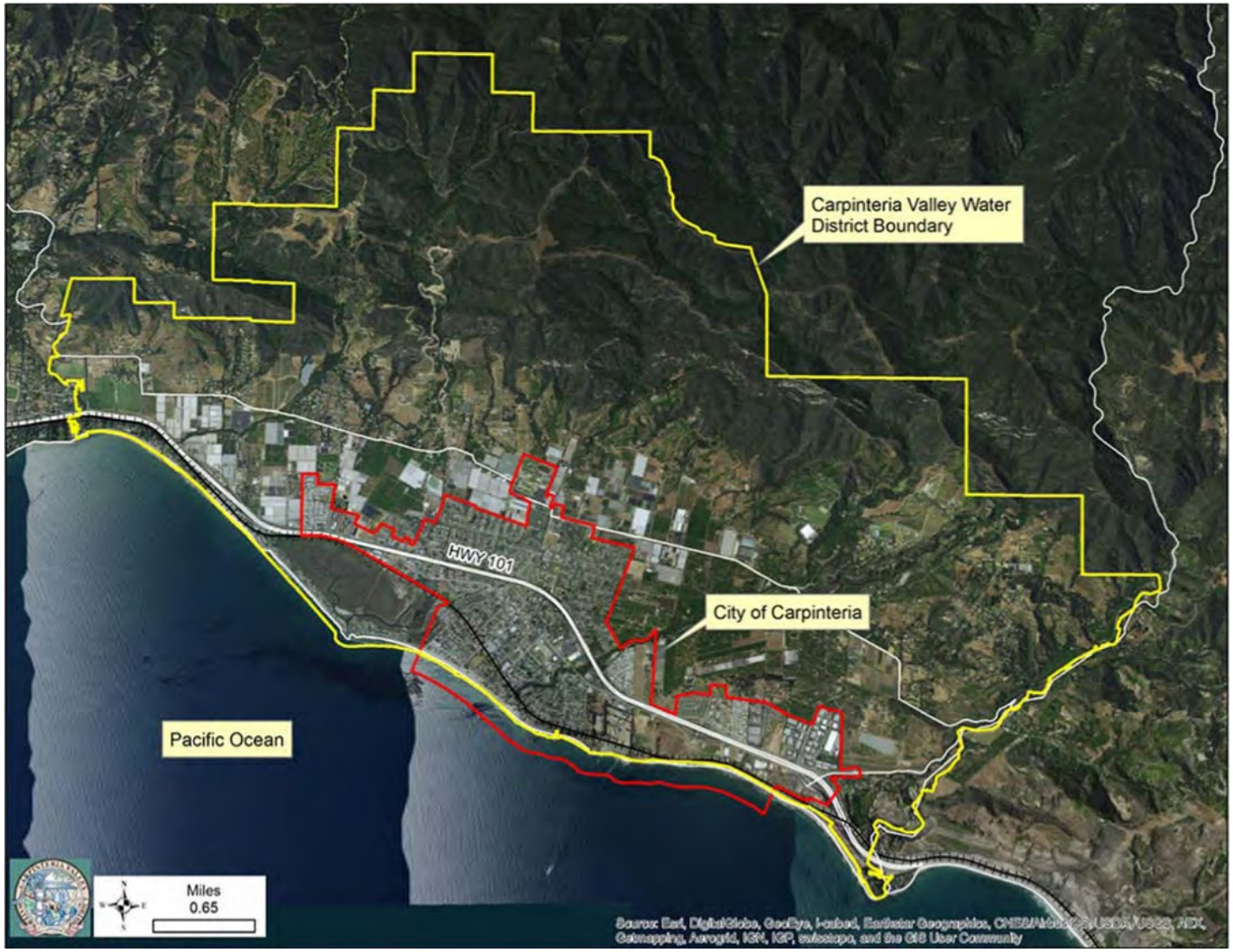
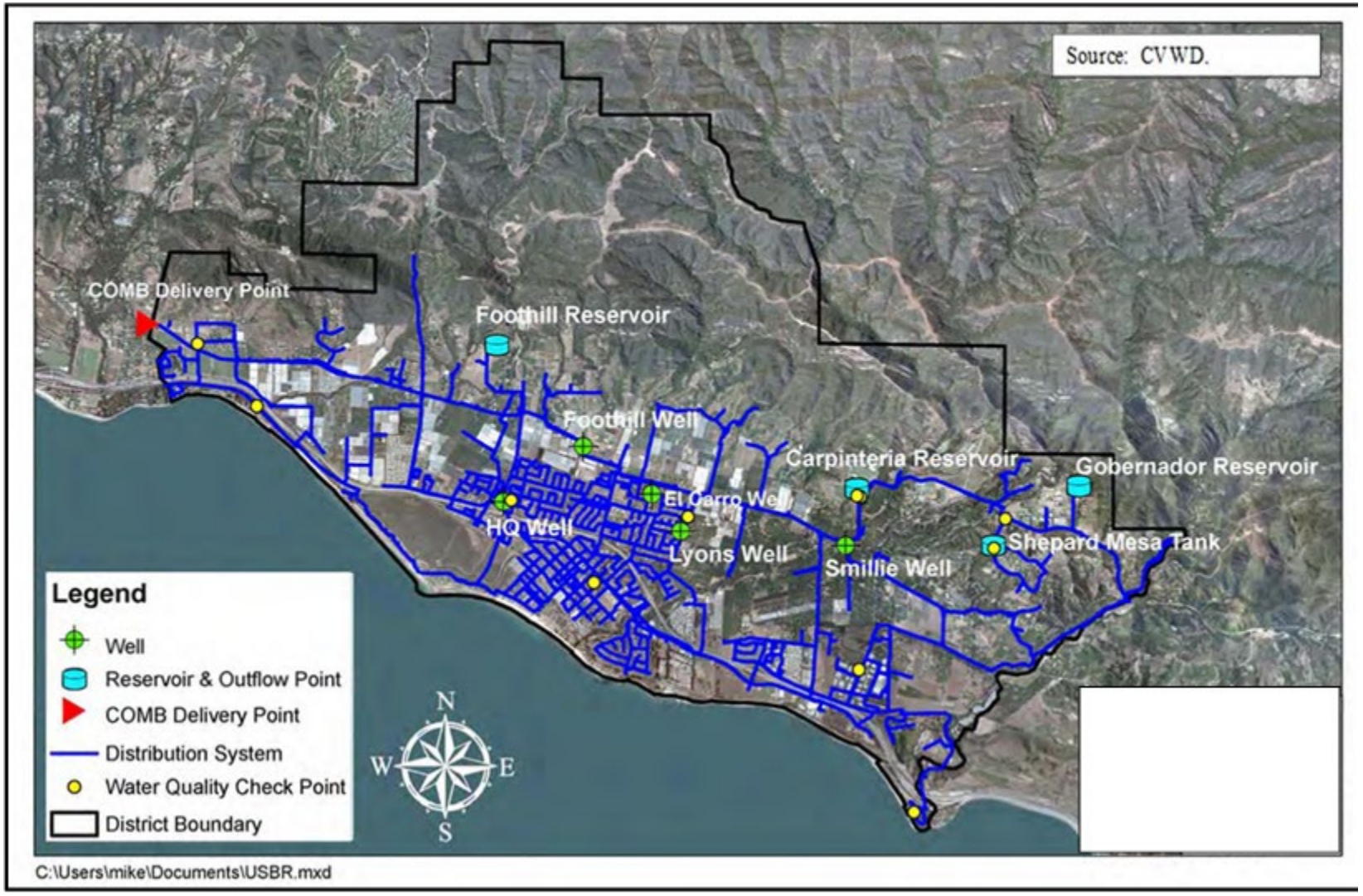


Figure 3: District Facilities



2.5 CLIMATE

Climate within the District's service area is Mediterranean in character. Summers are usually dry with generally mild temperatures and winters have light to moderate quantities of precipitation (predominantly in the form of rainfall) with cool temperatures. Annual variation in climate conditions is minimal within the District's service area. However, unique topographic conditions in the Gobernador Canyon area of the District can lead to frost conditions for approximately 5 days per year.

The District service area is located on a narrow, moderately to gently sloping alluvial plain which extends from the base of the Santa Ynez Mountains southward to the Pacific Ocean. Natural drainage of the plain is provided by Carpinteria Creek, Franklin Creek, Santa Monica Creek, Rincon Creek, Arroyo Paredon Creek, and Toro Creek. Headwaters of each of these creeks are located in the Santa Ynez Mountains.

Cachuma Project water, stored in Lake Cachuma, is a major source of surface water for the District (see **Section 4** for details). Water from the Cachuma Project is collected from the Santa Ynez River watershed, which is subject to its own local climatic variations. Rainfall in the Santa Ynez River watershed is greater than that of local patterns due to the orographic affect created by the local mountains and the offshore winds.

Average daily maximum air temperature varies between 64.9 and 77.1 degrees Fahrenheit with an average of 70.8 (WRCC, 2015). Annual average rainfall for the area is 17.84 inches. Annual average evapotranspiration (ETo) for the area is 44.13 inches (CIMIS, 2020). Additional temperature, precipitation, and evapotranspiration data is provided in **Table 14**.

Table 14: Local Climate Summary

Month	Average Maximum Temperature (F)[1]	Average Minimum Temperature (F)[1]	Average Precipitation (inches)[2]	Average Evapotranspiration (inches)[3]
January	64.9	43.0	3.89	1.80
February	65.6	44.6	3.90	2.32
March	66.8	46.2	3.09	3.63
April	69.0	48.6	1.20	4.61
May	69.9	51.3	0.39	5.05
June	72.4	54.3	0.08	4.92
July	75.9	57.3	0.02	5.41
August	77.1	57.9	0.05	5.23
September	76.7	56.4	0.31	4.05
October	74.4	52.5	0.62	3.26
November	70.9	46.9	1.52	2.16
December	66.4	43.4	2.77	1.69
Annual Avg.	**70.8**	**50.2**	**17.84**	**44.13**

Notes:
(1) Western Region Climate Center (WRCC), Santa Barbara Station No. 047902 for years 1893 to 2016 (WRCC, 2016).
(2) Data combined from County of Santa Barbara, City of Santa Barbara for years 1894 to 1948, and County of Santa Barbara, Carpinteria Fire Station for years 1949 to 2020.
(3) CADWR, Santa Barbara CIMIS Station No. 107 for years 1993 to 2020 (CIMIS, 2020).

2.6 DEMOGRAPHIC FACTORS

2.6.1 Land Use

Land use within the District includes agriculture, residential, and commercial properties (see **Figure 4**). Much of the land use within the City of Carpinteria limits is residential or commercial, with some industrial and manufacturing. Almost all the agricultural land lies outside the City limits. Land use within the District is regulated by the City for the incorporated area, and by the County of Santa Barbara for the unincorporated area.

Agricultural customers include approximately 3,105 acres of irrigated crops including fruits and nuts, pasture, grains, berries, and vineyards (see **Table 15**). Agricultural activities also include covered nurseries that produce crops such as growing cut flowers, lettuce, orchids, and cannabis. Micro-sprinklers are the most common method of outdoor crop irrigation and hydroponics is the most common greenhouse irrigation.

Table 15: Acres of Agricultural Crops in the District

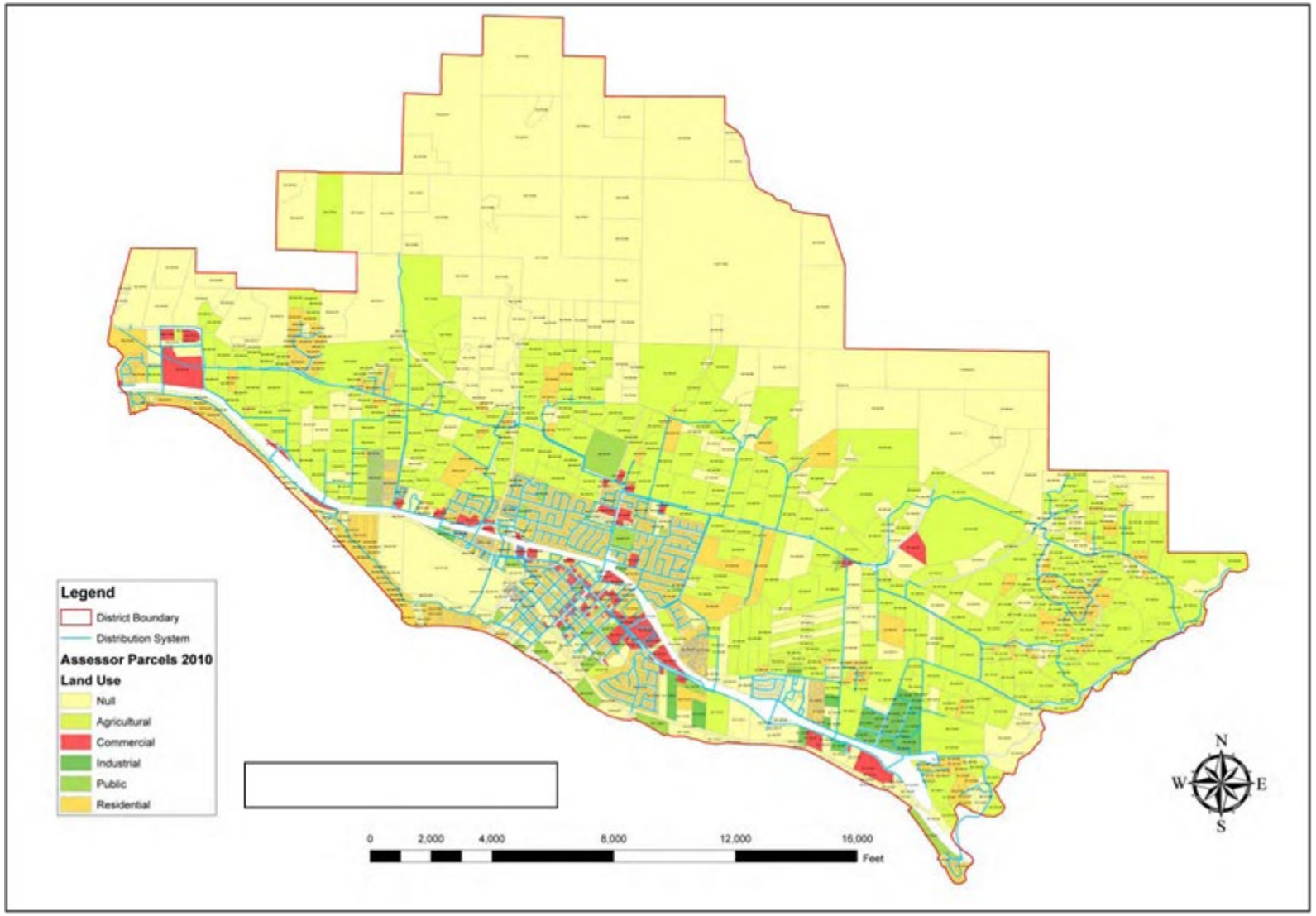
Crop Type	Acres
Avocado	1,987
Cherimoya	174
Lemons	146
Orchards	36
Field Crops	213
Covered Nursery	344
Open Nursery	204
Total	**3,105**

Source: CVWD, 2021c.

2.6.2 Population and Socioeconomic Information

The City of Carpinteria has a water allocation program as required by the Local Coastal Plan (City of Carpinteria, 2003). A water allocation is given to each new development to ensure that the available supply of water is not exceeded. The City has reached its General Plan build-out population, but has the potential for approximately 901 more residential units by 2031, according to the Regional Housing Needs Assessment (RHNA) prepared by the Santa Barbara County Association of Governments. The RHNA also projects an estimated 251 units will be needed in the unincorporated portion of the District's service area. Based on historical development rates, the District anticipates that these units will be developed over a longer timeframe than expected in the RHNA, but that the bulk of the units will be constructed by 2035 (estimated 75%) and the remaining units constructed by 2045. Many of the undeveloped parcels outside the City limits are being developed as ranchettes or small farm operations. These lands will produce only a small increase in the number of housing units in the Valley.

Figure 4: District Land Use Map



Water service is provided to a current population within the District's service area of approximately 15,966 and a total of 4,531 service connections. Population estimates were generated from the present to 2045 and include areas outside of the City limits but within the District service area. The District used population projections developed by California State University Fullerton to estimate the population for the period 2020 to 2045 using the 2010 Census data, aerial photography, current meter connections, District surveys, and estimated population growth rate. These population projections were then compared to Santa Barbara County Association of Government (SBCAG) projections for the City of Carpinteria and the unincorporated county, and found to be generally consistent with SBCAG projections. Additionally, the population estimates provided here incorporate growth from the most recent Regional Housing Needs Assessment (RHNA), which was not included in the SBCAG population estimates. RHNA projections and estimates of housing needs in the District's service area were coordinated with the City of Carpinteria's Planning staff and County of Santa Barbara. **Table 16** provides a summary of the current and projected population for the District for the period 2020 to 2045 (see also **Appendix D Table 3-1**).

Population is anticipated to be 18,876 by 2045. Population growth within the District is anticipated to be 2,880 persons over the next 25 years (approximately 0.68 percent per year). As noted above, the City of Carpinteria is at its General Plan buildout, but anticipates an additional 901 units will be needed under the RHNA. Additional growth may occur as the result of expansion of the City of Carpinteria, redevelopment, and/or changes in the local economy, as well as development in the unincorporated portion of the District's service area, which is expected to add an additional 251 units within the District's service area. Average annual population growth rate for the whole of California for the period 2020 to 2045 is estimated to be approximately 0.25 percent, slightly higher than the District's projected growth for the same period (California Department of Finance, 2021).

Table 16: Current and Projected District Population

2020	2025	2030	2035	2040	2045
15,996	16,356	16,716	18,156	18,516	18,876

Approximately 90 percent of the entire service area population lives in the City of Carpinteria. An estimated 10 percent of the population lives below the poverty threshold, and the average median annual household income is approximately $78,900. Moreover, 37 percent of the population speaks a language other than English at home, and 40 percent of the population is under 18 years old or 65 years and older (U.S. Census Bureau 2019). The District does not have any significant demographic factors that would affect water resources management planning.

2.7 DISTRICT OPERATIONS

2.7.1 Operating Rules and Regulations

A copy of the District's Rules and Regulations Manual (2021-22) is available on the District's website: https://cvwd.net/doc/1365. A hard copy of the District's Rules and Regulations are also available upon request.

2.7.2 Water Delivery Measures

Automated metering infrastructure is in place across the District's system to provide near-real-time data on water use, using Badger Meter ultrasonic meters. The accuracy of these meters is expected to remain around 99% through the life of the meters (approximately 20 years).

2.7.3 Water Rate Schedules and Billing

District water rates are based on the cost of providing services to all accounts. Customers are subject to fixed charges based on meter size and volumetric charges based on the amount of water delivered each billing period (**Appendix E)**. The District's volumetric rate structure has inclining block water rates, where the cost per unit of water increases with the quantity of water used, for single-family and multi-family residential, commercial, industrial, and public

accounts. The District's water rates provide an incentive for customers to conserve water. Customers are billed monthly for 100 percent of the volume of water used. The district's volumetric rates for agricultural customers and temporary meters are based on a flat fee per unit of water used. Although agricultural and temporary volumetric rates do not vary with the quantity of water used, they do very based on elevation of the property. All agricultural accounts with at least one dwelling unit are also assessed a monthly Residential Equivalency Charge (REQ) per dwelling unit. Volumetric rates for fire meters are flat regardless of usage or elevation. All customers pay basic and State Water Project (SWP) fees each month based on their meter size. Residential, multi-family, commercial, industrial, and public accounts, and temporary meters pay a monthly capital improvement program (CIP) charge based on their 5-year average water use. Agricultural accounts are charged a monthly O&M fee based on their meter size to fund the portion of costs that are collected from other customer classes through the CIP fee. Units served by a master meter are also charged a Dwelling Unit Equivalency Charge (DEQ) based on their meter size and the number of dwelling units. The District has the legal authority to evaluate and set rates for its customers.

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3. SYSTEM DEMANDS

3.1 UWMP REQUIREMENTS

This section includes a description of system demands and confirmation that the District met its SBx7-7 water conservation goals, and addresses the following CWC requirements for UWMPs:

- Quantify past, current, and projected water use, identifying the uses among water use sectors. (CWC §10631(d)(1))
- Report the distribution system water loss for the five most recent 12-month period available. (CWC §10631(d)(3)(A))
- Show water loss standards were met. (CWC §10631 (d)(3)(c))
- Include projected water use needed for lower income housing projected in the servicearea of the supplier. (CWC §10631.1(a))
- Include estimates for water savings from adopted codes, plans, and other policies or laws. (CWC §10631 (d)(4)(A)
- Include citations of codes, standards, ordinances, or plans used to make water use projections (CWC §10631(d)(4)(B))
- Consider demands under climate change. (CWC §10635(b))
- Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data. (CWC §10608.20(e))
- Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5-year baseline. This does not apply if the suppliers base GPCD is at or below 100. (CWC §10608.22)
- Retail suppliers shall meet their target by December 31, 2020. (CWC §10608.24(a))
- If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment. (CWC §10608.24(d)(2))
- Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form. (CWC §10608.4)

3.2 HISTORICAL AND CURRENT WATER DEMANDS

Currently, the District serves water to 3,265 single-family residential accounts, 350 multiple-family accounts, 283 commercial/institutional accounts, 58 industrial accounts, 50 landscape irrigation accounts, 386 agricultural accounts, and 132 other (fire) accounts. All of the District's customers are metered accounts and billed monthly. Water demands for 2020 are presented in **Table 17**. According to the District's metering data, total water demand (including water loss) in 2020 was 4,105 acre-feet (AF). The District noted that the 2015 total water demand was 4,143 AF and 2010 total water demand was 3,718 AF. The 2020 demands are 38 AF (1 percent) lower than the 2015 demands and 387 AF (10 percent) higher than the 2010 demands. Agriculture demands accounted for the highest category by volume used within the District at 2,093 AF (51 percent) in 2020. Historical and projected water use is shown in **Figure 5**, below. Municipal customers (including residential, commercial/institutional, industrial, and landscape uses) accounted for nearly 1,893 AF (46 percent) of the District's 2020 total water demand. Water demands for each of the primary customer categories are summarized below.

Water demand is a function of several factors. Geographic location, topography, land use, demography, and water system characteristics (i.e., system pressures, water quality and metering of connections) all influence water usage. Water demand characteristics within the District will therefore differ from water demands of other areas in California according to these factors of influence. Reasons for differences in water demand between local communities can be numerous and complex. Differences in per capita demand are primarily attributable to variations in outdoor demands (Vickers, 2000). Other factors may include, but are

not limited to, the following: parcel size, housing density, house age, condition of plumbing, use of water conservation fixtures, conservation practices, land use, climate, water rates, local ordinances, record keeping, and statistical anomalies.

3.2.1 Residential Demands

In 2020, single-family residential and multiple-family residential customers used 1,376 AF (33.5 percent) of the total water use. For additional details see **Table 17** below and **Appendix D Table 4-1**.

3.2.2 Commercial Demands

Commercial customers accounted for 245 AF (6 percent) of the total 2020 water use. For the District's 2020 water use, this use category includes governmental demands. For additional details see **Table 17** below and **Appendix D Table 4-1**.

3.2.3 Industrial Demands

Industrial customers accounted for 61 AF (1 percent) of water demands in 2020. For additional details see **Table 17** below and **Appendix D Table 4-1**.

3.2.4 Institutional/Governmental Demands

Institutional and Governmental customers accounted for an estimated 121 AF (3 percent) of water demands in 2020. For additional details see **Table 17** below and **Appendix D Table 4-1**.

3.2.5 Agricultural Demands

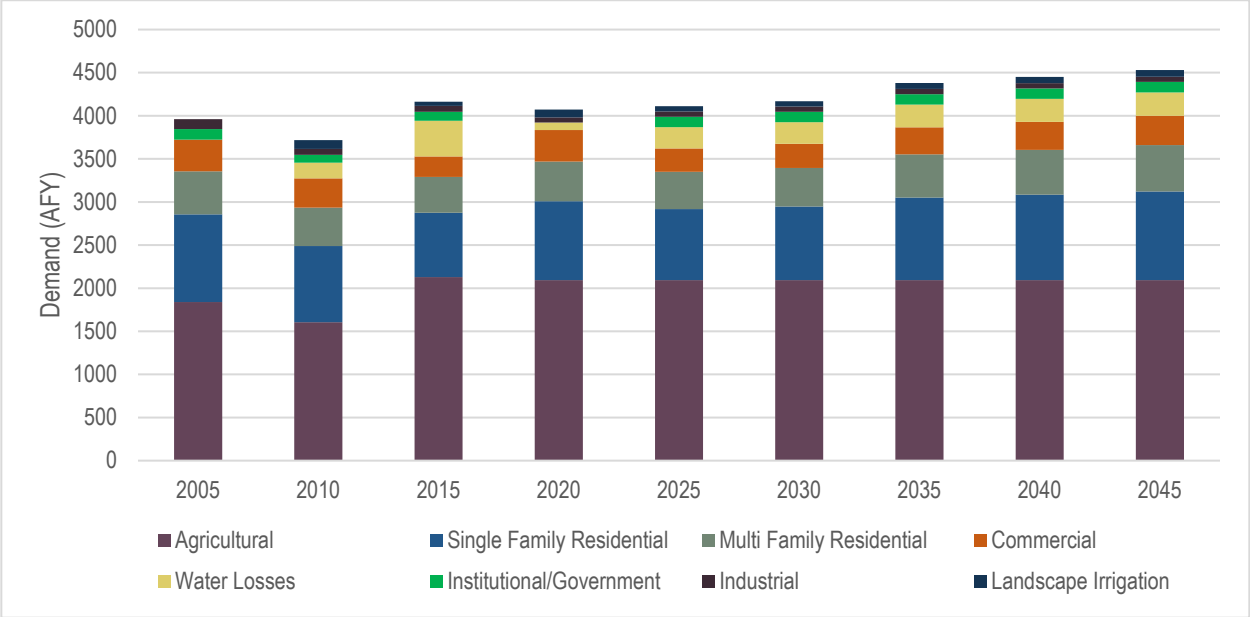
Agricultural customers accounted for over 51 percent (2,093 AF) of water demands in 2020. For additional details see **Table 17** and **Appendix D Table 4-1**. In 2015, agriculture accounted for approximately 2,130 AF (51 percent) of total water uses. Between 2015 and 2019, agricultural water use decreased to 1,781, but the transition in crops to cannabis in recent years, coupled with 2020 being a warm, dry year with limited precipitation, resulted in an increase in agricultural water use from 2019.

Table 17: District Demands for 2020

Customer Classification	2020 Water Demand (AF)[1]	2020 Water Demand (Percent of Total)
Single Family Residential	915	22%
Multi-Family Residential	461	11%
Commercial	245	6%
Industrial	61	1%
Institutional/Governmental	121	3%
Landscape Irrigation	90	2%
Agriculture	2,093	51%
Water Losses	119	3%
Total	**4,105**	**100%**

Notes:
(1) CVWD, 2021a. All values rounded. 2020 demand does not necessarily represent the average water demand or distribution for CVWD.

Figure 5: Historical, Current, and Projected Water Demands



3.2.6 Water Losses

In addition to the traditional demand sources, another component that significantly impacts the District's water supplies is water system losses. This component is typically defined as the difference between water production and water sales. Water system losses are characterized at non-revenue water (e.g., authorized activities such as firefighting and main flushing) and actual water losses from unauthorized sources (e.g., leakage, illegal connections, theft, and inaccurate flow meters). Water losses are the physical potable water losses from the pressurized water distribution system and the Supplier's storage facilities up to the point of delivery to the customer's system. Estimated total water loss within the District was approximately 119 AF (3 percent) of the total water demand during 2020. Note that this is for calendar year 2020, while water loss audits are conducted on the fiscal year, as shown in **Table 18**, and may appear slightly differently. Historically, water loss has varied, but averages approximately 6 percent of total water use. Recent water losses are shown in **Table 18**, and a copy of the District's water loss audit summaries for fiscal years 2015-2016 through 2019-2020 are provided in **Appendix G**. Apparent water losses may also be caused by time of metering issues. Much of the District's imported water supply is metered by external agencies. These agencies may read meters at different times than the District reads its customer meters.

Table 18: Recent Water Losses

Fiscal Year	Water Loss (AFY)	Water Loss (Percent of Total Demands)
2014-2015	210	5%
2015-2016	411	10%
2016-2017	262	7%
2017-2018	243	6%
2018-2019	156	4%
2019-2020	161	4%
Average	**241**	**6%**

The District's estimated unaccounted-for water was lower than estimates from USEPA Region 9 which indicate an average of 6.4 percent for total water loss across the entire Pacific Southwest region. California Department of Water Resources, Office of Water Conservation uses approximately 9.5 percent for long-range planning of municipal water production. The District has installed automated metering infrastructure (AMI) including new meters in 2018 throughout its system to identify leaks quickly, helping to reduce system water losses, and may consider additional measures to reduce water loss within the distribution system such as additional water main replacement. The District is partnering with agencies that treat and transport water in order to improve time of metering issues that contribute to apparent water losses.

3.2.7 CURRENT DEMANDS FOR LOW INCOME HOUSEHOLDS

One of the requirements of the UWMP Act is the evaluation of demands for lower income households. (CWC, 10631.1(a)) According to the California Health and Safety Code, Section 50079.5 (a), *"Lower income households" means persons and families whose income does not exceed the qualifying limits for lower income families… In the event the federal standards are discontinued, the department shall, by regulation, establish income limits for lower income households for all geographic areas of the state at 80 percent of area median income, adjusted for family size and revised annually."*

The District does not track water demand for lower-income households. However, water demands for lower income households are included in the total water demands for single-family residential and multiple-family residential as summarized in **Section 3.2.1** and **Table 17**. The District provides water to all customers to meet customer demands including water necessary for lower income single-family households and multiple-family households. The District does provide qualifying low-income customers with a 20 percent reduction in the monthly service charge component of their water bill.

3.3 FUTURE WATER DEMANDS

Projected water use estimates are based on the projected increases to the District's customer base. **Section 2.6** summarized anticipated population growth within the District. Population growth within the District is anticipated to be 2,880 persons over the next 25 years (approximately 0.68 percent per year), based on SBCAG projections in the *Regional Growth Forecast 5050 Santa Barbara County* (SBCAG, 2019), adjusted to account for the additional housing stock call for by the *Regional Housing Needs Allocation (RHNA) Plan 6th Cycle 2023-2031* (SBCAG, 2021). Inclusion of additional housing units (and associated population) was determined in conjunction with local land use planners from the City of Carpinteria, as well as an estimate of the portion of additional housing units in the unincorporated area of Santa Barbara County that could reasonably be expected to fall within the District's service area. All future new accounts will be metered and billed via volume-based rates. Total projected water demands will range from approximately 4,111 AF in 2025 to 4,530 AF in 2045. See **Table 19** for further details (see also **Appendix D Table 4-2**). Projected water demands for each of the primary customer categories are summarized below.

3.3.1 Residential Demands

Projected residential demands were estimated by applying the per capita water usage in 2020, measured as gallons per capita per day (GPCD), to the projected District population provided in **Section 2.6.2.** Additional information on residential population estimates is described above. Projected single-family residential water use will account for approximately 856 AFY (19 percent) of the 2045 District total water use, while projected multiple-family residential demand will account for approximately 448 (10 percent) of the 2045 District total water used. Combined projected residential use will account for approximately 1,304 AFY (29 percent) of the 2045 District total water used. See **Table 19** (see also **Appendix D Table 4-2**) for details of projected water demands through 2045.

3.3.2 Commercial Demands

Projected commercial water use will account for approximately 282 AFY (6 percent) of the District total water used by 2045. This was estimated based on the portion of the District's water use that historically has been used by commercial customers, with limited growth due to projected land use in the District's service area, which is expected to remain relatively similar to current land uses. See **Table 19** (see also **Appendix D Table 4-2**) for details of future estimated demands through 2045.

3.3.3 Industrial Demands

Projected industrial demands will account for approximately 61 AF (1 percent) of the District's total water demand by 2045. Industrial demands are expected to stay consistent with 2020 use into the future because no changes in industrial land uses are expected during the planning horizon. See **Table 19** (see also **Appendix D Table 4-2**) for details of estimated water demands through 2045

3.3.4 Agricultural Demands

Projected agricultural demands will account for approximately 2,426 AF (54 percent) of the District total water demand by 2045. Factors that are expected to increase agricultural water demands include a shift in crop type to more water-heavy uses such as cannabis in recent years and the potential for some agricultural users to convert from pumping groundwater to purchasing water from the District in response to the Groundwater Sustainability Plan (see Section 4.2.1 explanation of the SGMA process). Factors expected to decrease agricultural demands include conversion of agricultural lands to other land uses, such as housing, and potential reduction in agricultural activities in response to groundwater use limitation in the Groundwater Sustainability Plan. Many of these changes in local agricultural practices are new or expected future changes, with limited data to inform long term projections. As such for purposes of this 2020 UWMP, agricultural demands have been kept flat at 2020 use, with the expectation that the factors for increasing and decreasing agricultural demands will cancel each other out. See **Table 19** (see also **Appendix D Table 4-2**) for details of estimated water demands through 2045.

3.3.5 Institutional/Governmental Demands

Projected institutional and governmental demands will account for approximately 121 AF (3 percent) of the District total water demand by 2045. Similar to industrial demands, institutional and governmental demands are expected to remain consistent with 2020 use into the future because there are no projected land use changes affecting the presence of institutions or governmental land uses. See **Table 19 (**see also **Appendix D Table 4-2**) for details of estimated water demands through 2045.

Table 19: Projected District Total Water Demands 2025-2045 (AFY)

Customer Classification[1,2]	2025	2030	2035	2040	2045
Single Family Residential	793	788	857	855	856
Multiple-Family Residential	415	412	448	448	448
Commercial	261	260	282	281	282
Industrial	61	61	61	61	61
Institutional/Governmental	121	121	121	121	121
Landscape Irrigation	59	57	62	63	64
Agricultural	2,156	2,220	2,287	2,356	2,426
Water Losses[3]	245	251	263	267	272
Total	**4,111**	**4,170**	**4,381**	**4,452**	**4,530**

Notes:
(1) CVWD, 2020. All values rounded. Some differences may occur due to rounding.
(2) Projected total water use includes existing water use and projected water use from potential new development. New development based on Santa Barbara County Association of Governments forecast for 2025 to 2045 including 0.36 percent per year for 2021-2025, 0.2 percent per year for 2026-2040, and 0.08 percent per year for 2041-2045, and adjusted for RHNA housing projections. Source: SBCAG, 2019 and 2021.
(3) Assumes water losses are 6 percent of total water use, based on average water losses for the last five years.

3.3.6 Water Loss

Total water loss is projected to be 272 AFY (6 percent) of District total water use by 2045. Water loss was estimated based on average water loss over the last five years (see **Table 18** for details; also **Appendix D Table 4-2**). As demonstrated in **Table 18**, overall water loss for the district has decreased in recent years, in part thanks to the implementation of AMI and replacement of meters across the District's system. However, the District should consider alternatives to reduce this value further. These measures may include additional water main replacement, water system audits, and metered use by contractors (see Section 7 for additional details).

3.3.7 Passive Savings

Passive savings are incorporated into projected water use for the District. Passive savings are those savings associated with the implementation of plumbing codes and efficiency standards. These savings come from the use of efficient fixtures, including toilets, clothes washers, dishwashers, and urinals. The District's passive water savings are shown in **Table 20**, and were estimated using a demographically-driven growth and replacement model that accounts for fixtures from new construction and natural replacement using the same demographic data as the regional growth forecast. Water fixtures installed due to new construction are assumed to be in compliance with the plumbing codes in effect when the new construction occurs. Natural replacement rates vary by device and are linked to the expected life of the device, which ranges from 13 years for a residential dishwasher to 40 years for non-residential toilets and urinals. When devices are replaced due to failure, remodeling, or other reasons, the new devices are assumed to be compliant with the plumbing codes in effect when the replacement occurs. The total water consumed by each use of the fixture, and the frequency of fixture use, was based on focused end-use studies, including *2016 Residential End Uses of Water, Version 2* published by the Water Research Foundation (DeOreo et al. 2016) and *Commercial and Institutional End Uses of Water* study published by the American Water Works Association Research Foundation (Dziegielewski et al. 2000).

Table 20: Estimated Passive Water Savings

Customer Classification	2025	2030	2035	2040	2045
Single-Family	26	52	79	93	103
Multifamily	19	32	43	49	53
CII	0	6	12	18	23
Landscape	0	1	2	3	3
Total	**51**	**97**	**143**	**168**	**186**

3.3.8 Future Use for Low Income Households

The UWMP Act includes the evaluation of demands for low income households (CWC §10631.1(a)) Future low income housing is incorporated into population projections identified in **Table 16** and water demand projections identified in **Table 19.** The District does not track water demand for lower-income households. However, water demands for lower-income households are included in the total water demands projected for single-family residential and multiple-family residential as summarized in **Table 19**. The District has sufficient water supplies to accommodate the increase in water demand associated with construction of potential new single-family and multiple-family housing units for lower-income residents.

3.4 WATER CONSERVATION ACT OF 2009

In February 2008, Governor Arnold Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. A key component of this plan was a goal to achieve a 20 percent reduction in per capita water use statewide by the year 2020 (also known as the 20x2020 target). The Governor's inclusion of water conservation in the Delta plan emphasizes the importance of water conservation in reducing demand on the Delta and in reducing demand on the overall California water

supply. In response to Schwarzenegger's call for statewide per capita savings, DWR prepared a 20x2020 Water Conservation Plan (DWR, 2010). The Water Conservation Plan developed estimates of statewide and regional baseline per capita water use and outlined recommendations to the Governor on how a statewide per capita water use reduction plan could be implemented.

In November 2009, SB X7-7, The Water Conservation Act of 2009 (CWC, 10608-10608.44), was signed into law as part of a comprehensive water legislation package. The Water Conservation Act addresses both urban and agricultural water conservation. The urban provisions reflect the approach taken in the 20x2020 Water Conservation Plan. The legislation sets a goal of achieving a 20 percent statewide reduction in urban per capita water use and directs urban retail water suppliers to set 2020 urban water use targets. This SB X7-7 legislation requires urban retail water suppliers to summarize the calculation of this water use target in the UWMP. Details of the District's compliance are provided below.

3.4.1 Baseline Water Use

Water suppliers must define a 10-year baseline period (or 15-year) for water use that is used to develop their target levels of per capita water use. Water suppliers must also calculate water use for a 5-year baseline period and use that value to determine a minimum required reduction in water use by 2020. The longer baseline period applies to a water supplier that meets at least 10 percent of its 2008 measured-retail water demand through recycled water. Because the District did not supply recycled water in 2008, it was required to select a 10-year baseline. The District chose the 10-year baseline period 2001 to 2010, and the 5-year baseline period 2003 to 2007. The State allows water suppliers to use one of four methods to calculate its 2020 target. The District chose to use Methodology 3: Base Daily Per Capita Water Use, which set its 2020 target at 95% of the "2020 Plan" Regional Target for the Central Coast (see **Section 3.4.2**). The calculations for the District's baseline and targets are shown in the SBx7-7 Verification Tables in **Appendix F**.

3.4.2 Water Use Targets

Urban retail water supplies were required to set a year 2020 water use target and a 2015 interim target using one of four methods (CWC §10608.20(a)(1)). The Water Code directs that water suppliers must compare their actual water use in 2020 with their calculated targets to assess compliance (see Section 3.4.3). The years 2015 and 2020 are referred to in the methodologies as compliance years. All baseline, target, and compliance-year water use estimates must be calculated and reported in GPCD.

3.4.3 District Compliance Summary

As demonstrated here and shown in the SBx7-7 Verification and Compliance tables included in **Appendix F**, the District's 2020 Target is 117 GPCD. The District's 2020 water use was 112 GPCD. Therefore, the District has met its 2020 water use target, and is in compliance with SBx7-7.

Compliance with the California Water Conservation Act of 2009 is summarized in **Table 21**. See **Appendix D Tables 5-1** and **5-2** and **Appendix F** for additional details.

Table 21: Summary of Compliance with California Water Conservation Act of 2009

Metric	Reported Measurement/Quantity	Reference
Baseline period - 10-year	2001-2010	Appendix E SBx7-7 Verification Table 1
Baseline period - 5-year	2003-2007	Appendix E SBx7-7 Verification Table 1
Population 10-year range (2001-2010)	16,115 to 15,143	Appendix E SBx7-7 Verification Table 3
Population compliance year 2015	14,993	Appendix E SBx7-7 Verification Table 3
Gross water use 10-year average (2001-2010)	2,211 AF	Appendix E SBx7-7 Verification Table 4
Gross water use 5-year average (2003-2007)	2,377 AF	Appendix E SBx7-7 Verification Table 4
Gross water use 2020	2,012 AF	Appendix E SBx7-7 Compliance Table 4
Baseline per capita use 10-year avg. (2001-2010)	127 GPCD	Appendix E SBx7-7 Verification Table 5
Baseline per capita use 5-year avg. (2003-2007)	136 gpcd	Appendix E SBx7-7 Verification Table 5
District's gallons per capita per day compliance year 2015	122 GPCD	Appendix E SBx7-7 Verification Table 5
Target Method	Method 3 – Hydrologic Region	Appendix E SBx7-7 Verification Tables 7
Method 3 – Central Coast Hydrologic Region	123 GPCD	Appendix E SBx7-7 Verification Table 7E
Hydrologic Region (Central Coast)	95 percent target of 117 GPCD	Appendix E SBx7-7 Verification Table 7E
District 2020 water use target	117 GPCD	Appendix E SBx7-7 Verification Table 9
District's actual water use compliance year 2020	112 GPCD	Appendix E SBx7-7 Compliance Table 5
Did District meet SBx7-7 2020 Target GPCD	**Yes**	**-**

Figure 6 Central Coast Hydrologic Basin

Source: RWQCB, 2017.

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4. SYSTEM SUPPLIES

4.1 UWMP REQUIREMENTS

This section will include the following:

- When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies. (CWC §10631(b)(2))
- Describe measures taken to acquire and develop planned sources of water. (CWC §10631(b)(3))
- Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030,2035, 2040 and optionally 2045. (CWC §10631(b))
- Indicate whether groundwater is an existing or planned source of water available to the supplier. (CWC §10631(b))
- Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization. (CWC §10631(b)(4) (A))
- Describe the groundwater basin. (CWC §10631(b)(4) (B))
- Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump. (CWC §10631(b)(4) (B))
- For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions. (CWC §10631(b)(4) (B))
- Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years (CWC §10631(b)(4) (C))
- Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped. (CWC §10631(b)(4) (D))
- Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis. (CWC §10631(c))
- Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project. (CWC §10633(b))
- Describe the recycled water currently being used in the supplier's service area. (CWC §10633(c))
- Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses. (CWC §10633(d))
- Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected. (CWC §10633(e))
- Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year. (CWC §10633(f))
- Provide a plan for optimizing the use of recycled water in the supplier’s service area. (CWC §10633(g))

- Describe desalinated water project opportunities for long-term supply. (CWC §10631(g))
- Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods. (CWC §10633(a))
- Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years. (CWC §10631(f))
- The UWMP must include energy information, as stated in the code, that a supplier can readily obtain. (CWC §10631.2(a))

4.2 CURRENT WATER SUPPLIES

The District has a balanced water supply portfolio with surface water supplies from the Cachuma Project, surface water from the State Water Project (SWP), and groundwater from the Carpinteria Groundwater Basin. Potential maximum operational yield of groundwater by the District is 2,839 AFY, while the long-term average is estimated to be approximately 1,200 AFY. The District's maximum local surface water allocation from the Cachuma Project is currently 2,813 AFY, while the long- term average is estimated to be approximately 1,970 AFY. Maximum allocation from the SWP is 2,200 AFY (including 200 AF of drought buffer), while the long-term average is estimated to be approximately 876 AFY. Each of these water supplies is described in detail in subsequent sections.

Table 22 summarizes the water supplies available in 2020 to meet demands within the District service area (also see **Appendix D, Table 6-8**). Actual total District supplies in 2020 were 4,105 AF, which included approximately 794 AF (19 percent) from District wells and 3,311 AF (81 percent) from the Cachuma project. In addition to these primary supplies, the District will periodically purchase water from or exchange water with neighboring water purveyors, such as the Santa Ynez River Water Conservation District and Santa Ynez Improvement District No. 1 (ID #1). However, the District did not exchange water with ID #1 in 2020.

For the period 2016 to 2020, local groundwater provided approximately 38 percent of the average annual water supply, while the Cachuma Project provided approximately 40 percent, and SWP water provided approximately 22 percent.

Table 22: District Delivered Water Supplies for 2020

Water Supplies	2020 Water Supplies (AFY)	2020 Water Supplies (Percent of Total)
Groundwater	794	19%
Cachuma Project	3,311	81%
State Water Project	0	0%
Recycled Water	0	0%
Desalination	0	0%
Transfers or Exchanges In/Out	0	0%
Other	0	0%
Total	**4,105**	**100%**

Source: CVWD, 2021a. All values rounded.

4.2.1 Local Groundwater

The District overlays the Carpinteria Groundwater Basin (DWR Basin No. 3-018), a relatively large groundwater aquifer, that extends from beyond the Ventura County line on the east, to Toro Canyon on the west, from the foothills of Santa Ynez Mountains to the north, and extending offshore to the southwest for over a mile. As noted above, the District relies on this basin as one of its local supplies. **Figure 7** displays the regional groundwater basins (Carpinteria Groundwater Basin is located in the lower right). **Figure 8** displays the Carpinteria Groundwater Basin including areas of Storage Unit No. 1 and Storage Unit No. 2. **Figure 9** displays the recharge area and confined area of the Carpinteria Groundwater Basin. **Figure 10** provides a cross section of the Carpinteria Groundwater Basin from ocean (left) to mountains (right), and indicates the multiple water bearing zones. The Basin includes approximately 12.7 square miles of surface area (County of Santa Barbara, 2020a).

The Basin is divided by the Rincon Creek fault into two storage units; storage Unit No. 1 is the superior unit in both storage quality and storage capacity. In 1986, the total storage in the aquifer was estimated to be approximately 700,000 AF (CVWD, 1986). However, usable groundwater storage capacity determines how much groundwater can be stored during wet periods for use during droughts. In a coastal basin, conceptually it is the volume of water stored in a basin between the maximum water-level surface and the lowest water-level surface that could be reached without initiating seawater intrusion. Water levels near the coast need to remain consistently above sea level to prevent seawater intrusion. For the Carpinteria Groundwater Basin, usable groundwater storage capacity was estimated by calculating the volume of water stored above sea level based on Spring 1998 water-level contours (the historical Basin high) for Storage Unit 1. Usable storage for the Basin recharge area was estimated at 38,926 AF, while the usable storage in the confined area was estimated at 29 AF. Thus, total usable area was estimated to be nearly 39,000 AF (Marks, 2015).

Basin sustainable yield is defined as the amount of groundwater that can be continuously withdrawn from a basin on a long-term average annual basis without adverse impact (DWR, 2003). In 2012, the sustainable yield of the Carpinteria Groundwater Basin Unit No. 1 was estimated at approximately 4,000 AFY (CVWD, 2012).

Groundwater rights in the Basin have not been adjudicated. The District, under the authority of State Assembly Bill 3030, adopted a Groundwater Management Plan in order to establish its role as groundwater manager for the Carpinteria Groundwater Basin. The Groundwater Management Plan was adopted on August 14, 1996 by the District's Board of Directors and provides direction for the District as the managing entity for the Carpinteria Groundwater Basin. Elements of the Plan include: water level & quality monitoring, sanitary seal retrofit program, abandoned well destruction program, educational goals, and a well inventory database. A copy of this Plan is provided in **Appendix H**. The Groundwater Management Plan will ultimately be superseded by a Groundwater Sustainability Plan (GSP) in 2024 as described in the following section.

Sustainable Groundwater Management Act

In 2015, the Sustainable Groundwater Management Act (SGMA) was enacted to provide for the sustainable management of groundwater basins in California. SGMA planning requirements are mandatory for the high- and medium-priority groundwater basins identified by DWR. In these basins, local agencies are required to create a Groundwater Sustainability Agency (GSA) and adopt a SGMA-compliant GSP.

Figure 7: Regional Groundwater Basins

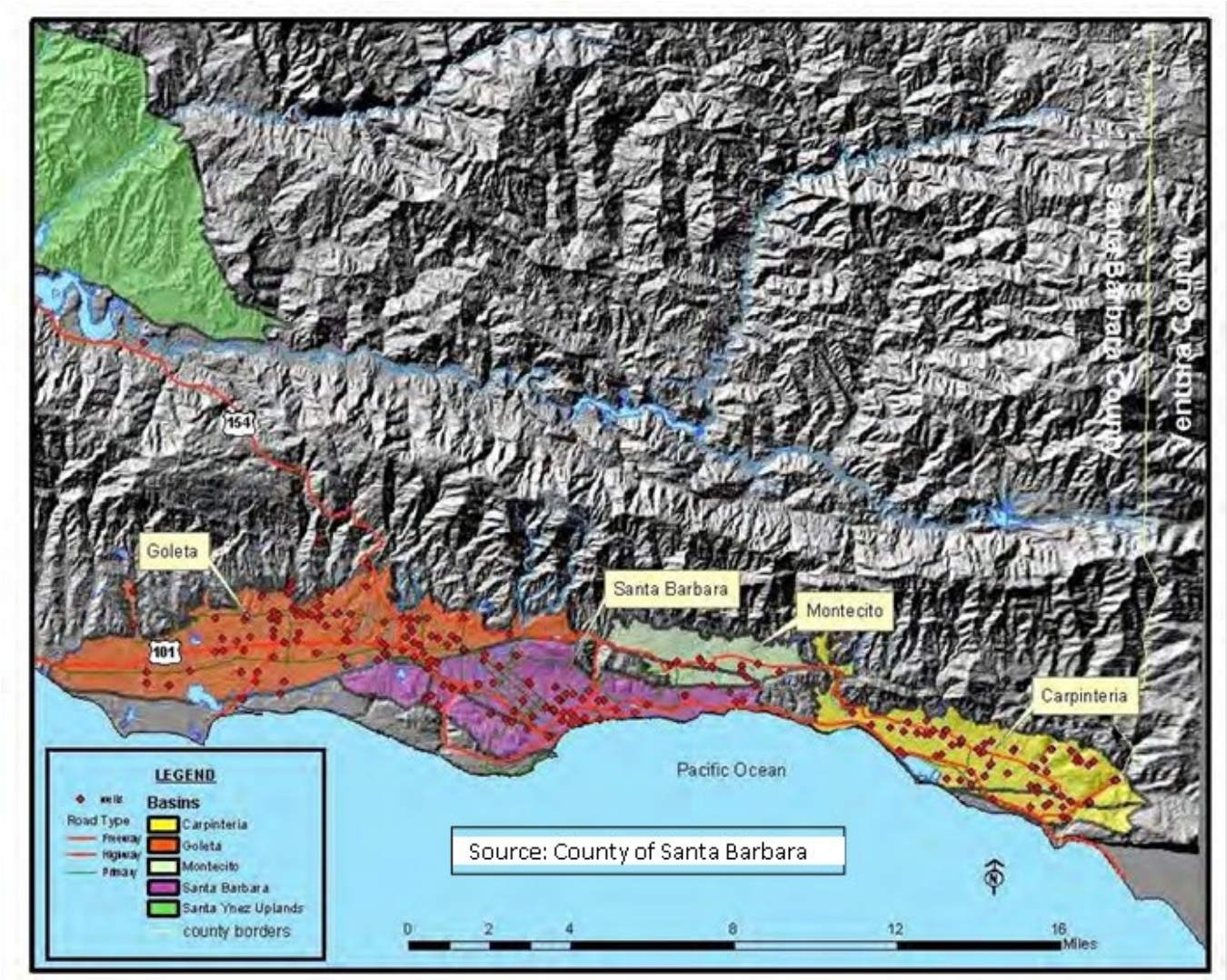


Figure 8: Carpinteria Groundwater Basin

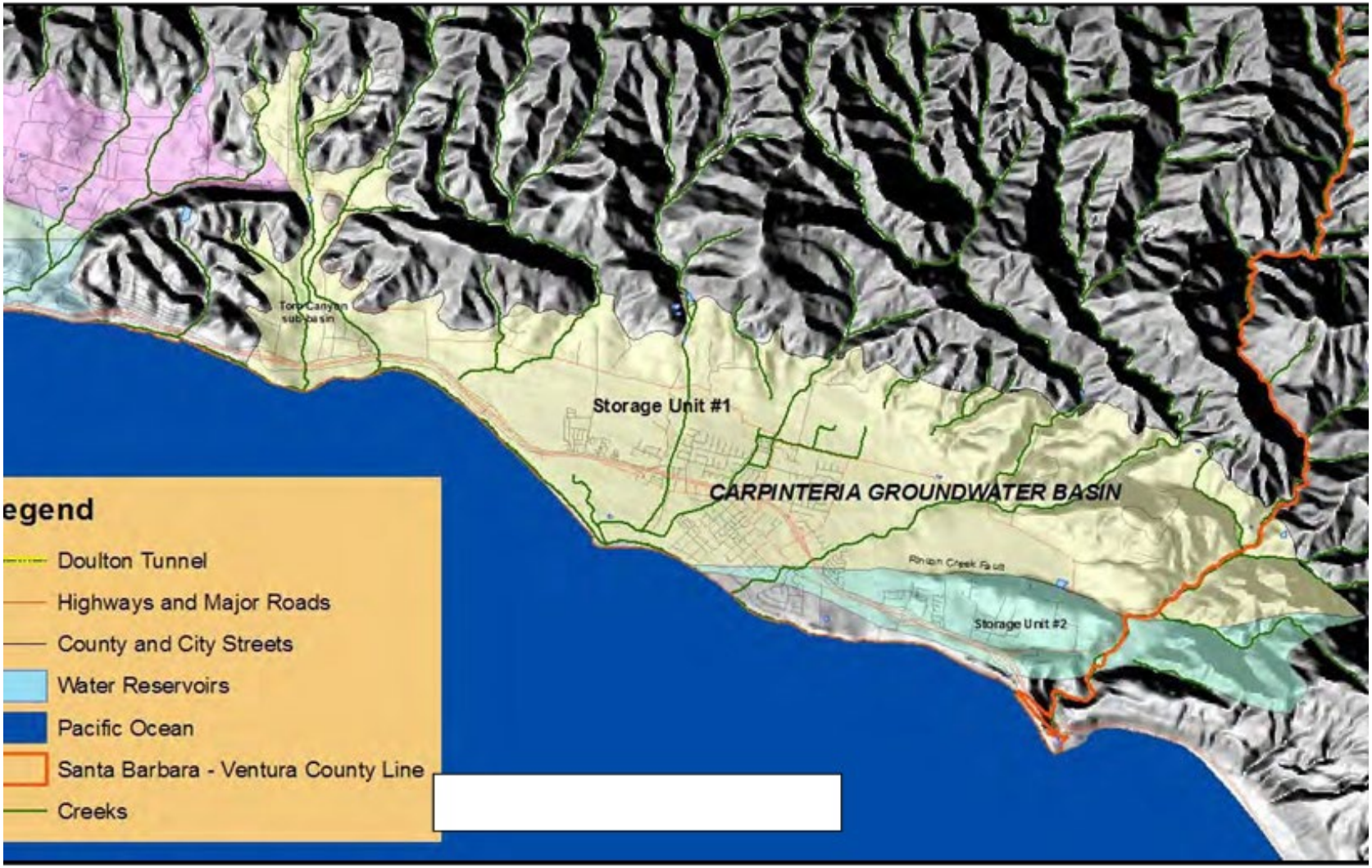


Figure 9: Confined and Recharge Areas

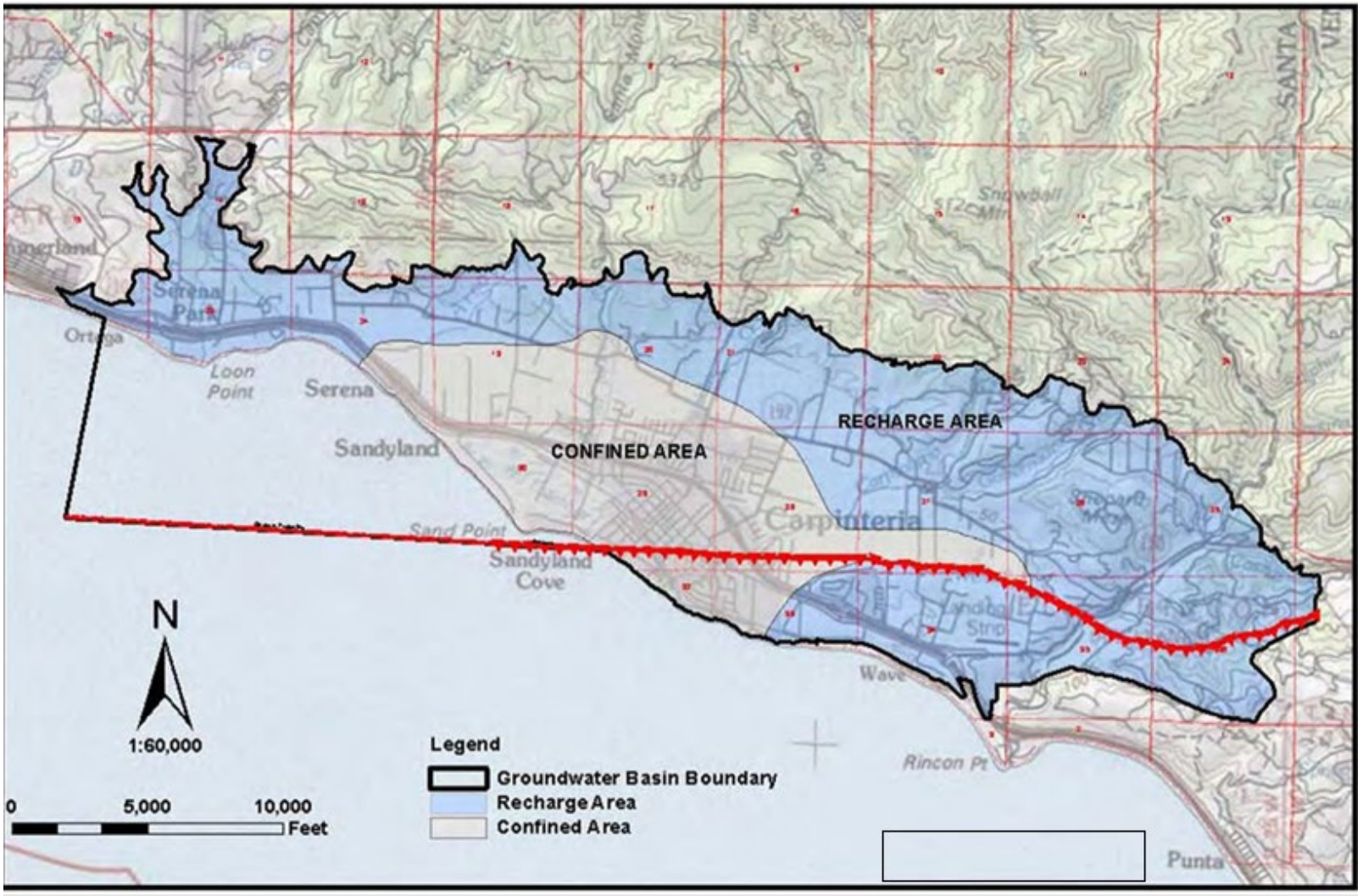
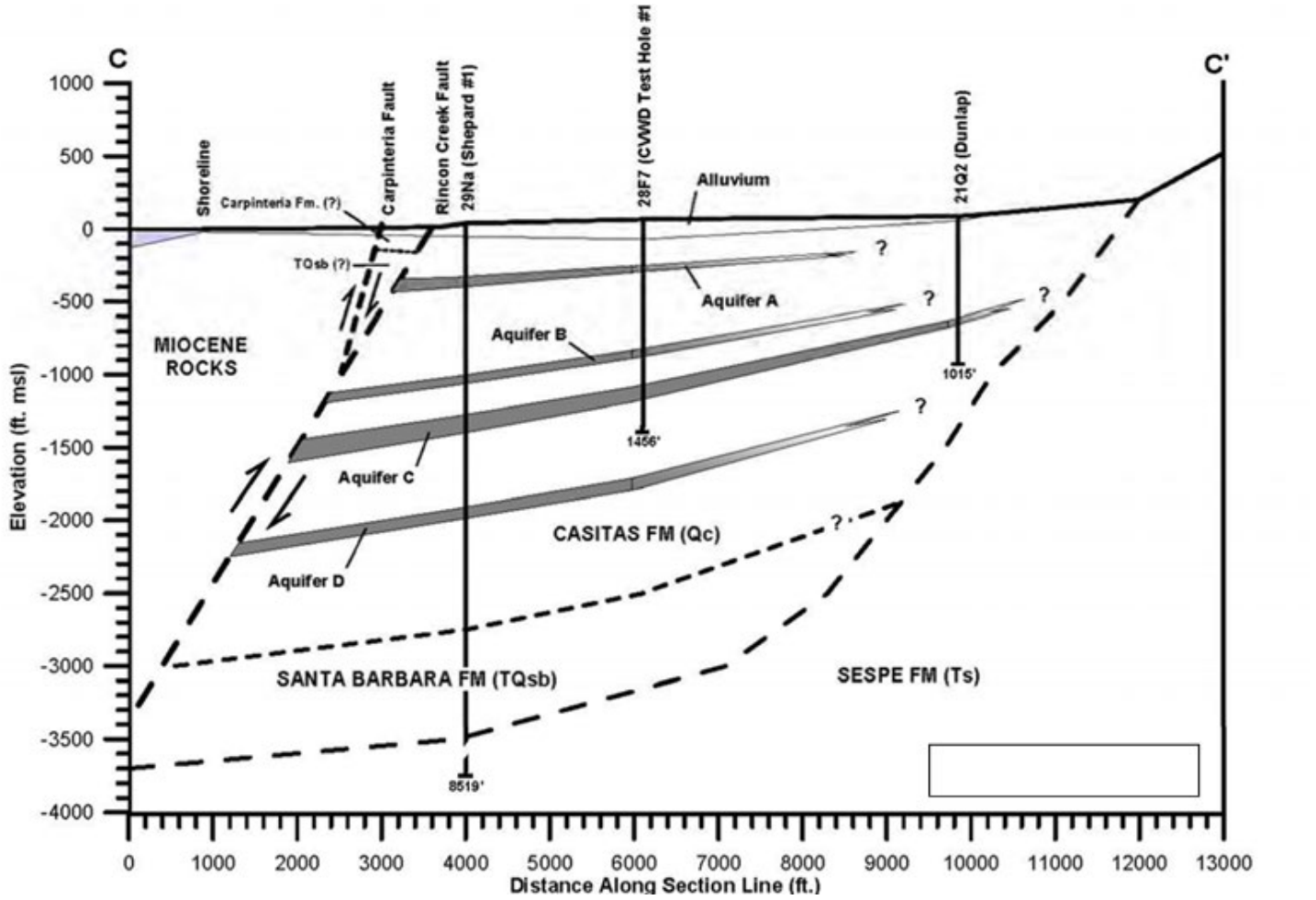


Figure 10: Cross Section of Carpinteria Groundwater Basin



The Carpinteria Groundwater Basin was re-designated from a low priority to a high priority basin in 2019 as part of DWR's re-prioritization of groundwater basins following the 2016 basin boundary modifications, as required by the Water Code. As such, the agencies overlying the Carpinteria Groundwater Basin are required to form a GSA and adopt a Groundwater Sustainability Plan (GSP) or submit an alternative to a GSP. The Carpinteria GSA was formed in January 2020 as a joint powers authority (JPA) comprised of the following four local public agencies: Carpinteria Valley Water District, City of Carpinteria, County of Ventura, and Santa Barbara County Water Agency. The Carpinteria GSA will submit a GSP to DWR by late 2023 for adoption and implementation in early 2024.The GSP will include an extensive analysis of the projected water budget, monitoring networks, sustainable management criteria, and projects and management actions for the Carpinteria Groundwater Basin.

District Groundwater Facilities

As noted in **Section 2**, the District owns and operates five municipal wells with a combined capacity to produce approximately 3.98 MGD. **Table 23** provides a summary of the District's wells. These wells are located central to the suburban section of Carpinteria, as shown in **Figure 3**.

Table 23: District Groundwater Facilities

Well Name	Status	Typical Capacity (gallons/min.)	Average Production (MG/day)
El Carro #2 Well	Active	900	1.30
Headquarters Well	Active	1,200	1.70
Smillie Well	Active	250	0.36
High School Well	Inactive	300	0.00
Lyon Well	Inactive	600	0.00
Totals	-	**3,250**	**3.36**

Source: CVWD, 2020. All values rounded.

Total pumping within the Carpinteria Groundwater Basin by the District and private owners has averaged nearly 5,685 AFY from Water Year (WY) 2015 to 2019 (see **Table 24** for details; also see **Appendix D, Table 6-1**).

District-only pumping averaged approximately 1,953 AFY (33 percent of total pumping within the Basin) from WY 2015 to 2019, and 1,470 AFY from WY 1985 to 2019 (CVWD, 2021b). Maximum recorded pumping by the District over the period 1985 to 2019 is 3,413 AF in WY1990. Maximum recorded total pumping within the District (including the District and private pumpers) during the period 1984 to 2019 is 6,790 AF in 2018. This record pumping was likely due to a zero percent allocation of Cachuma Project water in 2018.

Table 24 also indicates that District pumping ranged from 933 AF in WY 2019 to 2,751 AF in WY 2016 (19 percent to 45 percent of total District water supplies, respectively) for the period WY 2015 to 2019. In **Table 24**, the percentage of annual water supply refers to the percent of groundwater pumped compared to the total amount of District water supplies including surface water and groundwater sources.

Table 24: Carpinteria Groundwater Basin Total Pumping WY 2015-2019

Water Year	District Pumping (AFY)	Percentage of Total Pumping	Percentage of Annual Water Supplies	Private Pumping (AFY)	Percentage of Total Pumping	Total Basin Pumping (AFY)
2015	2,605	42%	63%	3,526	58%	6,131
2016	2,751	45%	71%	3,380	55%	6,131
2017	1,235	27%	31%	3,321	73%	4,556
2018	2,239	33%	57%	4,551	67%	6,790
2019	933	19%	25%	3,884	81%	4,817
Annual Average	**1,953**	**33%**	**46%**	**3,732**	**67%**	**5,685**

Source: CVWD, 2021b.

Private pumping averaged 3,732 AFY (67 percent of total pumping within the Basin) over the period WY 2015 to 2019 (see **Table 24**), and 2,554 AFY for the period WY 1985 to 2019 (CVWD, 2021b). Maximum recorded pumping by private pumpers over the period WY 1985 to 2019 is 6,790 AF (2018). Pumping via private wells occurs throughout the Basin with a high concentration of large pumpers north of Foothill Road for primarily agricultural uses. Because private pumping in the Basin is not metered, estimates for private groundwater extraction are derived by the District utilizing land use surveys, water delivery information, geographic information system (GIS) mapping, and crop use estimates (CVWD, 2021b). In order to manage this component of local groundwater use, an analysis using crop types and water demand factors is done each year to estimate the private pumping in the basin. Additionally, levels are monitored every two months at various wells located throughout the Basin.

4.2.2 Cachuma Project

The District receives surface water supplies from the Cachuma Project and SWP. Each of these water supply sources is summarized below. **Table 25** summarizes the surface water supplies received by the District for the period 2016 to 2021. Over the period 2016 to 2020, the District received an annual average of 2,448 AFY (62 percent of District's water supplies) from these sources.

Table 25: District Surface Water Deliveries 2016-2020

Year	Cachuma Project (AFY)	Percentage Annual Water Supply	State Water Project (AFY)[1]	Percentage of Annual Water Supply	Total Surface Water Deliveries (AFY)
2016	743	19%	377	10%	1,119
2017	1,165	29%	2,031	50%	3,196
2018	0	0%	1,435	37%	1,435
2019	2,750	74%	427	11%	3,177
2020	3,311	81%	0	0%	3,311
Annual Average	**1,594**	**41%**	**854**	**22%**	**2,448**

Source: CVWD, 2021a. All values rounded.

The District receives water from the Cachuma Project (local surface water) which stores water in Lake Cachuma within the Santa Ynez River watershed in Santa Barbara County. Annual average flow of the Santa Ynez River is approximately 66,000 acre-feet. The Santa Ynez River watershed and the South Coast area are characterized by a short rainy season in the winter and a long dry season in the summer. The region is from time to time subject to strong storms off the Pacific, consequently, rainfall can vary widely. The Cachuma Project was constructed by the U.S. Bureau of Reclamation (USBR) in the early 1950s.

Principal features of the Cachuma Project are Lake Cachuma (see **Figure 11**), Bradbury Dam (see **Figure 12**), Tecolote Tunnel, and South Coast Conduit (SCC) and related distribution systems. Lake Cachuma includes a surface area of approximately 3,200 acres, 42 miles of shoreline, and approximately up to 196,000 AF of storage. When finished, the Bradbury Dam was a zoned earthfill structure that rose 206 feet above the stream bed with a crest length of 2,975 feet (see **Figure 12**). Approximately 6,700,000 cubic yards of earthfill were used in its construction. The spillway section is concrete-lined, with four 50-foot by 30-foot radial gates, and has a capacity of 161,000 cubic feet per second (cfs). Beneath the dam is a 7-foot horseshoe tunnel containing the controlled outlet works, which consist of the concrete-lined tunnel through which two 30-inch, hollow-jet valves and one 10-inch butterfly valve pass non-flood flows of the Santa Ynez River to users downstream of the dam. Water diverted from Lake Cachuma passes through the Tecolote Tunnel, which brings water through the Santa Ynez Mountains to the SCC. The SCC facilities include a steel distribution pipeline that has lateral pipelines bringing water to four regulating reservoirs: Glen Anne Dam and Reservoir, Lauro Dam and Reservoir, Ortega Dam and Reservoir, and Carpinteria Reservoir.

Tecolote Tunnel, SCC, and the regulating reservoir facilities are operated by the Cachuma Operation and Maintenance Board (COMB). The District is one of four member units that make up the COMB Board. The District has a contractual agreement with COMB for delivery of its Cachuma Project water. Surface water stored in Lake Cachuma is treated at the Cater Water Treatment Plant (WTP), before being conveyed to the District. The Cater WTP is owned and operated by the City of Santa Barbara and has a capacity to treat 37 MGD.

Figure 11: Photo – Lake Cachuma, Santa Barbara County

The Lake's storage capacity is approximately 196,000 AF. Per the Cachuma Master Contract, the total annual allocation for all member units is 25,714 AF, set collectively by the Cachuma member agency managers. This number is based on the present understanding of the lake volume, fish and downstream water rights releases, and drought planning. Storage capacity within Lake Cachuma will likely decrease slightly over time due to silt loading. Additionally, releases for fish, environment, and long-term drought planning may change over time which may significantly affect total allotments for Cachuma Project member agencies.

Figure 12: Photo – Bradbury Dam, Lake Cachuma, Santa Barbara County (December 2018)

The allotments between the Cachuma member agencies were decided by the member agencies to be a certain percentage of the annual allotment. These percentage values were written into the original Cachuma Master Contract. Each agency has a contractual right to their percentage of the annual allotment. The current annual yield of 25,714 AFY was determined prior to the last USBR contract renewal in 1995 and written into the Cachuma Master Contract. This means, from a contract standpoint, that each member has entitlement to a fixed amount of water. Currently, the District's maximum allocation is 2,813 AFY, or 10.94 percent of the Cachuma Project water (see **Table 22**).

However, during the most recent local drought that occurred between 2012 and 2016, member units had to adjust the annual water withdrawals down to extend water supplies in Lake Cachuma. Cachuma entitlements were consistently below average, and member units took a zero allocation for WY 2016 due to prolonged drought, though the District was able to utilize carryover storage in that year. Allocations from the Cachuma Project was also limited in 2018, and the District chose to hold its Cachuma as carry-over supply that year. Decision-making about these changes is done by the member agencies in coordination with USBR. COMB implements the changes as directed by the member units. Lake supply planning occurs at an operational level and relies on the member agencies voluntary cooperation. The District's planning principles and water supply goals are representative of the other member agencies' planning principles and goals. That principle being that the District uses the resource responsibly with the goal to sustain it for indefinite future beneficial use for all of the member units.

Water stored in Lake Cachuma is also used to maintain and improve stream conditions in the Santa Ynez River downstream of the Bradbury Dam, in addition to providing water to member units. Water releases for fish from Bradbury Dam have occurred since 1993, with additional water releases from Lake Cachuma used to fulfill groundwater rights

agreements held by USBR. Effects of future water rights decisions on Cachuma Project yield have not been estimated by USBR or any other agency in Santa Barbara County (CVWD, 2005). Lake Cachuma occasionally spills at Bradbury Dam, on average about every three years. Spill water goes toward the ocean, and is used for river recharge, habitat and sediment management, and historically has not been available to the Cachuma member units, except for Santa Ynez ID No. 1 (previously a member unit, but not currently a member unit of COMB). During a spill event, the South Coast member agencies have the opportunity to take delivery of "surplus" water that is not charged to the agencies entitlement while the spill event is occurring.

When full, Lake Cachuma provides the member units with five to six years of water supply conditions at an annual consumption of approximately 27,000 AF in dry conditions. Other competing interests for water stored in Lake Cachuma include fish habitat and downstream water rights. In the event that lake levels are drawn down to less than 100,000 AF, the member units begin cutting back allocations by 20 percent each year in an effort to preserve the water supply.

The District's Cachuma Project annual allocation could decrease in the future due to a number of factors including but not limited to: sedimentation which reduces reservoir storage capacity, water rights, fish flow releases, and hydrologic conditions. Lake Cachuma had an initial storage capacity of 205,000 AF with a surface area of 3,090 in 1956. In 2004, COMB completed an improvement to Lake Cachuma spillway to increase storage by approximately 9,300 AF by extending the flash boards 3 feet to bring the maximum lake elevation from 750 feet above sea level to 753 feet above sea level. Objective of this project was to provide additional storage for downstream releases related to fish habitat and water rights. This additional storage capacity was put to use in the winter of 2004-2005 in which Lake Cachuma filled during a single extreme winter storm.

In 2013, an updated bathymetric survey was conducted that estimated Lake Cachuma's storage capacity has been reduced approximately 20,900 AF due to siltation, with a current capacity of 184,121 acre-feet at 750 MSL. However, this survey also estimated a storage capacity of 193,305 AF at the new full operating level of 753 MSL (Santa Barbara County, 2013). The August 2016 Ray Fire and the 2017 Whittier Fire, with burn areas located within the watershed, may have also increased the potential to introduce siltation into the reservoir during storm runoff (Santa Barbara County, 2021). The Cachuma Project dry water-year supply can be as low as 0 percent. For planning purposes, the District assumes an overall 50 percent delivery (i.e., 50 percent reduction) in Cachuma supplies from 2020 to 2045, reducing the District's allocation to approximately 1,407 AFY.

The District purchased an annual average of 1,594 AF from the Cachuma Project over the period 2016 to 2020. This amount represents 41 percent of the District's total water supplies. **Table 25** summarizes the Cachuma Project supplies received by the District for the period 2016 to 2020.

4.2.3 State Water Project

The SWP is the largest state-built, multi-purpose water project in the country. It was authorized by the California State Legislature in 1959, with the construction of most initial facilities completed by 1973. The SWP is owned by the State of California and operated by DWR. The primary purpose of the SWP is to deliver water to 29 urban and agricultural water suppliers in Northern California, San Francisco Bay Area, San Joaquin Valley, Central Coast, and Southern California, including 27 million users and 750,000 acres of farmland. Of the contracted water supply, approximately 70 percent goes to urban users and 30 percent goes to agricultural users.

SWP facilities originate in northern California at Lake Oroville on the Feather River.

Figure 13 illustrates the location of major SWP facilities. Storage released from Lake Oroville flows into the Feather River, goes downstream to its confluence with the Sacramento River, and then travels into the Sacramento-San Joaquin River Delta (Delta). Water is pumped from the Delta region to contractors in areas north and south of the San Francisco Bay and south of the Delta. SWP deliveries consist solely of untreated water. The SWP system currently spans more than 705 miles and consists of 700 miles of canals and pipelines, 36 storage facilities, 5 hydro-electric power plants, 4 pumping-generating plants, and 21 pumping plants (DWR, n.d.).

While some SWP supplies are pumped from the northern Delta into the North Bay Aqueduct, the vast majority of SWP supplies are pumped from the southern Delta into the 444-mile-long California Aqueduct. The California Aqueduct conveys water along the west side of the San Joaquin Valley to Edmonston Pumping Plant, where water is pumped over the Tehachapi Mountains and the aqueduct then divides into the East and West Branches. In addition to delivering water to its contractors, the SWP is operated to improve water quality in the Bay-Delta region, control flood waters, provide recreation, power generation, and environmental enhancement.

The SWP's Coastal Branch serves the San Luis Obispo and Santa Barbara counties. The Central Coast Water Authority (CCWA) was formed to finance, construct, manage, and operate the 42- mile extension of the SWP pipeline from Vandenberg to Lake Cachuma (see **Figure 14**). CCWA contracts with the Santa Barbara County Flood Control and Water Conservation District (SBCFC and WCD) for SWP water. The SBCFC and WCD is a SWP Contractor, and has a SWP allocation of 45,486 AFY, which is divided across eight member agencies and five other entities (collectively, the "CCWA Participants"). The District contracts directly with CCWA for its SWP allocation. Initially, the District sought an allocation of 2,700 AFY that was later scaled back to 2,000 AFY.

The District's allocation of 2,000 AFY was determined in 1991 when citizens within the District's service area, along with the other Central Coast water agencies, voted to participate in the SWP. A drought buffer of 200 AFY was added later for a total SWP allocation of 2,200 AFY. Estimates to support that level of allocation were based on the 1987 to 1991 drought conditions, and the rate of growth in the region at the time.

Figure 13: State Water Project Facilities

Figure 14: CCWA Facilities

The DWR 2019 "State Water Project Delivery Capability Report" (DCR) provides SWP contractors an assessment of the reliability of the SWP component of their overall supplies. “Water delivery reliability” is defined as the annual amount of water that can be expected to be delivered with a certain frequency. Water delivery reliability depends on three general factors: the availability of water, the ability to convey water to the desired point of delivery, and the magnitude of demand for the water. SWP delivery capability is calculated using computer simulations based on 82 years of historical data (1922 through 2003). DWR's 2019 DCR includes "Table A" which is each agencies contracted amount, along with an estimated projection of overall Statewide deliveries of imported surface water for the SWP contractors for the average water-year scenario, single dry water-year scenario, and multiple dry water-year scenario (DWR, 2020). Table A contract amounts do not reflect actual deliveries a contractor should expect to receive.

Contractors’ requests for SWP water deliveries cannot always be met. In some years, there are water shortages and water surpluses in other years. At the time that the SWP was constructed, it was thought that the system could deliver about 50 percent of the allocations in a very dry year. Deliveries for the 2009-2018 period averaged 1,871,000 AF (45 percent) for Table A allocations (DWR, 2019). In 2020, SWP contractors received 20 percent of their SWP allocations (DWR, 2021). For the period 2016-2020, SWP contractors received an average of 55 percent of their SWP allocations. The last 100 percent allocation, difficult to achieve even in wet years due to pumping restrictions to protect threatened and endangered fish, was in 2006.

The 2019 DCR (DWR, 2020) indicated that the SWP, using existing facilities operated under current regulatory and operational constraints and future anticipated conditions, and with all contractors requesting delivery of their full Table A allocations in most years, could deliver 58 percent of Table A allocations on a long-term average basis. However, in a single dry water-year (worst case scenario) DWR estimated delivery of an average of only 11 percent of Table A allocations. In a four-year drought scenario, the DWR estimated delivery of an average of 31 percent of Table A allocations.

DWR’s 2019 DCR (DWR, 2020) recognized continuing challenges to the ability of the SWP to deliver full contractual allocations of SWP water. Factors that affect the ability to estimate existing and future SWP water delivery reliability include, but are not limited to, the following:

- Restrictions on SWP and Central Valley Project (CVP) operations due to ongoing regulatory restrictions aimed at protecting the estuary’s endangered and threatened fish species;
- Climate change which poses the threat of increased variability of floods and drought, as well as sea level rise;
- Vulnerability of Delta islands, many of which are already below sea level, to continued subsidence;
- Vulnerability of Delta levees to failure due to water pressure increases, floods, and earthquakes on fragile levees.

While increased uses for the SWP pipeline capacity are being found for wheeling water, the SWP allocation may not always provide sufficient drought protection. The District often elects to not receive SWP water in normal, wet, and dry years by not using its full SWP allocation.

Water from the SWP has been available to the District since 1995. As shown in **Table 22**, actual SWP water deliveries to the District in 2020 were 0 AF. For the period 2016-2020, SWP water provided approximately 854 AFY, or 22 percent, of the District’s water supplies.

4.2.4 Additional Existing Water Supply Projects

Currently the District relies on three sources of supply to meet water demand in its service area. These include: local groundwater, Cachuma Project, and SWP. Additionally, the District will periodically purchase or exchange water from neighboring water purveyors, participate in groundwater banking, and is currently developing aquifer storage and recovery (ASR) and potable reuse programs (see Section 4.4 for future supply discussion). The District anticipates sufficient supply to meet demand for the next 25 years under normal water supply and water demand conditions. Current District Capital Improvement Projects relate to reliability and water quality issues, rather than supply.

The District currently participates in two "out of District storage programs". The first program includes a cooperative arrangement for groundwater banking called "Short-Term Water Storage Partnership" (Rosedale-Rio Bravo Water Storage District and Irvine Ranch Water District), which the District has participated in since 2008. This program involves storage of SWP water in the groundwater basins managed by the Rosedale-Rio Bravo Water Storage District. The second program involves the District temporarily storing SWP carryover water in San Luis Reservoir. The groundwater banking program and storage in San Luis Reservoir are two programs made available to increase overall SWP supply reliability. Currently, the District has approximately 560 AF of deliverable water stored in these two out of District storage programs. Implementation of a portion of these arrangements, or any future potential water storage or banking arrangements, can reasonably be expected to provide up to 1,000 AF of supply in future dry years, and the District anticipates increasing this out of District storage amount between 2021 and 2045.

4.2.5 Sales, Transfers, and Exchanges

The District is not a wholesaler and in general does not sell water to other agencies. The District infrequently sells, transfers, and/or exchanges water with other agencies. For example, it sold 250 AF in 2004 to Montecito Water District as a one-year contract. This water was sold to Montecito Water District prior to entering the District's distribution system.

The District also participates regularly in a SWP exchange program with ID #1, located downstream of Lake Cachuma. Under the exchange program, the District typically purchases approximately 400 AF of SWP and supplies it to ID #1 for its use. In exchange, ID #1 supplies an equal amount of Lake Cachuma water to the District. This exchange eliminates the need to pump SWP water into Lake Cachuma and the retreatment of this water prior to use, thereby lowering the overall cost to both parties.

In addition, the District can receive water from the Casitas Municipal Water District (CMWD), which is able to provide surface water from Lake Casitas via an 8-inch piped connection between CMWD's and the District's systems. If more flow is required than the capacity of the existing 8-inch pipeline can deliver, as was the case in 1987 to 1991 drought, then an overland pipe can be installed to convey the additional flow. An emergency water exchange agreement remains in place with CMWD. For this reason, the District has considered this a limited potential water supply. The District also receives CMWD water for sale to CMWD customers adjacent to the District service area. CMWD, the Central Coast Water Authority, and the District are currently collaborating to implement the Ventura-Santa Barbara Counties Intertie Project (also known as the Casitas Intertie Project). The Project will construct 6,000 feet of bi-direction pipeline and two pump stations to convey water from the District to CMWD. Preliminary design and environmental documentation have been completed, and full design is currently underway. The project would provide a direct connection for delivery of imported water, with an estimated average yield of approximately 2,000 AFY over a period of four months. The Project is anticipated to be online by 2023.

4.3 WATER QUALITY OF EXISTING WATER SUPPLIES

The District has both surface water and groundwater sources which present very different water quality issues. Surface water comes from the SWP, which originates at the Sacramento-San Joaquin Delta, and from Lake Cachuma, which originates from the Santa Ynez River watershed. Groundwater is locally produced from the Cachuma Groundwater

Basin via District wells. The District meets all water quality requirements of the California Division of Drinking Water (CADDW, formerly Department of Public Health). A copy of the 2020 Consumer Confidence Report (CCR) is provided in **Appendix I**. Details for the District's water quality monitoring program are provided in **Appendix I.**

4.3.1 Groundwater

The District extracts local groundwater from the Carpinteria Groundwater Basin. No known contamination issues exist with respect to the groundwater supply. Manganese arises as a secondary water quality concern for groundwater, and this is controlled via a treatment system. Groundwater is also used to blend with the imported supplies to reduce disinfection by-products. The District has no known water quality violations with respect to groundwater extractions. A copy of the current CCR is provided in **Appendix I**. Details for the District's water quality monitoring program are provided in **Appendix I.**

4.3.2 Surface Water (Cachuma and SWP Supplies)

The source of SWP water is rain and snow from the Sierra Nevada, Cascade, and Coastal mountain ranges. SWP water is delivered to Lake Cachuma where is it stored when purchased by the District, where it then travels to the District via the SCC. There are two WTPs along the SCC: Corona Del Mar and Cater. The Cater WTP treats all Cachuma water delivered to the District . Water treated at this plant can be drawn directly from the SCC or from Lauro Reservoir. Water in the SCC comes directly from Lake Cachuma via the Tecolote Tunnel. Normal operation for the Cater WTP is to draw water from the Lauro Reservoir.

Periods of intense rainfall or snowmelt can cause changes in surface water movement and affect surface water quality. Surface runoff can result in the mobilization of new contaminants that then enter surface water bodies, while other constituents may be reduced or eliminated. Water quality at Lake Cachuma is impacted by seasonal mixing and stratification and by biological activity, especially algae blooms. Water quality issues of concern that affect SWP water held in surface reservoirs and in Lake Cachuma include: total organic carbon, taste and odor, color, bacteriological, and disinfection byproducts. These issues are typical of surface waters in California and resolved via treatment modifications. The District has no known water quality violations with respect to surface water sources. A copy of the 2020 CCR is provided in **Appendix I**. Details for the District's water quality monitoring program are provided in **Appendix I.**

4.4 FUTURE WATER SUPPLIES

A variety of existing water sources will be used by the District to meet water demands for the period 2025 to 2045 including local groundwater, local surface water from Cachuma Lake, imported surface water from the SWP, and potable reuse via the Carpinteria Advanced Purification Project (CAPP). The District may consider potential additional water supplies and/or management actions be implemented including, but not limited to, the following: increased groundwater production, participation in banking projects, conjunctive use, use of recycled water, groundwater and ocean desalination, participation in SWP allocation transfers, maximize use of and or purchase additional surface water rights, transfer or exchange of water rights, and additional support for water demand management programs (see **Section 7**). The following sections summarize future water supply programs that could be used to meet future water demands and increase the quantity and reliability of the District's water supplies.

Table 26 summarizes the projected maximum available water supplies for the period 2025 to 2045 to meet water demands within the District service area (also see **Appendix D, Table 6-9**). Projected maximum available water supplies for the period 2025 to 204 will be approximately 5,446 AFY, however this total is not sustainable. Potential maximum short-term extraction of groundwater by the District is 3,000 AFY, while the long-term average (sustainable-yield) will be approximately 1,200 AFY. The District's maximum local surface water allocation from the Cachuma Project is currently 2,813 AFY, while the District understands that future deliveries will be less than the maximum allocation.

Maximum allocation from the SWP is 2,200 AFY (including 200 AF of drought buffer), while the District understands that future deliveries will be less than the maximum allocation. Each of these water supplies is described in detail in subsequent sections.

Table 26: Projected Maximum Available Water Supplies 2025-2045 (Single Normal WY)

Water Supplies (AFY)	2025	2030	2035	2040	2045
Groundwater[1]	2,839	2,839	2,839	2,839	2,839
Cachuma Project[2]	2,110	2,110	2,110	2,110	2,110
State Water Project[3]	1,800	1,800	1,800	1,800	1,800
Recycled Water[4]	0	1,000	1,000	1,000	1,000
Desalination	0	0	0	0	0
Exchanges[5]	400	400	400	400	400
Other[6]	0	0	0	0	0
Total	**7,149**	**8,149**	**8,149**	**8,149**	**8,149**

Source: CVWD, 2021a. All values rounded.
Notes:
(1) District pumping can be increased up to the operational yield of 3,000 AFY to offset demands. District anticipates a conservative estimate of long-term average for pumping is approximately 1,200 AFY which is consistent with the Basin sustainable-yield; current annual average District groundwater pumping is approximately 1,500 AFY (1984-2020) (McDonald, 2020).
(2) The District's current maximum allocation is 2,813 AFY. However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using of a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045.
(3) District current maximum allocation is 2,200 AFY (includes 200 AFY drought buffer program). The projected value of 1,800 AF reflects the total allocation (2,200) minus the ID#1 exchange volume of 400 AF.
(4) District is currently evaluating potential long-term use of recycling water for potable reuse (CVWD, 2016). Conservative estimate assumes recycled water available starting 2030 (McDonald, 2020).
(5) District approved up to 400 AF of SWP water for exchange with ID#1 (McDonald, 2020).
(6) District has banked and utilized 1,000 AFY of SWP water. District anticipates utilizing banking programs again between 2021 and 2040 (McDonald, 2020).

Table 27 summarizes the projected long-term available water supplies for the period 2025 to 2045 to meet normal water-year demands within the District service area (also see **Appendix D, Table 6-9**). Projected long-term available water supplies for the period 2025 to 2045 will be approximately 5,446 AFY. **Table 27** indicates that the District's projected conservative long-term groundwater extractions are anticipated to be approximately 1,200 AFY (consistent with Basin sustainable-yield). It is anticipated that groundwater extractions will be approximately 22 percent of the District's total water supplies from 2025 to 2045. The District's projected long- term available deliveries of local surface water from the Cachuma Project are anticipated to be approximately 1,970 AFY (including conservative estimate of average annual delivery of 70 percent of allocation due to sedimentation in the lake, releases for fish species, and downstream water rights). It is anticipated that surface water from the Cachuma Project will be approximately 36 percent of the District's total water supplies from 2025 to 2045. The District's projected long- term available deliveries from the SWP are anticipated to be approximately 1,250 AFY (including conservative estimate of average annual delivery of 58 percent of allocation) with approximately 400 AFY exchanged with ID #1. It is anticipated that SWP water will be approximately 16 percent of the District's total water supplies from 2025 to 2045.

As summarized in **Section 3**, District total water demands are anticipated to increase to approximately 4,530 AFY by 2045. Therefore, projected available water supplies are anticipated to be sufficient to reliably meet future water

demands under normal water-year conditions. Additional details for the comparison of water supplies and water demands are provided in **Section 5**.

4.4.1 Groundwater

As summarized in **Section 4.2.1**, the District extracts water from the Carpinteria Groundwater Basin. The District anticipates that pumping will average approximately 1,200 AFY in 2025 to 2045 (see **Table 27** for details; also see **Appendix D, Table 6-9**). The District anticipates that the 1,200 AFY of extractions will be approximately 30 percent of the current Basin sustainable yield. It is anticipated that District local groundwater extractions will be approximately 21 percent of the District's long-term available water supplies from 2025 to 2045.

As the District moves forward with the planning of its capital improvements, the focus has been on creating a flexible, reliable, and robust water system focused on reliability and water quality. Among the improvements, the District is currently exploring the feasibility of an aquifer storage and recovery (ASR) program. The District has completed a new production/injection well, installed covers on surface reservoirs to protect water quality, and completed a new 3 million gallon storage tank to provide additional finished water storage.

Conjunctive use of the Carpinteria Groundwater Basin would potentially allow local storage of excess water, such as spill water from Lake Cachuma that would normally be lost, to recharge the Basin via ASR. Additionally, use of the groundwater in excess of the annual basin yield during dry periods is being considered to extend the surface water supply through drought periods. The District's future groundwater use will comply with the 2024 GSP.

4.4.2 Cachuma Project

As summarized in **Section 4.2.2**, the District currently has a maximum allocation of approximately 2,813 AFY of Lake Cachuma surface water rights (see **Table 27** for details; also see **Appendix D, Table 6-9**). However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045. It is anticipated that surface water from the Cachuma Project will be approximately 38 percent of the District's long-term available water supplies from 2025 to 2045. In addition, the District will continue to access Cachuma Project carryover water to supplement the existing allocation.

Table 27: Projected Long Term Available Water Supplies 2020-2040

Water Supplies (AFY)	Projected 2020	Projected 2025	Projected 2030	Projected 2035	Projected 2040
Groundwater[1]	1,200	1,200	1,200	1,200	1,200
Cachuma Project[2]	2,110	2,110	2,110	2,110	2,110
State Water Project[3]	876	876	876	876	876
Recycled Water[4]	0	1,000	1,000	1,000	1,000
Desalination	0	0	0	0	0
Transfers or Exchanges In/Out[5]	400	400	400	400	400
Other[6]	0	0	0	0	0
Total	**4,586**	**5,586**	**5,586**	**5,586**	**5,586**

Source: CVWD, 2020. All values rounded.
Notes:
District supplies in a single normal water-year (assuming sustainable management of each supply)
(1) Conservative estimate of long-term average for District pumping is approximately 1,200 AFY which is consistent with the Basin sustainable-yield; current annual average District groundwater pumping is approximately 1,500 AFY (1984-2020); pumping can be increased up to the District's operational yield (3,000 AFY) to offset demands (McDonald, 2020).
(2) The District's current maximum allocation is 2,813 AFY. However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using of a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045.
(3) District's conservative long-term planning estimate assumes delivery of 1,276 AFY (58 percent delivery of 2,200 AFY allocation) of SWP Table A water with 400 AFY exchanged with the ID #1 (McDonald, 2020; DWR, 2020)
(4) District is currently evaluating potential long-term use of recycled water. Conservative estimate assumes recycled water available starting in 2030.
(5) District approved up to 400 AF of SWP water for exchange with ID #1 for Cachuma Project water.
(6) District has banked and utilized 1,000 AFY of SWP water in the past. However, the District does not anticipate utilizing banking programs again between 2021 and 2045 in a single normal water-year).

4.4.3 State Water Project

As summarized in **Section 4.2.3**, the District currently has a maximum allocation of approximately 2,200 AFY of SWP water (see **Table 26** for details; also see **Appendix D, Table 6-9**). A conservative long-term normal water-year planning estimate projects delivery of 1,200 AFY of SWP water (based on 58 percent delivery of Table A water; DWR, 2020). The District anticipates direct delivery of 876 AFY (16 percent of future supplies) of SWP water and 400 AF (7 percent of future supplies) of SWP water exchanged with ID #1 from 2025 to 2045. As noted in **Section 4.2.3**, the District typically purchases 300 to 400 AFY of SWP and supplies it to ID #1 for its use. In exchange, ID #1 provides an equal volume of Lake Cachuma water to the District. See **Section 4.4.6** for additional details. In addition, the District will continue to access SWP carryover water and suspended Table A SWP water to supplement the existing SWP allocation.

Availability of SWP water, particularly during summer months and periods of prolonged drought, and water quality considerations may restrict the District's access to SWP water.

As previously noted, the District currently participates in two "out of District" storage programs including storing SWP water in Rosedale-Rio Bravo Water Storage District groundwater basins and storing SWP water in San Luis Reservoir. Currently, the District has approximately 560 AF of deliverable water stored in these two out of District storage programs. Implementation of a portion of these arrangements, or any future potential water storage or banking

arrangements, can reasonably be expected to provide up to 1,000 AF of supply in future dry years, and the District anticipates increasing this out of District storage amount between 2021 and 2045.

For the purposes of this UWMP, the District does not anticipate pursuing additional SWP water allocations to supplement future water supplies. However, this does not restrict the District's future efforts to pursue additional surface water supplies to supplement existing groundwater production.

4.4.4 Carpinteria Groundwater Bank

Since CVWD is reliant on groundwater, any discussion of water reliability strategies should include discussion of greater use of groundwater storage and conjunctive use management of the Carpinteria Basin. Direct recharge, in-lieu recharge, and ASR can be used in the deposit or "put" side of a water bank operation, and existing and new wells can be used for the withdrawal or "take" operations. Increased recharge of local creeks or recycled water could enhance the amount of water that can later be extracted.

For initial estimates of storage quantities for a groundwater bank, the District could consider obtaining 6,300 AF of storage, based on 5 percent storage losses over five years, and a storage account to accommodate six drought years. A water bank of this size would accommodate a similar period as the DWR-defined six-year drought of 1987 to 1992 (DWR, 2000). An additional storage buffer could be added for a typical water bank mechanism for reducing rapid changes in the storage account's groundwater levels that limit withdrawals to one-third the storage account.

A water-banking program would need evaluation of the Basin response if it is stressed to a greater degree than has occurred historically. Groundwater modeling and well pumping tests would be needed to test for subsidence, seawater intrusion, or other potential effects of increasing use of the Carpinteria Basin.

Extraction Options

A local water bank could be used by the District, but would need cooperation by users of private wells in the Basin. During normal and wet years, well owners would receive the benefit of higher groundwater levels and reduced pumping costs. In drought years, the groundwater levels would be drawn down, and water levels could drop to historic lows. Extraction limits would need to be determined to avoid negative effects of subsidence, having water levels below well pump intakes, or levels that allow for sea water intrusion. Further modeling and aquifer testing would be needed to determine how water levels would respond over a series of years. The bank would have the potential to be expanded to allow for use by other nearby entities during a drought if this option makes sense to the Basin users.

Recharge Options

Groundwater storage and banking projects generally have rules of operation, whereby an agency can "rent" storage space in a groundwater basin. In-lieu recharge, in conjunction with Lake Cachuma and SWP deliveries, presents an opportunity for groundwater banking. When surplus water is available from the SWP or Lake Cachuma (due to spill events or high carryovers), the District could reduce its well production and use the surplus surface water to meet demands. In this manner, low-cost surplus surface water is used 'in-lieu' of using the groundwater, causing a net recharge of the groundwater. Withholding use of the groundwater resource prolongs the availability of the basin yield and may allow the District to increase its extractions of water from the basin to enhance dry year reliability during drought conditions.

Other direct recharge methods are also available including recharge along the creek beds, and ASR. ASR is the practice of injecting water in a well during times when water is available, and recovery of the water from the same well during times when it is needed. ASR, as a water supply management option, allows for storing water during times of flood, surplus, or when water quality is good, and recovering it later during emergencies or times of water shortage, or

when water quality from the source would otherwise be poor. Large water volumes are stored deep underground, reducing or eliminating the need to construct large and expensive surface reservoirs. ASR has the additional advantage of being easily measurable. The District has analyzed ASR in several previous investigations to enhance groundwater recharge and if needed, protect the aquifer from seawater intrusion.

As described in **Section 4.2.1**, the Carpinteria Basin GSP, anticipated in 2024, will provide an extensive analysis of the impacts of groundwater use on the projected water budget, sustainable management criteria, and projects and management actions such as groundwater banking. The GSP is being developed in collaboration with agriculture/growers and other possible stakeholders. The analyses will serve to better quantify how much the Carpinteria Basin could be used for all the stakeholders, and, to test various projects and management actions. The District plans to formally evaluate groundwater banking in the Carpinteria Basin.

4.4.5 Desalinated Water

With population growth and the recent prolonged drought contributing to an increase in Californians' concerns about water scarcity, several communities and industries in California are looking towards desalination plants to convert saline water (e.g., seawater, brackish water or treated wastewater) into fresh water. Use of desalinated water could aid in offsetting the District's reliance on their other available water supplies during drought periods and allow for their more efficient management. Additionally, use of desalinated water could be used to improve water quality of new and existing potable water supplies.

Seawater desalination options potentially available to the District include:

- Construct a new seawater desalination facility within or adjacent to the District's service area
- Participate in the City of Santa Barbara's desalination project
- Participate in a desalination facility outside of Santa Barbara County and receive water by exchange.

The City of Santa Barbara reactivated the Charles E. Meyer Desalination Plant in 2017 in response to the recent historic drought. The plant can provide a supply of up to 3,125 AFY (City of Santa Barbara, 2021). At present, the District does not plan to purchase water from the City of Santa Barbara ocean desalination facility because costs of the desalinated water exceed costs of the District's other water supplies. The District does not currently have plans to construct a desalination treatment plant nor purchase desalinated water from any agency.

4.4.6 Sales, Transfers, and Exchange Opportunities

Water Transfers

The District has considered the idea of banking water or exchanging water with other purveyors, but, to date, such measures have not been planned. The District reviews its customer base demand, District population growth, and economic changes annually to determine if additional water supplies need to be acquired. The District is currently exploring options for the use of a groundwater bank located outside of the County. However, an agreement is not in place at this time. The District will continue to assess its future supply needs and if necessary will explore water banking and/or exchange possibilities.

Water Exchanges

As described in **Section 4.2.5**, the District also participates regularly in a SWP exchange program with ID #1, located downstream of Lake Cachuma. Under the exchange program, the District typically purchases 300 to 400 AFY of SWP and supplies it to ID #1 for its use. In exchange, ID #1 provides an equal amount of Lake Cachuma water to the District. The District anticipates continuing this program through 2045 (see **Table 27** for details; also see **Appendix D, Table**

6-9). It is anticipated that SWP/Cachuma water exchange with ID #1 will be approximately 7 percent of the District's long-term available water supplies from 2025 to 2045.

Casitas Municipal Water District

During the 1987 to 1991 drought, the District and other Cachuma project members made use of water from Casitas Lake (managed by CMWD) in Ventura County. Although the drought affected CMWD supply, they still had excess water to sell to water purveyors in Santa Barbara County. An 8-inch pipeline exists between the CMWD and the District systems. As described in **Section 4.2.5**, the District is collaborating with CMWD to implement the Ventura-Santa Barbara Counties Intertie Project by 2023. An emergency water exchange agreement remains in place. For this reason, the District has considered this a limited potential water supply.

4.4.7 Recycled Water

Acceptable uses of recycled water include irrigating crops, parks, and golf courses, as well as water needed for groundwater recharge, industrial processes, power plants, firefighting, and other similar uses, depending on quality of the recycled water. The District does not currently produce or use recycled water. The District is in the process of implementing a potable reuse project to meet future water demands and is not currently considering development of non-potable recycled water supplies. Increased use of recycled water for non-potable uses could reduce the District's reliance on SWP and Lake Cachuma supplies and reduce use of local groundwater supplies. The District intends to maximize the volume of recycled water for potable reuse, and therefore is not planning to produce non-potable recycled water in the future. No additional actions will be necessary to fully use the recycled water for potable reuse, as it will contribute to meeting existing and projected potable demands.

Potential issues associated with the use of recycled water include:

- Water quality as it relates to the end use; suitability for irrigation of agricultural or public park lands, groundwater recharge, or other reuse
- Regulatory requirements associated with the end use and the public's contact with the recycled water
- Cost for additional treatment beyond what the wastewater treatment plant already required to provide.

Wastewater Treatment

The District does not collect or treat wastewater. Wastewater within the District's service area is collected and treated by Carpinteria Sanitary District (CSD). The collection system covers most of the City of Carpinteria and some outlying areas of unincorporated County of Santa Barbara. The collection system consists of approximately 42 miles of piping. In 2017, CSD served approximately 6,683 customer connections, of which approximately 6,158 were residential and 525 were non-residential (CSD, 2017). Estimated maximum peak flow of the collection system is 6.5 MGD, peaking for a period of 20 minutes. Peak flows occurring during heavy rainfall are likely attributable to infiltration and intrusion flows.

The CSD Wastewater Treatment Plant (WWTP) is located on a low-lying section of an alluvial deposit adjacent to Carpinteria Creek. Plant Capacity is 2.5 MGD with treatment meeting secondary standards. Treated water is disposed via an ocean outfall located 1,000 feet out from the treatment plant. Average inflow to the plant is approximately 1.12 MGD (see **Appendix D, Table 6-2**).

In 2016, the District partnered with CSD and the City of Carpinteria to develop a Recycled Water Facilities Plan for the District's service area to evaluate recycled water use alternatives to serve municipal, agricultural, and groundwater recharge uses.

The District intends to implement the CAPP to reuse wastewater that currently flows to the ocean. The CAPP is an indirect potable reuse project that involves taking water that has already been cleaned at the CSD WWTP, purifying it in a newly-constructed Advanced Water Purification Facility, then delivering it through a pipeline to injection wells for storage in the Carpinteria Groundwater Basin. The project could ultimately provide approximately 1,000 AFY for storage in the Carpinteria Groundwater Basin, up to 25 percent of the District's water supply, creating a locally-controlled, drought resistant drinking water supply. CAPP is anticipated to be online by 2025 (CVWD and CSD, n.d.).

Existing Recycled Water Supplies and Demands

Currently only localized recycled water systems exist, and the District does not supply recycled water. Those are located in privately owned agricultural greenhouse operations and at the CSD. It is unknown to what degree greenhouse operators are using recycled water, but it does appear that recycled systems are common within that industry. CSD uses recycled water on the WWTP premises for treatment processes and some landscape irrigation.

The CSD WWTP is currently permitted to discharge secondary-23 recycled water. Secondary-23 means the water has been oxidized and disinfected so that the median concentration of total coliform bacteria does not exceed a Most Probable Number (MPN) of 23 per 100 milliliters (ml) and the single day maximum does not exceed a MPN of 240 per 100 ml in any 30-day period.

Future Recycled Water Supplies and Demands

As previously described, the District's CAPP is anticipated to be online by 2025. Future advanced purified recycled water local production from the CAPP is anticipated to be 1,000 AF per year from 2026 to 2045 (see **Table 28**). Commitments for future recycled water local demands are 1,000 AF per year for groundwater recharge (see **Table 29**; also see **Appendix D, Table 6-4**).

Table 28: Projected Recycled Water Production 2025-2040

Production (AFY)	2025	2030	2035	2040	2045
Carpinteria Sanitary District[1]	0	1,000	1,000	1,000	1,000

Source: CVWD and CSD, N.d.
Notes:
1. Conservative estimate assumes CAPP will be online by 2026.

Table 29: Projected Recycled Water Demand 2025-2040

Demand by User Type (AFY)[1]	2025	2030	2035	2040	2045
Agriculture	0	0	0	0	0
Landscape	0	0	0	0	0
Wildlife Habitat	0	0	0	0	0
Wetlands	0	0	0	0	0
Industrial	0	0	0	0	0
Groundwater Recharge	0	1,000	1,000	1,000	1,000
Other	0	0	0	0	0
Total	**0**	**1,000**	**1,000**	**1,000**	**1,000**

Source: CVWD and CSD, N.d.
Notes:
1. Conservative estimate assumes CAPP will be online by 2026.

4.5 WATER QUALITY OF FUTURE WATER SUPPLIES

The District plans to continue to use both groundwater sources and surface water sources as the primary sources of water supply through 2045 (see **Table 22**). As previously noted in **Section 4.3**, each of these supplies has very different water quality issues. The District does not anticipate additional water quality concerns above and beyond those defined in **Section 4.3**. A copy of the current CCR is provided in **Appendix I**.

4.6 ENERGY

Water production and movement is a significant energy demand within the State and within the Carpinteria Valley. In 2019, the District developed a Draft Climate Action Plan (CAP) to provide an inventory the current energy intensity and corresponding greenhouse gas (GHG) emissions associated with District operations. Although the CAP relies on some estimates of GHG production, the District used the best available information in order to estimate its water services' operational energy intensity (CVWD, 2019a). Operational energy intensity is defined as the total amount of energy expended by the District on a per acre-foot basis to take water from where the District acquires water to its point of delivery to customers. Energy intensity reporting offers several benefits to the District and its customers, including identifying energy savings opportunities, calculating GHG emission reductions associated with the District's water conservation program, and identifying potential opportunities for receiving energy efficiency funding. The energy required for conveyance, treatment, extraction, and distribution of water is described below.

4.6.1 Conveyance

Conveyance is the energy associated with moving water from water supplies to water treatment plants or distribution systems. For the purposes of this UWMP, conveyance is the movement of water via the Shepard Mesa Pump Station to the service area. During fiscal year (FY) 2019, the Shepard Mesa Pump Station used an average of 353 kWh per AF (CVWD, 2019a). Assuming this energy intensity remained consistent in calendar year 2020, the energy used to convey 129 AF via the Shepard Mesa Pump Station is estimated at 45,528 kWh.

4.6.2 Treatment

The District relies on the City of Santa Barbara to treat water arriving from Lake Cachuma at the Cater Treatment Plant. Because the Carter Treatment Plant is located in the City of Santa Barbara and under the City of Santa Barbara's operational control, the plant's energy consumption is already reflected in the City of Santa Barbara's UWMP and is not included here. The District does provided some treatment at wellheads and its reservoirs, primarily for iron and manganese. The District estimates that it treated 4,899 AF of water in 2020, with pumped groundwater treated twice, once at the wellhead and once at the reservoir. Because the treatment is relatively minimal, the District estimates that 5 percent of the energy used at the wells and reservoirs are associated with this on-site treatment. Total energy for this treatment in 2020 is estimated at 87,881 kWh, for an energy intensity of 18 kWh per AF.

4.6.3 Extraction

Extraction is the energy required to pump water from groundwater basins. The District currently pumps water from the Carpinteria Water Basin. In FY 2019, the District wells used an average of 784 kWh per AF. Assuming this energy intensity remained consistent in calendar year 2020, the energy used to pump the 794 AF of groundwater from the District's wells is estimated at 622,814 kWh.

4.6.4 Distribution

Once water is either treated or pumped, it is distributed to customers. In order to distribute to all customers and maintain system pressure, various pumps, reservoirs, and other facilities are necessary. In FY 2019, the District's distribution

system used an average of 164 kWh per AF. Assuming this energy intensity remained consistent in calendar year 2020, the energy required to distribute water to customers in 2020 totaled 674,965 kWh for the 4,105 AF of potable water delivered.

Table 30 provides a summary of the energy intensity of the District's water management processes and **Table 31** provides a summary of total energy intensity of water supplies. In total, the District's water deliveries are estimated to have an energy intensity of 349 kWh per AF.

Table 30: Energy Intensity by Water Management Process

Reporting Period: 1/1/2020 to 12/31/2020	Water Management Process				Total Utility
	Extract and Divert	Conveyance	Treatment	Distribution	
Volume of Water Entering Process (AF)	794	129	4,899	4,105	
Retail Potable Deliveries (%)	100%	100%	100%	100%	
Retail Non-Potable Deliveries (%)	0%	0%	0%	0%	
Total Percentage	100%	100%	100%	100%	
Energy Consumed (kWh)	622,814	45,528	87,881	674,965	1,431,188
Energy Intensity (kWh per AF)	**784**	**353**	**18**	**164**	**N/A**

Table 31: Total Energy Intensity

Water Delivery Type	Production Volume (AF)	Total Utility (kWh/AF)
Retail Potable Deliveries	4,105	349
Retail Non-Potable Deliveries	0	0
All Water Delivery Types	**4,105**	**349**

4.7 CLIMATE CHANGE

4.7.1 Introduction

Current climate change projections suggest that California will continue to enjoy a Mediterranean climate with the typical seasonal pattern of relatively cool and wet winters and hot, dry summers. However, climate patterns are different now and may continue to change at an accelerated pace. Increased global GHG emissions are leading to serious consequences for California, including, but not limited to higher air and water temperatures, rising sea levels, variable precipitation patterns, increased wildfires, increased droughts and floods, decreased amount and duration of snowpack, and extreme variability in weather patterns (CVWD, 2019a; DWR, 2013a; CANRA, 2009). These changes are anticipated to intensify over the 20-year planning horizon of this Assessment. Even if all emissions of GHG ceased today, some of these developments would be unavoidable because of the increase in GHG recorded over the last 100 years and the fact that the climate system changes slowly (PPIC, 2011). Many of these climate changes would affect the availability, volume, and quality of California water supplies.

In an effort to reduce the District's GHG emissions and mitigate climate change impacts, the District developed the Draft CAP in 2019 to estimate the District's current GHG emissions and establish strategies for reduction of these emissions. The CAP sets realistic and achievable goals that can help achieve local, regional, and State GHG reduction targets.

4.7.2 Potential Impacts of Climate Change

State and local water supplies and water demands may be impacted by climate change via one or more processes, including rising temperatures; increased precipitation, runoff, flood, and drought variability; rising sea levels; and increased wildfires. By 2050, temperatures in California are anticipated to be 2.7° Fahrenheit higher than 2000 levels. As global temperatures increase, it is anticipated that existing patterns of precipitation will change as well. Although models do not predict an overall net decrease in precipitation, the frequency and variability of severe storm events may increase, leading to more frequent droughts and floods. Runoff from the Sierra Nevada snowpack is also anticipated to occur earlier and be more unpredictable (Cal-Adopt, 2019). This change in runoff could affect availability of spring and summer snowmelt from mountain areas, including SWP water from the Sacramento Delta and local rivers and streams. Sustained long-term increases in temperature will likely diminish the overall volume of the Sierra snowpack over the century, reducing the availability of water for many parts of the State, including Carpinteria. Supplies from the SWP are also expected to decrease, with long-term allocations averaging approximately 60 percent (DWR, 2019).

Sea levels have risen by as much as 7 inches along the California coast over the last century (County of San Diego, 2017). According to some estimates, sea level is projected to rise an additional 10 to 18 inches by 2050 and between 30 and 60 inches by 2100 (CEC, 2012). These sea level increases could significantly impact infrastructure within coastal areas and affect quantity and timing of SWP water exports from the Sacramento Delta. Effects of sea level rise in the Delta would be two-fold: (1) problems with weak levees protecting the low-lying land, many already below sea level; and (2) increased salinity intrusion from the ocean which could degrade fresh water transfer supplies pumped at the southern edge of the Delta or require more fresh water releases to repel ocean salinity. The entire 110-mile coastline in Santa Barbara County is vulnerable to sea level rise. In Santa Barbara County, tidal gauge station 9411340 has shown a gradual increase of approximately 1.25 millimeters (mm) per year (approximately 1.8 inches) since measurements began in 1973 (NOAA, 2011). Modeling projections anticipate that some areas of coastline in Carpinteria may be susceptible to up to 60 inches of sea level rise by 2100 (NOAA, 2019).

Increased temperatures associated with climate change are expected to alter the distribution and composition of natural vegetation and soils and vegetation moisture content. This has the potential to increase fire risk in the Carpinteria Valley (CVWD, 2019a). Critical infrastructure in the service area that may be susceptible to increased wildfires include, but is not limited to, reservoirs, pump stations, storage tanks, and meters and AMI equipment.

In the CADWR Water Plan (DWR, 2013a), an assessment of the impacts of global climate change on the State's water supply was conducted using a series of computer models based on decades of scientific research. Model results for California indicate a significant likelihood of increased temperature, reduction in Sierra snow depth, early snow melt, and a rise in sea level. These changing hydrological conditions could affect future planning efforts which are typically based on historic conditions. Difficulties in statewide water supply planning that may arise include, but are not limited to, the following:

- hydrological conditions, variability, and extremes that are different than what current water systems were designed to manage.
- changes occurring too rapidly to allow sufficient time and information to permit managers to respond appropriately.
- special efforts or plans to protect against surprises and uncertainties.

Over time, impacts associated with climate change can result in reduced water availability, loss of economic vitality and impact human health and welfare in the District's service area. The Draft CAP includes a climate change vulnerability assessment to identify the District's resources and infrastructure that can be adversely affected by climate change (CVWD, 2019b). Vulnerabilities in the District's service area as a result of climate change include, but are not limited to, the following:

- changes in frequency and duration of drought and heat events;
- increased sea levels and inundation of low-lying coastal areas;
- alteration in the pattern and severity of precipitation;
- increased wildfire activity.

4.7.3 Potential Effects of Climate Change on Water Demand

Climate change may increase daytime and nighttime temperatures and seasonal temperatures. This change may impact the length of the growing season. This general increase in temperatures coupled with greater variability and unpredictability in precipitation is expected to lead to increases in evapotranspiration resulting from warmer seasons; thereby creating an increase in demand for irrigation water and an increase in the year-to-year variability of demand.

Temperate fruit and nut trees such as almonds, pistachios, and apples require adequate winter chill to produce economically viable yields. Increased temperatures daytime, nighttime, and season temperatures may reduce winter chill hours thereby causing adverse effects on the yield of some crops. Some farmers are beginning to overcome this change by planting trees closer together and using new varieties.

Studies are now underway to prepare farmers for the likely impacts of climate change. Such efforts include breeding varieties of fruit trees which can withstand the decreased water chill hours, developing tools to aid the crops in coping with insufficient chill, and researching the temperature responses of particular orchard crops to better understand potential long-term effects. However, some solutions such as replanting orchards with altered crop varieties or the installation of aiding tools may not be feasible for many irrigators.

4.7.4 Mitigation and Adaptation

Responding to climate change generally takes two forms: mitigation and adaptation. Mitigation is taking steps to reduce human contribution to the causes of climate change by reducing GHG emissions. Adaptation is the process of responding to the effects of climate change by modifying our systems and behaviors to function in a warmer climate (DWR, 2013a).

In the water sector, climate change mitigation is generally achieved by reducing energy use, becoming more efficient with energy use, and/or substituting renewable energy sources in place of fossil fuel-based energy sources. Because water requires energy to move, treat, use, and discharge as summarized in **Section 4.6**, water conservation is also energy conservation. As each water supplier implements water conservation measures and determines its water conservation targets, it can also calculate conserved energy and GHGs offsets as a side benefit. Once a water supplier has calculated the water conserved by a BMP, it is straightforward to convert that volume to conserved energy, and GHGs offsets. Additionally, water suppliers may want to focus on implementing water conservation measures that conserve water but do so at a significant decrease in GHG emissions as compared with other measures (DWR, 2013a).

Climate change is anticipated to increase average daily temperatures. Continued warming of the climate system has considerable impact on the operation of most water districts. In an average year, snow in the Sierra Nevada provides 30 percent of California's water supply. For Water Year 2021, the snowpack in the Northern and Central Sierra peaked at 70 percent of average (DWR, 2021). Predictions indicate that by 2100 the Sierra snowpack will be significantly reduced (Cal-Adapt, 2019). Much of the lost snow will fall as rain, which flows quickly down the mountains during winter

and cannot be stored in our current water system for use during California's hot, dry summers. The climate is also expected to become more variable, bringing more droughts and floods. Water districts will have to adapt to new, more variable conditions.

Principles of climate change adaptation include the following:

- As more mitigation is completed now, the less adaptation we may have to do in the future, because climate impacts could be less severe.
- Mitigation is much less expensive than adaptation.
- Mitigation should happen globally.
- Adaptation must happen locally.
- Adaptation strategies should be implemented according to future conditions, regular assessment and recalibration.
- Some adaptation strategies have benefits that can be realized today.

4.7.5 Local Strategies

As climate change continues to unfold in the coming decades, water agencies may need to mitigate and adapt to new strategies, which may require reevaluating existing agency missions, policies, regulations, facilities, funding priorities, and other responsibilities. The District's Draft CAP outlines two preliminary adaptation strategies to ameliorate the potential impacts of climate change, including:

1. **Prioritize local water**: promote water conservation and recycled water use;
2. **Lose less**: decrease water loss through water usage or leaking infrastructure

Strategies for meeting adaptation needs are still underway and not fully discussed in the Draft CAP. Additional adaptation strategies that could be evaluated in the future include, but are not limited to, the following:

- Prepare long-term facility and sustainability master plans including specific elements for climate change adaptation.
- Increase investments in infrastructure that promotes adaptation strategies (such as ground water recharge, and recycled water) and existing principal facilities susceptible to impacts of climate change.

Notwithstanding the above strategies for dealing with climate change, the reality is that current environmental regulations place a very high priority on releasing additional water for endangered species (i.e., Sacramento Delta and Santa Ynez River) and the environment. The potential for increased water demand for environmental resources and the possibility of reduced water supplies will be one of the biggest challenges confronting water agencies.

The goal of the District is to utilize the available local water supplies as effectively as possible in meeting the requirements of the District's water users. It is worth noting, however, that the District's control over water supplies is limited; thus management practice changes will need to be adaptive in nature.

5. WATER SUPPLY RELIABILITY

5.1 UWMP REQUIREMENTS

This section will include the following:

- Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability. (CWC §10634)
- Describe water management tools and options to maximize resources and minimize the need to import water from other regions. (CWC §10620(f))
- Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years. (CWC §10635(a))
- Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects. (CWC §10635(b))
- Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years. (CWC §10635(b)(1))
- Include a determination of the reliability of each source of supply under a variety of water shortage conditions. (CWC §10635(b)(2))
- Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period. (CWC §10635(b)(3))
- Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria. (CWC §10635(b)(4))

5.2 RELIABILITY

Water supply reliability is a measure of a water service system's anticipated success in managing water shortages. Analysis of water supply reliability is one of the primary requirements of the UWMP (Water Code §10635(a)). This assessment includes: an average water-year, single dry water-year, multiple dry water-years, and three-year minimum supply. This assessment also includes a Drought Risk Assessment (DRA) to evaluate the reliability of each supply source under a five-year drought.

In order to plan for a reliable water supply, District staff examined both the possibility of short-term and long-term shortages. A short-term water shortage could result from a disaster such as an earthquake, flood, or even a widespread power outage. A long-term water shortage would most likely result from a long period of drought in the region. Of the District's supplies, groundwater is the primary one affected by water quality concerns when the District is determining how much to use during drought. To maintain long-term sustainability of the groundwater basin, the District must monitor groundwater levels to avoid sea water intrusion, which can occur when groundwater elevation drops too low for too long a period.

5.3 BASIS OF WATER YEAR DATA

As required, the District determined the basis of water-year data. These years represent the historical average water-year (average water-year), single driest water-year (single dry water-year), and driest multiple year period (multiple dry water-year). **Table 32** summarizes the District's basis of water-year data. The "Supply Delivered" column in **Table 32**

represents the water supply delivered during the base year (not maximum available water supply). The District selected 2014 as the average water-year, 2013 as the single dry water-year, and 2012 to 2016 as the multiple dry water-years period. As indicated in **Table 32** (also see **Appendix D, Table 7- 1**), the District determined that the potential water supply delivered is 4,523 AF for an average water-year, 4,845 AF for single dry water-year, and 3,849 to 4,845 AF in multiple dry water- year.

Table 32: Basis of Water Year Data

Water-Year Type	Base Year(s)	Supply Delivered (AFY)
Average Water-Year	2014	4,523
Single Dry Water-Year	2013	4,845
Multiple Dry Water-Years	2012	4,530
	2013	4,845
	2014	4,523
	2015	4,133
	2016	3,849

Source: CVWD, 2021a. All values in AF, rounded.

5.4 RELIABILITY ASSESSMENT

In compliance with the Urban Water Management Planning Act, an assessment was developed to determine the District's water supply reliability. This assessment includes a comparison of the total projected water supplies available with the projected water demands through the year 2045 for the following conditions: (1) normal/average water-year, (2) single dry water-year, and (3) multiple consecutive dry water-years. Results for the assessment for each of these three conditions are described below. The District generally chooses to use its local supplies before using SWP or exchange water, and is pursuing advanced purified recycled water to provide additional reliable local potable supplies to further reduce reliance on imported water. The District has elected to use a conservative approach for its reliability assessment, limiting surface water supplies to below its historical levels. This helps to plan for the potential impacts of climate change (in conjunction with drought conditions), which is expected to reduce availability of surface water supplies.

5.4.1 Normal Water Year Assessment

Local groundwater, Cachuma Project water, SWP water, and recycled water are anticipated to be the primary water supplies through 2045. For the normal water-year assessment, the District selected 2014 as the basis for the evaluation (see **Table 32**). **Table 33** (also see **Appendix D, Table 7-2**) indicates that total water supplies available in normal water-years is projected to be 4,586 AF in 2025 and 5,586 AF for the period 2030 to 2045. Total water demands are projected to be 4,111 to 4,530 AFY for the period 2025 to 2045. **Table 33** indicates that the District's projected conservative long-term groundwater extractions are anticipated to be approximately 1,200 AFY (consistent with Basin sustainable-yield). The District's projected long-term available deliveries of local surface water from the Cachuma Project are anticipated to be approximately 2,110 AFY (including conservative estimate of average annual delivery of 75 percent of allocation due to sedimentation in the lake, releases for fish species, and downstream water rights). The District's projected long-term available deliveries from the SWP are anticipated to be approximately 876 AFY (including conservative estimate of average annual delivery of 58 percent of Table A allocation) with approximately 400 AFY exchanged with ID#1. The long-term supply projections also assume that the CAPP will provide 1,000 AFY of advanced treated recycled water supply starting in 2030 for indirect potable reuse.

Table 33 indicates that the District will have an estimated net positive supply or contingency ranging from approximately 475 AFY in 2025 to approximately 1,416 AFY in 2030 and 1,056 AFY in 2045. Thus, no deficit was observed during the assessment of normal water-year supplies and demands. Although the District is showing supplies in excess of demands, it would only access as much water as needed to meet demands, and extra supplies would be stored either in the groundwater basin or as carryover storage for the Cachuma Project or SWP. The District desires to have a minimum water supply surplus or contingency of approximately 200 to 400 AF each year in the event of an interruption of water supply due to operational or climate adversity, and works to maintain 1,000 AF of carryover storage in the Cachuma project in normal years. The District anticipates that groundwater pumping within the basin would be increased up to the sustainable-yield (2,800 AFY) to offset increased demands during drought. The District also participates in groundwater banking in the Central Valley to store excess SWP water. In addition, the District could implement additional programs to increase supplies and/or water conservation/demand management measures to reduce demands.

Table 33: Projected Normal Water Year Supply and Demand 2025-2045

	2025	2030	2035	2040	2045
Groundwater[1]	1,200	1,200	1,200	1,200	1,200
Cachuma Project[2]	2,110	2,110	2,110	2,110	2,110
State Water Project[3]	876	876	876	876	876
Recycled Water[4]	0	1,000	1,000	1,000	1,000
Exchange[3]	400	400	400	400	400
Other[5]	0	0	0	0	0
Supply Total	**4,586**	**5,586**	**5,586**	**5,586**	**5,586**
Demand Total[6]	**4,111**	**4,170**	**4,381**	**4,452**	**4,530**
Difference[7]	**475**	**1,416**	**1,205**	**1,134**	**1,056**

Source: CVWD 2021. All values in AFY and rounded. Table assumes normal water-year precedes normal water-year.
Notes:
(1) Current conservative estimate of long term average for District pumping is approximately 1,200 AFY which is consistent with the Basin sustainable yield of around 4,000 AFY; annual average District groundwater pumping is approximately 1,500 AFY (2016-2020).
(2) The District's current maximum allocation is 2,813 AFY. However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using of a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045.
(3) SWP delivery may be 1,256 AFY which represents the most current understanding of the normal water-year yield from the SWP (58% delivery of max allocation at 2,200 AFY). In addition, the District could use SWP carryover water. The projected SWP value of 876 AFY reflects the average delivery (1,276 AFY) minus the ID#1 exchange volume of 400 AF. District's current maximum SWP allocation is 2,200 AFY (includes 200 AFY drought buffer program). However, the District understands that future deliveries will be less than the maximum allocation.
(4) The District is currently planning for the potential long-term use of recycled water. 1,000 AF of recycled water will be available annually for indirect potable reuse starting by 2026.
(5) The District has banked and utilized 1,000 AFY of SWP water. However, the District does not anticipate utilizing banking programs in a normal year.
(6) Demand total does not include potential additional reduction of demand of 10 percent for period 2025-2045 utilizing water enhanced demand management measures for urban and agricultural customers.
(7) The difference represents the sum of supplies minus demands. The District desires to maintain a positive supply or contingency of a minimum of 200 to 400 AFY in order to account for unforeseen changes in supplies or demands. In years where supply exceed demand, the District will reduce groundwater pumping or diversions from Cachuma Project and State Water Project.

5.4.2 Single Dry Water Year Assessment

Local groundwater, Cachuma surface water, SWP surface water, and advanced purified recycled water for potable reuse are anticipated to be the District's primary water supplies through 2045. **Table 34** (also see **Appendix D, Table 7-3**) indicates that total water supplies available in single dry water-years is projected to be 4,280 AF in 2025 and 4,719 AF by 2045. Total water demands are projected to range from 4,280 to 4,719 AFY for the period 2025 to 2045 (increase of 15 percent over normal water-year demands).

Table 34 indicates that the District's projected groundwater extractions during a single dry water-year are anticipated to average approximately 1,473 AFY from 2025 through 2045. The District's projected available deliveries of local surface water from the Cachuma Project for a single dry water-year are anticipated to be approximately 2,110 AFY (including conservative estimate of average annual delivery of 75 percent of allocation due to sedimentation in the lake, releases for fish species, and downstream water rights). The District's projected available deliveries from the SWP for a single dry water-year are anticipated to be approximately 154 AFY (including conservative estimate of average annual delivery of 7 percent of allocation, which accounts for dry years affecting SWP source waters). The District's projected advanced purified recycled water deliveries for indirect potable reuse are anticipated to be approximately 1,000 AFY starting in 2026. Recycled water available for potable reuse is a drought-proof supply because it's created from baseline wastewater flows in the District's service area, and would not be affected by dry-year conditions.

Table 34 indicates the District will have an estimated water supply equal to or greater than water demand from 2025 to 2045. A surplus of 119 AFY is expected in 2030, when potable reuse supplies (recycled water) are available. The District desires to have a minimum water supply surplus or contingency of approximately 200 to 400 AF each year in the event of an interruption of water supply due to operational or climate adversity. The District anticipates that groundwater pumping within the basin would be increased to offset increased water demands, or the District will utilize carry-over storage from the Cachuma Project. In addition, the District could implement additional programs to increase supplies and/or water conservation/demand management measures to reduce demands.

Table 34: Projected Single Dry Water Year Supply and Demand 2025-2045

	2025	2030	2035	2040	2045
Groundwater[1]	2,017	1,200	1,307	1,385	1,455
Cachuma Project[2]	2,110	2,110	2,110	2,110	2,110
State Water Project[3]	154	154	154	154	154
Recycled Water[4]	0	1,000	1,000	1,000	1,000
Other[5]	0	0	0	0	0
Supply Total	**4,281**	**4,464**	**4,571**	**4,649**	**4,719**
Demand Total[6]	**4,281**	**4,345**	**4,571**	**4,649**	**4,719**
Difference[7]	**0**	**119**	**0**	**0**	**0**

Source: CVWD, 2021a. All values in AFY and rounded. Assumes normal water-year precedes single dry year.
Notes:
(1) The District anticipates that pumping could be increased up to the operational yield of 2,800 AFY to offset demands in a shortage condition. Current conservative estimate of long-term average for District pumping is approximately 1,200 AFY which is consistent with the Basin sustainable-yield of 4,000 AFY; annual average District groundwater pumping is approximately 1,500 AFY (2016-2020, a dry period).
(2) The District's current maximum allocation is 2,813 AFY. However, the District anticipates annual delivery may be reduced due to more competition for this supply, drought and other factors. For planning purposes, the District is using of a maximum of 2,110 AFY (75 percent of the allocation; via anticipated reduction of 25 percent) from 2025 to 2045.
(3) Projected SWP delivery is 154 AFY which represents the most current understanding of the single dry water- year yield from the SWP (7% delivery of maximum allocation at 2,200 AFY). In addition, the District could use SWP carryover water if available. District's current maximum SWP allocation is 2,200 AFY (includes 200 AFY drought buffer program). However, the District understands that future deliveries will be less than the maximum allocation. The District anticipates no exchange with the ID#1 in a single dry water-year.
(4) The District is currently planning for the potential long-term use of recycled water. Conservative estimate assumes 1,000 AF of recycled water will be available annually for indirect potable reuse starting in 2026.
(5) The District has banked and utilized 1,000 AFY of State Water Project water. However, the District anticipates that accessing water in banking programs between 2025 and 2045 will be considered as the final option before purchasing supplemental water.
(6) Does not include potential additional reduction of demand of 10 percent for period 2020-2040 utilizing water enhanced demand management measures for urban and agricultural customers.
(7) The difference represents the sum of supplies minus demands. The District desires to maintain a positive supply or contingency of a minimum of 200 to 400 AFY in order to account for unforeseen changes in supplies or demands.

5.4.3 Multiple Dry Water Year Assessment

Local groundwater, Cachuma surface water, SWP surface water, and recycled water are anticipated to be the District's primary water supplies through 2045. For the multiple dry water-years assessment, the District selected 2012 to 2016 as the basis for the evaluation (see **Table 32**). **Table 35** (also see **Appendix D, Table 7-4**) shows the projected supply totals, demands, and differences (surplus or shortages) under five consecutive dry years for the planning period. In general, the District utilizes surface water and carry-over storage before relying heavily on groundwater in later dry years, in order to conserve the most reliable supply until needed. This assessment assumes that SWP supplies will be restricted in multiple dry years, more than was experienced in the 2012-2016 reference years, because the current drought is affecting the sources supplies for the SWP as well as the District's local surface waters, while during the 2012-2016 reference period, SWP supplies were not as affected as the District's local surface supplies. The multiple dry year assessment projects that the District will have sufficient supplies to meet demands, when using banked (stored) District water and supplemental water from Casitas Municipal Water District (CMWD), other State Water Contractors, and other CCWA member units. The District will only use enough supplies to meet demands. Therefore, in years where District has a surplus of supply, it will reduce its groundwater pumping or use of surface water supplies.

In the first dry year of the multiple dry water-year assessment, the District is projected to have between 4,280 AFY and 4,719 AFY of water available. Supplemental water would not be used in the first dry year. In the second dry year, the District is projected to have between 4,578 AFY and 5,047 AFY of supplies and would need to use supplemental water in all years. Between 281 AFY and 950 AFY of supplemental water would be used in the second dry year. During the third dry year, the District would have between 4,274 AFY and 4,712 AFY of supplies. Supplemental water would be used in the third dry year under the 2025 scenario, but not used in any of the other planning years. Demand is expected to decrease in the third dry year because the District assumes drought messaging would be implemented and conservation would occur, consistent with the 2012-2016 reference period. In the fourth dry year, the District's supplies are projected to range from 3,905 AFY to 4,306 AFY, and supplemental water used in the 2025 and 2045 scenarios. Similarly, the fifth dry year, the District's supplies are projected to range from 3,637 AFY to 4,010 AFY, and supplemental water used in the 2025 and 2045 scenarios. Additional analyses are provided in **Appendix J**.

With the use of supplemental water, no deficit was observed during the assessment of multiple dry water-year supplies and demands. The District desires to have a minimum water supply surplus or contingency of approximately 200 to 400 AF each year in the event of an interruption of water supply due to operational or climate adversity. The District anticipates that groundwater pumping within the basin would increase to offset increased water demands. However, the District will closely manage groundwater pumping for long-term sustainability of the basin (i.e., groundwater levels must remain high enough to avoid sea water intrusion). In addition, the District could implement additional programs to increase supplies and/or water conservation/demand management measures to reduce demands. These programs are highlighted in the Water Shortage Contingency Plan (WSCP) (see **Section 6**) and would be implemented during a drought declaration.

Table 35: Projected Multiple Dry Water Year Supply and Demand 2025-2045

	AFY	2025	2030	2035	2040	2045
Year 1	Supply Total[1,2,3,4,5]	4,280	4,345	4,571	4,648	4,719
	Demand Total[6]	4,280	4,345	4,571	4,648	4,719
	Difference[7]	0	0	0	0	0
Year 2	Supply Total[1,2,3,4,5]	4,578	4,647	4,888	4,972	5,047
	Demand Total[6]	4,578	4,647	4,888	4,972	5,047
	Difference[7]	0	0	0	0	0
Year 3	Supply Total[1,2,3,4,5]	4,274	4,338	4,563	4,641	4,712
	Demand Total[6]	4,274	4,338	4,563	4,641	4,712
	Difference[7]	0	0	0	0	0
Year 4	Supply Total[1,2,3,4,5]	3,905	3,964	4,170	4,241	4,306
	Demand Total[6]	3,905	3,964	4,170	4,241	4,306
	Difference[7]	0	0	0	0	0
Year 5	Supply Total[1,2,3,4,5]	3,637	3,691	3,883	3,949	4,010
	Demand Total[6]	3,637	3,691	3,883	3,949	4,010
	Difference[7]	0	0	0	0	0

Source: CVWD, 2021a. All values in AFY and rounded. See **Appendix J** for derivation of each value.

Notes:

(1) Maximum groundwater production is 2,800 AFY. Current conservative estimate of long-term average for District pumping is approximately 1,200 AFY which is consistent with the Basin sustainable-yield of 4,000 AFY; the District anticipates that pumping could be increased up to the operational yield of 2,800 AFY to offset demands and would be used more in the later dry years, when carry-over storage from surface water is depleted.

(2) Projected Cachuma Project delivery is 0 to 2,110 AFY for future years. District's current maximum Cachuma allocation is 2,813 AFY, and conservatively assumes 75% available in the first dry year, with supplies decreasing in subsequent dry years. The District understands that future deliveries can be as low as 0 AFY. Though a 0% allocation is not desired, the District can accommodate one year with a 0 AFY allocation by increasing reliance on other available water supplies.

(3) Projected SWP delivery ranges from 134 AFY to 317 AFY, which is based on a conservative estimate of both SWP availability and demands that cannot be met with District's local supplies. Current maximum SWP allocation is 2,200 AFY (includes 200 AFY drought buffer). However, the District understands that future deliveries will be less than the maximum allocation.

(4) The District is currently planning for the potential long-term use of recycled water. Conservative estimate assumes 1,000 AF of recycled water will be available annually for indirect potable reuse starting by 2030.

(5) The District has banked and utilized 1,000 AFY of State Water Project water. The District anticipates utilizing banking programs again between 2020 and 2045. Historically, the District has also been able to purchase supplemental water from CMWD and other State Water Contractors.

(6) Does not include potential additional reduction of demand of 10 percent for period 2025-2045 utilizing water enhanced demand management measures for urban and agricultural customers, but does assume some demand conservation in response to drought restrictions.

(7) The difference represents the sum of supplies minus demands. The District desires to maintain a positive supply or contingency of a minimum of 400 AFY in order to account for unforeseen changes in supplies or demands.

5.5 DROUGHT RISK ASSESSMENT

Per UWMP requirements, the UWMP must also include a five-year Drought Risk Assessment (DRA) to evaluate the reliability of each supply source under a long-term drought. The District relies on the many possible sources available, including local groundwater, local surface water from Lake Cachuma, imported SWP water, exchanges with other water districts on the central coast, local storage, and an emergency connection to CMWD. Additional emergency procedures are summarized in **Section 6**.

The District evaluated water supply reliability over a five-year period from 2021 to 2025. The DRA assessment examines water supplies, water uses, and the resulting water supply reliability under a reasonable precision for five consecutive dry years. The DRA assessment also provides an opportunity to evaluate the functionality of the District's WSCP, included in **Section 6**. This assessment can help identify potential shortfalls and allow for proactive steps to be taken prior to the next long-term drought. The DRA can be modified or updated on an interim cycle, as needed, to allow for the incorporation of new information as it becomes available or in the event of unforeseen circumstances.

Because the District is currently in the second year of a drought (WY 2022), and anticipates the potential for consecutive dry years, the District's supply projection model assumes drought conditions over the next five years (2021-2025). The model is primarily based on three inputs:

1. near-term projections of Cachuma Project supplies (using the locally-accepted lake model managed by COMB, and following discussion with USBR about expected allocations of Lake Cachuma supplies),

2. availability of existing carry-over storage in Lake Cachuma, Banked Water in the Central Valley, and Supplemental Water Purchases, and

3. sustainable yield limits on groundwater pumping to prevent sea water intrusion.

Additionally, the District conservatively assumes 0 AF SWP allocation starting in WY 2023 because current drought conditions are severe statewide. Supplemental water was purchased in WY 2021,and the District expects to purchase supplemental water in WY 2022 through 2025 if dry conditions persist. The District will no longer need to purchase supplemental water in 2026 because supplemental water purchased in WY 2022, 2023, and 2025 will allow for some carryover storage in Lake Cachuma in WY 2026, and the CAPP project will be online by WY 2026. In addition, the District assumes a 20 percent reduction in water use based on entering Drought Level 2 (scheduled to occur in October 2021).

The District anticipates that groundwater pumping within the basin would be increased to offset increased water demands if surface water supplies, including carryover storage, are substantially depleted. In addition, the District could implement additional programs to increase supplies and reduce demands. Advanced treated recycled water for indirect potable reuse from the CAPP is assumed to become available starting in 2026. Once CAPP is online, advanced purified recycled water for potable reuse will be considered a drought-resistant supply. Projected demands assume 20 percent conservation from current demand (approximately 4,000 AFY) for each of the five years.

The DRA analysis summarized in **Table 36** assumes that WSCP actions would be triggered starting with Stage 1 (declared in July 2019), increased to Stage 2 in Fall 2021 through WY 2023, and increased to Stage 3 in Fall 2024 through WY 2025, resulting in the ability to meet demands during the five-year drought. It is likely the District will escalate conservation measures should the current drought be ongoing, so the demands presented here are conservative. The District would have a five-year minimum water supply total ranging from approximately 3,200 AF in 2022 to 3,745 AF in 2025. The DRA shown here reflects the District's current supply projections, given existing drought conditions. 2025 would represent a seventh consecutive dry year.

Table 36: Five-Year Drought Risk Assessment (2021-2025)

Supplies	2021[4]	2022	2023	2024	2025
Supply & Demand					
Total Water Use[1] (Demand)	4,000	4,000	4,000	4,000	4,000
Cachuma Project	*1,969*	*746*	*927*	*2,345*	*745*
State Water Project	*598*	*396*	*0*	*0*	*0*
Groundwater	*1,969*	*1,600*	*1,600*	*1,200*	*2,000*
Recycled Water	*0*	*0*	*0*	*0*	*0*
Supplemental Water	*1,131*	*458*	*673*	*0*	*1,000*
Total Supplies[2]	5,667	3,200	3,200	3,545	3,745
Surplus/Shortfall without WSCP Action[3]	1,667	-800	-55	145	-55
Planned WSCP Actions (Demand Reduction and Supply Augmentation)					
WSCP - Supply Augmentation Benefit	0	0	0	0	0
WSCP - Use Reduction Savings Benefit	800	800	800	1,200	1,200
Revised Surplus/(Shortfall)	2,467	0	0	754	945
Resulting % Use Reduction from WSCP Action	20%	20%	20%	30%	30%

Source: CVWD, 2021a. All values in AFY and rounded.

Notes:

(1) Total water use based on typical annual demand of 4,000 AFY, and does not reflect conservation savings.

(2) Total supplies include a mix of surface water (Cachuma Project and SWP), groundwater, advanced treated recycled water for potable reuse, and supplemental water.

(3) District entered WSCP Drought Response Level 1 in 2019, and is expected to enter WSCP Drought Response Level 2, which calls for 20% demand reduction, in October 2021. This analysis assumes the District stays in Drought Response Level 2 through 2023 and increases to WSCP Drought Response Level 3 in 2024 through 2025.

(4) Surplus will contribute to carryover storage, for use in later dry years.

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6. WATER SHORTAGE CONTINGENCY

6.1 UWMP REQUIREMENTS

This section will include the following requirements:

- Provide a water shortage contingency plan (WSCP) with specified elements below. (CWC §10632(a))
- Provide the analysis of water supply reliability in the WSCP. (CWC §10632(a)(1))
- Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented. (CWC §10632(a)(10))
- Provide the written decision- making process and other methods that the supplier will use each year to determine its water reliability. (CWC §10632(a)(2) (A))
- Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code. (CWC §10632(a)(2) (B))
- Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply. (CWC §10632(a)(3) (A))
- Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories. (CWC §10632(a)(3) (B))
- Suppliers with WSCP that align with the defined shortage levels must specify locally appropriate supply augmentation actions. (CWC §10632(a)(4) (A))
- Specify locally appropriate demand reduction actions to adequately respond to shortages. (CWC §10632(a)(4) (B))
- Specify locally appropriate operational changes. (CWC §10632(a)(4) (C))
- Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions. (CWC §10632(a)(4) (D))
- Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action. (CWC §10632(a)(4) (E))
- The plan shall include a seismic risk assessment and mitigation plan. (CWC §10632.5)
- Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages. (CWC §10632(a)(5) (A))
- Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications. (CWC §10632(a)(5) (B) and 10632(a)(5) (C))
- Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP. (CWC §10632(a)(6))
- Describe the legal authority that empowers the supplier to enforce shortage response actions. (CWC §10632(a)(7) (A))
- Provide a statement that the supplier will declare a water shortage emergency. (CWC §10632(a)(7) (B))

- Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency. (CWC §10632(a)(7) (C))
- Describe the potential revenue reductions and expense increases associated with activated shortage response actions. (CWC §10632(a)(8) (A))
- Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions. (CWC §10632(a)(8) (B))
- Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3. (CWC §10632(a)(8) (C))
- Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance. (CWC §10632(a)(9))
- Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas. (CWC §10632(b))
- Provide supporting documentation that WSCP has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR. (CWC §10635(c))
- Make available the WSCP to customers and any city or county where it provides water within 30 after adopted the plan. (CWC §10632(c))

6.2 PROHIBITIONS, CONSUMPTION REDUCTION METHODS, AND PENALITIES

6.2.1 Mandatory Prohibitions on Water Wasting

Prohibition on waste of water usage was originally enacted in Ordinance No. 90-1 and has been restated in Ordinances No. 15-2, 19-2, and 21-1 (copies provided in **Appendix K**).

Examples of specific restrictions and prohibited wasteful practices include, but not limited to, the following: no use of running water for hosing or washing down driveways, walkways, and buildings; restaurants are to refrain from serving water unless requested by customers; no outside watering between 10:00 a.m. and 4:00 p.m. by hand or moveable landscape irrigation system; no outside watering between 8:00 a.m. and 6:00 p.m. by a fixed landscape irrigation system; no watering after measurable rainfall events; controls on boat and vehicle washing; no use of water which results in runoff beyond the immediate area of use; and leaks must be repaired within seventy-two (72) hours of discovery or notification by the District

6.2.2 Consumption Reduction Methods

Under normal water supply conditions, potable water production and delivery figures are recorded monthly. Total deliveries are compared monthly with available supplies. A water supply report is generated for the General Manager showing how the supply compares to the estimated demand for the year. This report is then presented to the Board of Directors at its regular meeting each month.

During Stages 2 through 6, the District staff will monitor demand over each month and compare with target demands under the current stage. If mandatory reductions are not being met, the District Staff will evaluate messaging, contact high users to inquire if their demand can be reduced, implement penalty fees, and implement allocations. The Board will receive monthly reports noting whether the District is achieving the target reductions.

6.2.3 Water Allotment Methods

The District has established the allotment methods for each customer type as noted in **Table 37** below.

Table 37: Water Allocation Method by Customer Type

Customer Type	Allocation Method
Agricultural	Percentage Reduction - vary by efficiency
Residential	Percentage Reduction – can vary by occupants per household
Commercial	Percentage Reduction
Industrial	Percentage Reduction
Public Authority	Percentage Reduction
New Customers	Estimate of similar uses apply
New Developments	No new services for new development during a declared water shortage of Stage 4, Stage 5, and Stage 6

Table 38 below indicates the proposed water allocated to each customer type by rationing stage during a declared water shortage. Individual customer allotments are based on a normal 5-year period average use. This gives the District a more accurate view of the usual water needs of each customer and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment may be greater than the amount used in the most recent year of the five-year base period.

The District is currently working on a formal allotment program for all customers that will also incorporate the State's new water conservation requirements. The District will calculate each customer's allotment according to the established rationing allotment method. The allotment shall reflect seasonal patterns. Each customer shall be notified of his or her classification and allotment on their bill by mail before the effective date of the Water Shortage Emergency. New customers will be notified at the time the application for service is made. In a disaster, prior notice of allotment may not be possible; notice will be provided by other means. Any customer may appeal the assigned water allotment on the basis of incorrect calculation or health and safety.

Table 38: Water Use Restriction (Allotments)

User Type	Allotments					
	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6[2]
Agriculture	90%	80%	70%	60%	50%	>50% (Variable)
Residential[1]	90%	80%	70%	60%	50%	>50% (Variable)
Commercial	90%	80%	70%	60%	50%	>50% (Variable)
Industrial	90%	80%	70%	60%	50%	>50% (Variable)
Public Authority	90%	80%	70%	60%	50%	>50% (Variable)

Notes:
(1) Exceptions may be made on a case-by-case basis for high occupancy dwellings.
(2) Allotment will be proportional to the water existing shortage condition.

6.2.4 Excessive Use Penalties

Excessive use penalties are not included in the current District policies and regulations. However, the District may impose excessive use penalties if additional conservation measures are deemed necessary.

6.3 EMERGENCY RESPONSE PLAN

In 1997, in accordance with the requirements of Assembly Bill 11X, the District developed its Emergency Response Plan (ERP). A copy of this ERP is provided in **Appendix F**. The ERP is currently being updated, and an updated ERP is expected to be available by January 2022. The District's ERP contains procedures for the distribution of potable water in a disaster. These procedures are consistent with guidelines prepared by the California State Office of Emergency Services. The District's ERP identifies various levels of natural and man-caused emergencies and provides examples of actions for a number of given emergencies, including earthquake and power failure.

The District owns and operates sufficient groundwater production capacity to meet demands during a water supply shortage. In addition, specific water-critical customers (such as hospitals, schools, and a few individual customers with medical conditions dependent on continuous water availability) have been identified. Emergency potable water distribution sites have been identified as City Hall, Carpinteria Middle School, District offices, and Carpinteria High School. Standby procurement documents are being developed for emergency bulk purchase of bottled water. Standby arrangements with several local trucking firms to provide tankers to distribute potable water (certified by the California Division of Drinking Water) for safe transportation of potable water are being developed. All existing water supply storage, treatment, and distribution facilities are inspected weekly.

In the event of a major earthquake the District's ERP (**Appendix F**) includes procedures for assessment of damage, public notification and procedures to determine appropriate actions to restore service as quickly as possible. It is likely in such an event that District customers will be required to ration water to some degree. The District would implement its Water Shortage Contingency Plan (WSCP), defined below, if necessary.

In the event of a flood that knocks out transmission or distribution lines the District staff will assess the damage and re-valve to get water to where it is needed. Damage from this type of disaster would likely be isolated damage that can be worked around until it can be repaired. The District's distribution system is looped, and in most cases, water can be rerouted to any area of the District. In the event that water becomes contaminated from flooding, a "Boil Water Notice" may be issued to customers until it can be established that water is safe to consume.

In the event of a power outage, the District has generators with automatic transfer switches on all the major booster stations and a portable 300 kW generator to run the wells. Critical treatment equipment is all run from an uninterruptible power supply (UPS). All future treatment equipment will be equipped with an automatic transfer switch and emergency generator.

Key issues that could lead to water supply shortages in the service area is further discussed in **Section 6.4**, along with measures the District may implement during an anticipated supply shortage. To offset future potential water shortages due to drought or disaster, the District is considering additional water supplies. These supplemental water supplies are summarized in **Section 4**.

6.3.1 Seismic Risk Assessment and Mitigation Plan

In 2019, the District prepared an Amendment to the County of Santa Barbara's Multi-Jurisdictional Hazard Mitigation Plan. The District's Multi-Jurisdictional Local Hazard Mitigation Plan Amendment (Amendment) documents potential hazards from natural disasters, including earthquakes, and specific projects that could mitigate future losses. According to the Amendment, the Santa Barbara County – including the Carpinteria Valley – is an active earthquake area. A large earthquake could jeopardize most of the District's infrastructure and limit the District's ability to deliver water. Depending on the earthquake severity, repairs could last between 6 and 24 months (CVWD, 2019b). A copy of this Amendment is included in **Appendix F**.

The District employs a number of proactive goals and objectives to mitigate potential earthquake impacts, including:

1. Goal 1: Promote disaster-resiliency for existing assets and critical facilities.
    - Objective 1a: Mitigate vulnerability of structures and critical facilities.
    - Objective 1b: Support coordination with other agencies to protect shared assets and facilities.
2. Goal 2: Promote disaster-resiliency for future assets and critical facilities.
    - Objective 2a: Mitigate vulnerability of planned future structures and critical facilities.
    - Objective 2b: Coordinate with planning and development authorities in the Valley to ensure new facilities and assets are protected from harm prior to construction.
3. Goal 3: Enhance inter-agency hazard mitigation coordination and communication.
    - Objective 3a: Review District plans and actions in a coordinated effort with other partnering

6.4 WATER SHORTAGE CONTINGENCY PLANNING

In order to plan for a reliable water supply, District staff examined both the possibility of short-term and long-term shortages. A short-term water shortage could result from a disaster such as an earthquake, flood, or even a widespread power outage. A long-term water shortage would most likely result from a long period of drought in the region. Durations of severe droughts in this region have historically lasted 3 to 5 years.

Costs of demand management or supply augmentation options to reduce the frequency and severity of shortages are now high enough that planners must look more carefully at the costs of not having reliable supplies to make the best possible estimate of the net benefit of taking specific actions, hence the term "reliability planning." To plan for long-term water supply reliability, planners examine an increasingly wide array of supply augmentation and demand reduction options to determine the best courses of action for meeting water service needs. Such options are generally evaluated using the water service reliability planning approach. Reliability planning requires information about the following: (1) expected frequency and severity of shortages; (2) how additional water management measures are likely to affect the frequency and severity of shortages; (3) how available contingency measures can reduce the impact of shortages when they occur.

In the past, the District Board of Directors has declared a water shortage emergency in response to significant drought-related cutbacks in supply from the Cachuma Project. A summary of the District's drought related ordinances is provided below, and copies of selected District Resolutions are provided in **Appendix K**. Should the District determine that the ordinary demands and requirements of its customers cannot be satisfied without depleting the water supply to the extent that there would be insufficient water for human consumption, sanitation, and fire protection, the District's Board of Directors shall declare a water shortage emergency. Such a declaration would be coordinated with the City of Carpinteria and County of Santa Barbara.

6.4.1 Water Shortage Contingency Ordinance/Resolution

The District adopted Resolution No. 547 in 1990 to address water shortage emergency. The District adopted Ordinance No. 90-1 in 1990 to address drought regulations and water conservation standards. Ordinance No. 90-2, also adopted in 1990, addresses restrictions on uses of water within the District. Ordinance No. 90-3, adopted in 1990, addresses restriction upon the delivery of water within the District.

On February 12, 2014, the District adopted Resolution 972, declaring a Stage One Drought Emergency to address drought conditions and request a 20 percent voluntary reduction in consumption from District customers. Resolution 980 was adopted in August 2014, incorporating prohibited activities defined by the SWRCB's Drought Emergency Water Conservation Regulation, and financial penalties for infraction of those prohibited activities. Ordinance 14-1, consolidating Resolutions 972 and 980, adding new requirements, and establishing enforcement measures was

adopted in October 2014. Ordinance 15-2 was adopted in May 2015 which declared a Stage Two Drought Condition with mandatory water use restrictions to achieve an immediate reduction in local municipal and industrial (M&I) water consumption by 20 percent in order to comply with the mandated state-wide reduction in water usage by 25 percent. In addition, Ordinance 15-2 incorporated additional prohibited activities and watering. In May 2019, the District adopted Ordinance 19-2, reducing the Stage Two Drought Condition to a Stage One Drought Condition and amending water use restrictions allocations after rainfall in 2019 restored Lake Cachuma levels above 100,000 AF. The District Board of Directors adopted Ordinance 21-1 declaring a Stage Two Drought Condition on October 13, 2021, after Governor Newsom declared the County of Santa Barbara to be in a drought emergency and the County of Santa Barbara Board of Supervisors declared a local drought emergency. A copy of all ordinances discussed above is provided in **Appendix K**.

The District is well prepared to operate effectively in the face of a catastrophic water supply interruption using the Emergency Response Plan (**Appendix F**) and the District Ordinances (**Appendix K**) for guidance.

6.4.2 Water Supply Reliability Analysis

The District's water asset portfolio primarily consists of local groundwater, local surface water from Lake Cachuma, and imported water from the SWP. The District regularly assesses water supply reliability to identify key issues – foreseeable or unforeseeable – that could lead to water supply shortages. Imported water and surface water sources are especially vulnerable to drought periods, and supplies can be restricted during prolonged dry periods. During the last historic drought, DWR announced a zero allocation for all SWP contractors for the first time in history in 2014. Due to the State's ongoing drought conditions, SWP contractors now face a 5 percent allocation as of March 2021. The District also received a zero allocation of Cachuma water in 2018 and has received a 75 percent allocation for WY 2022 Imported water supplies are also vulnerable to catastrophic events and natural disasters, such as earthquakes and wildfires, that could compromise the imported water conveyance system and the levee system that prevents seawater intrusion in the Bay Delta, the source of SWP water supplies. Furthermore, imported and surface water supplies are becoming increasingly unreliable due to climate change and evolving environmental and regulatory requirements.

In contrast, groundwater supplies from the Carpinteria Groundwater Basin are generally reliable and resilient to drought conditions, though groundwater levels must be managed to avoid seawater intrusion. The sudden presence of a toxin in the Basin could lead to groundwater supply shortages in the service area; however, the probability of this event occurring is very low and the District does not anticipate significant changes in groundwater quality. Chapters 4 and 5 of this UWMP further detail the potential threats to water supply that could lead to a shortage.

As shown in Chapter 5 of this UWMP, the District anticipates that demands can be met with a combination of local supplies (groundwater and Cachuma Project water), imported water (SWP), advanced purified recycled water, and banked water and supplemental water from CMWD, other State Water Contractors, and other CCWA member units under all dry-year scenarios during the planning period (2020-2045).

6.4.3 Stages of Action and Reduction Goals

The WSCP included in the 2015 UWMP outlined a three-stage rationing plan to invoke during declared water shortages. Per the 2020 UWMP guidelines, suppliers are now required to include six standard shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages, and greater than 50 percent shortage compared to the normal reliability condition in their WSCPs. Though suppliers are also authorized to continue using water shortage levels from previous WSCPs as long as a relationship between the existing shortage levels and the new six standard shortage levels is presented, the District has elected to revise the existing water shortage levels from three stages to six stages, to more clearly align with those mandated by statute.

The rationing plan includes voluntary and mandatory rationing, depending on the causes, severity, and anticipated duration of the water supply shortage. **Table 39** summarizes the District's current water rationing stages and reduction

goals which range from 10 percent to more than 50 percent depending on the shortage level. The levels shown here were adopted by the District's Board of Directors in August 2021, as part of an interim water shortage resolution. While that resolution is superseded by this WSCP, the shortage stages and goals in this WSCP are consistent with that resolution.

Table 39: Water Shortage Stages and Goals

Shortage Condition	Stage	Customer Reduction Goal	Type of Rationing Program
Less than 10 Percent	1	10%	Voluntary
10 to 20 Percent	2	20%	Mandatory
20 to 30 Percent	3	30%	Mandatory
30 to 40 Percent	4	40%	Mandatory
40 to 50 Percent	5	50%	Mandatory
More than 50 Percent	6	>50%	Mandatory

6.4.4 Shortage Response Actions and Demand Reduction Program

The District's demand reduction programs are described in Chapter 7. The District maintains active conservation programs for residential, commercial, and agricultural customers, and is an ongoing partner in Santa Barbara County's Regional Water Efficiency Program. Programs such as the Smart Rebates Program and the WaterWise Landscape Rebate Program, coupled with free water saving surveys and agricultural irrigation evaluations, have helped the District achieve water conservation goals during normal years and drought periods.

As previously stated, with this WSCP, the District is adopting the standard six water shortage levels prescribed by DWR. **Table 40** summarizes the shortage stages and associated consumption reduction methods, while **Table 41** details the specific actions to take at each shortage level, the expected decreases in supply and demand gaps realized by each action, and whether water use restrictions are enforced. It is important to note that the specific actions summarized in **Table 40** do not apply to greywater systems, which are inherently water saving measures, because the District does not directly supply water to these systems.

Table 40: Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions
1	Up to 10%	Limit landscape irrigation, restrict water use for decorative features, repair leaks and malfunctions, prohibit water use for washing vehicles and hard surfaces.
2	Up to 20%	Limit landscape irrigation to no more than three days per week, prohibit irrigation of turf or landscapes during and 24 hours following a measurable rainfall, implement water use efficiency devices for residential and CII, restrict water use for decorative features, repair leaks and malfunctions within 72 hours of notification, prohibit water use for washing vehicles and hard surfaces, restrict water use for recreational purposes.
3	Up to 30%	Limit landscape irrigation to no more than two days per week, prohibit irrigation of turf or landscapes during and 48 hours following a measurable rainfall, implement water use efficiency devices for residential and CII, restrict water use for decorative features, repair leaks and malfunctions within 72 hours of notification, and prohibit water use for washing vehicles and hard surfaces.
4	Up to 40%	Prohibit all landscape irrigation to no more than one day per week, prohibit irrigation of turf or landscapes during and 48 hours following a measurable rainfall, prohibit watering of turf, implement water use efficiency devices for residential and CII, restrict water use for decorative features and recreational purposes, repair leaks and malfunctions within 48 hours of notification, prohibit water use for washing vehicles and hard surfaces, consider a moratorium of new meters.
5	Up to 50%	Prohibit all landscape irrigation to no more than one day per week, prohibit irrigation of turf or landscapes during and 48 hours following a measurable rainfall, prohibit watering of turf, implement water use efficiency devices for residential and CII, restrict water use for decorative features and recreational purposes, repair leaks and malfunctions within 48 hours of notification, prohibit water use for washing vehicles and hard surfaces, consider a moratorium of new meters.
6	>50%	Prohibit all landscape irrigation to no more than one day per week, prohibit irrigation of turf or landscapes during and 48 hours following a measurable rainfall, prohibit watering of turf, implement water use efficiency devices for residential and CII, restrict water use for decorative features and recreational purposes, repair leaks and malfunctions within 48 hours of notification, prohibit water use for washing vehicles and hard surfaces, consider a moratorium of new meters, consider a water budget.

Table 41: Demand Reduction Actions

Shortage Level	Demand Reduction Actions	Shortage Gap Reduction[1]	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
1	Landscape - Restrict or prohibit runoff from landscape irrigation	2.21%		No
1	Landscape - Limit landscape irrigation to specific times	2.21%		No
1	CII - Restaurants may only serve water upon request	0.19%		No
1	CII - Lodging establishment must offer opt out of linen service	0.19%		No
1	Water Features - Restrict water use for decorative water features, such as fountains	0.67%	Non-recirculating fountains prohibited	No
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	3.34%		No
1	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	0.72%	Washing boats is also included in the prohibition	No
1	Other - Prohibit use of potable water for washing hard surfaces	0.95%		No
2	Landscape - Restrict or prohibit runoff from landscape irrigation	2.25%		Yes
2	Landscape - Limit landscape irrigation to specific times	0.77%		Yes
2	Landscape - Limit landscape irrigation to specific days	1.77%	Landscape irrigation is limited to no more than 3 days per week.	Yes
2	Landscape - Other landscape restriction or prohibition	3.08%	Irrigation of turf or ornamental landscapes during and twenty-four (24) hours following measurable rainfall is prohibited	Yes
2	Landscape - Other landscape restriction or prohibition	3.08%	Irrigation of landscapes outside newly constructed homes and buildings that is not delivered by drip or micro-spray systems is prohibited.	Yes
2	CII - Lodging establishment must offer opt out of linen service	0.38%		Yes
2	CII - Restaurants may only serve water upon request	0.19%		Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	0.92%	Non-recirculating fountains prohibited	Yes
2	Other water feature or swimming pool restriction	0.73%	Pools may be drained and refilled up to one third of the	Yes

Shortage Level	Demand Reduction Actions	Shortage Gap Reduction[1]	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
			volume per year unless authorized by the District.	
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	3.57%	Repairs must be made within seventy-two (72) hours of notification.	Yes
2	Other - Require automatic shut of hoses	2.31%		Yes
2	Other - Prohibit use of potable water for washing hard surfaces	0.76%		Yes
2	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	0.48%	Washing boats is also included in the prohibition	Yes
2	Other	0.01%	Gyms, pools, and other businesses providing showers must post drought notices and promote limitation of shower use.	Yes
3	Landscape - Restrict or prohibit runoff from landscape irrigation	4.72%		Yes
3	Landscape - Limit landscape irrigation to specific times	0.77%		Yes
3	Landscape - Limit landscape irrigation to specific days	4.72%	Landscape irrigation is limited to no more than 2 days per week.	Yes
3	Landscape - Other landscape restriction or prohibition	4.72%	Irrigation of turf or ornamental landscapes during and forty-eight (48) hours following measurable rainfall is prohibited.	Yes
3	Landscape - Other landscape restriction or prohibition	3.31%	Irrigation of landscapes outside newly constructed homes and buildings that is not delivered by drip or micro-spray systems is prohibited.	Yes
3	Landscape - Other landscape restriction or prohibition	0.21%	Irrigation of ornamental turf on public street medians is prohibited.	Yes
3	CII - Lodging establishment must offer opt out of linen service	0.38%		Yes
3	CII - Restaurants may only serve water upon request	0.19%		Yes
3	Water Features - Restrict water use for decorative water features, such as fountains	0.72%	Non-recirculating fountains prohibited	Yes
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	6.41%	Repairs must be made within seventy-two (72) hours of notification.	Yes

Shortage Level	Demand Reduction Actions	Shortage Gap Reduction[1]	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
3	Other - Require automatic shut of hoses	0.92%		Yes
3	Other - Prohibit use of potable water for washing hard surfaces	0.95%		Yes
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	0.95%	Washing boats is also included in the prohibition	Yes
3	Other water feature or swimming pool restriction	1.45%	Pools may be drained and refilled up to one third of the volume per year unless authorized by the District.	Yes
3	Other	2.17%	Gyms, pools, and other businesses providing showers must post drought notices and promote limitation of shower use.	Yes
4	Landscape - Restrict or prohibit runoff from landscape irrigation	4.72%		Yes
4	Landscape - Limit landscape irrigation to specific times	0.77%		Yes
4	Landscape - Limit landscape irrigation to specific days	4.72%	Landscape irrigation is limited to no more than 1 day per week.	Yes
4	Landscape - Other landscape restriction or prohibition	4.24%	Irrigation of turf or ornamental landscapes during and forty-eight (48) hours following measurable rainfall is prohibited.	Yes
4	Landscape - Other landscape restriction or prohibition	3.02%	Irrigation of landscapes outside newly constructed homes and buildings that is not delivered by drip or micro-spray systems is prohibited.	Yes
4	Landscape - Other landscape restriction or prohibition	0.21%	Irrigation of ornamental turf on public street medians is prohibited.	Yes
4	Landscape - Prohibit certain types of landscape irrigation	4.33%	Prohibit watering of turf.	Yes
4	Landscape - Prohibit all landscape irrigation	4.33%		Yes
4	CII - Lodging establishment must offer opt out of linen service	0.38%		Yes
4	CII - Restaurants may only serve water upon request	0.19%		Yes
4	CII - Commercial kitchens required to use pre-rinse spray valves	0.19%		Yes

Shortage Level	Demand Reduction Actions	Shortage Gap Reduction[1]	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
4	CII - Other CII restriction or prohibition	0.38%	CII facilities with independent non-District source of water supply shall limit outdoor irrigation to no more than two (2) days per week.	Yes
4	Water Features - Restrict water use for decorative water features, such as fountains	1.45%	Non-recirculating fountains prohibited	Yes
4	Pools and Spas - Require covers for pools and spas	1.45%	Or approved equivalent	Yes
4	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	1.45%	Or approved equivalent	Yes
4	Other water feature or swimming pool restriction	2.19%	Pools may be drained and refilled up to one third of the volume per year unless authorized by the District.	Yes
4	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	4.70%	Repairs must be made within forty-eight (48) hours of notification.	Yes
4	Other - Require automatic shut of hoses	0.09%		Yes
4	Other - Prohibit use of potable water for washing hard surfaces	0.92%		Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	0.48%	Washing boats is also included in the prohibition	Yes
4	Other	0.19%	Gyms, pools, and other businesses providing showers must post drought notices and promote limitation of shower use.	Yes
4	Other	0.01%	Use of District water for public outdoor showers is prohibited unless approved by the District.	Yes
4	Other	0.01%	Use of District water for recreational purposes is prohibited unless approved by the District.	Yes
4	Other	0.01%	Consider a moratorium of new meters.	Yes
5	Landscape - Restrict or prohibit runoff from landscape irrigation	5.30%		Yes
5	Landscape - Limit landscape irrigation to specific times	2.02%		Yes

Shortage Level	Demand Reduction Actions	Shortage Gap Reduction[1]	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
5	Landscape - Limit landscape irrigation to specific days	4.72%	Landscape irrigation is limited to no more than 1 day per week.	Yes
5	Landscape - Other landscape restriction or prohibition	4.24%	Irrigation of turf or ornamental landscapes during and forty-eight (48) hours following measurable rainfall is prohibited.	Yes
5	Landscape - Other landscape restriction or prohibition	0.39%	Irrigation of ornamental turf on public street medians is prohibited.	Yes
5	Landscape - Other landscape restriction or prohibition	3.87%	Irrigation of landscapes outside newly constructed homes and buildings that is not delivered by drip or micro-spray systems is prohibited.	Yes
5	Landscape - Prohibit certain types of landscape irrigation	4.08%	Prohibit watering of turf.	Yes
5	Landscape - Prohibit all landscape irrigation	4.08%		Yes
5	CII - Lodging establishment must offer opt out of linen service	0.97%		Yes
5	CII - Restaurants may only serve water upon request	0.97%		Yes
5	CII - Commercial kitchens required to use pre-rinse spray valves	0.97%		Yes
5	CII - Other CII restriction or prohibition	0.97%	CII facilities with independent non-District source of water supply shall limit outdoor irrigation to no more than one (1) day per week.	Yes
5	Water Features - Restrict water use for decorative water features, such as fountains	0.97%	Non-recirculating fountains prohibited	Yes
5	Pools and Spas - Require covers for pools and spas	0.97%	Or approved equivalent	Yes
5	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	0.97%	Or approved equivalent	Yes
5	Other water feature or swimming pool restriction	0.97%	Pools may NOT be drained and refilled unless authorized by the District.	Yes
5	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	6.00%	Repairs must be made within forty-eight (48) hours of notification.	Yes

Shortage Level	Demand Reduction Actions	Shortage Gap Reduction[1]	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
5	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	1.35%	Washing boats is also included in the prohibition	Yes
5	Other - Prohibit use of potable water for washing hard surfaces	2.76%		Yes
5	Other - Require automatic shut of hoses	2.76%		Yes
5	Other	0.38%	Gyms, pools, and other businesses providing showers must post drought notices and promote limitation of shower use.	Yes
5	Other	0.01%	Use of District water for public outdoor showers is prohibited unless approved by the District.	Yes
5	Other	0.02%	Use of District water for recreational purposes is prohibited unless approved by the District.	Yes
5	Other	0.02%	Consider a moratorium of new meters.	Yes
6	Landscape - Restrict or prohibit runoff from landscape irrigation	5.30%		Yes
6	Landscape - Limit landscape irrigation to specific times	2.02%		Yes
6	Landscape - Limit landscape irrigation to specific days	4.72%		Yes
6	Landscape - Other landscape restriction or prohibition	4.24%	Irrigation of turf or ornamental landscapes during and forty-eight (48) hours following measurable rainfall is prohibited.	Yes
6	Landscape - Other landscape restriction or prohibition	0.98%	Irrigation of ornamental turf on public street medians is prohibited.	Yes
6	Landscape - Other landscape restriction or prohibition	4.64%	Irrigation of landscapes outside newly constructed homes and buildings that is not delivered by drip or micro-spray systems is prohibited.	Yes
6	Landscape - Prohibit certain types of landscape irrigation	8.62%	Prohibit watering of turf.	Yes
6	Landscape - Prohibit all landscape irrigation	8.62%		Yes

Shortage Level	Demand Reduction Actions	Shortage Gap Reduction[1]	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
6	CII - Lodging establishment must offer opt out of linen service	0.97%		Yes
6	CII - Restaurants may only serve water upon request	0.97%		Yes
6	CII - Commercial kitchens required to use pre-rinse spray valves	0.97%		Yes
6	CII - Other CII restriction or prohibition	0.97%	CII facilities with independent non-District source of water supply shall limit outdoor irrigation to no more than one (1) day per week.	Yes
6	Water Features - Restrict water use for decorative water features, such as fountains	0.97%	Non-recirculating fountains prohibited	Yes
6	Pools and Spas - Require covers for pools and spas	0.97%	Or approved equivalent	Yes
6	Pools - Allow filling of swimming pools only when an appropriate cover is in place.	0.97%	Or approved equivalent	Yes
6	Other water feature or swimming pool restriction	0.97%	Pools may NOT be drained and refilled unless authorized by the District.	Yes
6	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	6.00%	Repairs must be made within forty-eight (48) hours of notification.	Yes
6	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	1.35%	Washing boats is also included in the prohibition	Yes
6	Other - Prohibit use of potable water for washing hard surfaces	2.76%		Yes
6	Other - Require automatic shut of hoses	2.76%		Yes
6	Other	0.38%	Gyms, pools, and other businesses providing showers must post drought notices and promote limitation of shower use.	Yes
6	Other	0.01%	Use of District water for public outdoor showers is prohibited unless approved by the District.	Yes
6	Other	0.02%	Use of District water for recreational purposes is prohibited unless approved by the District.	Yes

Shortage Level	Demand Reduction Actions	Shortage Gap Reduction[1]	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
6	Other	0.02%	Consider a moratorium of new meters.	Yes
6	Other	6.00%	Consider a water budget	Yes

1. Some actions that are consistent across multiple drought stages (e.g., prohibiting landscape runoff) are assumed to increase water conservation as the District increases the drought stage due to on-going outreach and drought messaging, social pressures, and increased monitoring and enforcement efforts by the District.

6.4.5 Operational Changes

The District manages its supplies during shortages by shifting which source serves as its primary supply in a given year. During dry years, the District uses surface water and carryover storage in the first few dry years while such supplies are still accessible, reserving groundwater supplies for potential dry years that may follow, because groundwater is more reliable in dry years. Historically, the District has also acquired supplemental water in early drought years as a way to conserve local supplies for times when supplemental water may be harder to acquire or more expensive later in a prolonged drought. As noted elsewhere, the District is able to change operation of its distribution system to address localized outages, as well as maintains an emergency connection to Casitas Municipal Water District, which could be used to access supplemental water or in the event that the District's connection to the Cachuma Project is disrupted.

6.4.6 Priority by Use

In the event of a water shortage emergency, water allotments will be established for all customers on a percentage basis, as shown in **Table 39**. All customers will be required to reduce use at the same percentage. First priority is given to health and safety in all cases. It is not believed that a shortage will jeopardize the health or safety of any District customers. If a customer chooses to protest their allotment due to hardship, they may file a claim at the District for review by the General Manager and, if appropriate, by the Board of Directors. A decision to adjust an allotment will be based primarily on a health and safety basis.

6.4.7 Health and Safety Requirements

In Stage 1 shortages, customers may adjust either indoor or outdoor water use (or both), in order to meet the voluntary water reduction goal. However, under Stages 2 through Stage 6 mandatory rationing programs, the District established a health and safety allotment of 55 gallons per capita per day (GPCD) and as low as 43 GPCD for short-term severe water shortages. This value equals 2,684 cubic feet per person per year for long-term water shortages. Stage 4, Stage 5, and Stage 6 mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or as a result of a disaster, would require that customers eliminate outdoor landscape watering and make changes in their indoor water use habits (for instance, not flushing toilets unless "necessary" or taking less frequent showers).

6.4.8 Water Shortage Stages and Triggering Mechanism

The water shortage response is designed to provide more than 50 percent of normal supply during a severe or extended water shortage (Stage 6). The rationing program triggering levels shown below were established to ensure that this goal is met. Water shortage stages are provided in **Table 42.**

The District's potable water sources include local groundwater, local surface water from Lake Cachuma, and imported State Water Project water. In addition, the District has access to exchange water, which is a combination of banked supplies and water purchased from other suppliers. Historically, the District has been able to purchase supplemental water during drought from CMWD, Mojave Water Agency, AVEK and other State Water Project contractors. The District is also pursuing advanced purified recycled water for potable reuse, which will create a drought-proof local supply,

considered to be highly reliable. This new supply is expected to become available starting in 2026. Rationing stages may be triggered by a supply shortage in one source or a combination of sources. When Shortages overlap Stages, the more restrictive rules will apply. Criteria for triggering the rationing stages are shown in **Table 42** below. A decision by the General Manager and ratification by the Board of Directors will be the mechanism by which the District will declare rationing requirements.

The General Manager shall report to the Board of Directors as needed with an assessment of the current water supplies, current water use trends, predicted weather conditions, and recommended water shortage stage. The Board of Directors may declare that a water shortage condition exists and implement the appropriate demand reduction goals and measures in response to current and/or predicted water availability conditions. During implementation of the water shortage stages, the District will perform water use/demand monitoring procedures. The District routinely monitors water use throughout the service area and can detect irregularly high water use. In general, monitoring of water use is performed during each water shortage stage, but may be intensified if conditions warrant, as described in Section 6.2.2.

Table 42: Water Shortage Stages and Triggering Mechanisms

	Stage 1 **Up to 10%**	**Stage 2** **10 - 20%**	**Stage 3** **20-30%**	**Stage 4** **30-40%**	**Stage 5** **40-50%**	**Stage 6** **>50%**
Water Supply Condition						
Supply Deficit	(1) Estimated demand is projected to exceed total supply by up to 10%. And (2) Below "normal" year is declared. Or	(1) Estimated demand is projected to exceed total supply by 10-20%. And (2) Below "normal" year is declared. Or	(1) Estimated demand is projected to exceed total supply by 20-30%. And (2) Below "normal" year is declared. Or	(1) Estimated demand is projected to exceed total supply by 30-40%. And (2) Fourth consecutive below "normal" year is declared and carryover water is depleted. Or	(1) Estimated demand is projected to exceed total supply by 40-50%. And (2) Fourth consecutive below "normal" year is declared and carryover water is depleted. Or	(1) Estimated demand is projected to exceed total supply by over 50%. And (2) Fourth consecutive below "normal" year is declared and carryover water is depleted. Or
Water Quality	(1) Contamination of up to 10% of water supply (exceeds primary drinking water standards). Or	(1) Contamination of 10-20% of water supply (exceeds primary drinking water standards). Or	(1) Contamination of 20-30% of water supply (exceeds primary drinking water standards). Or	(1) Contamination of 30-40% of water supply (exceeds primary drinking water standards). Or	(1) Contamination of 40-50% of water supply (exceeds primary drinking water standards). Or	(1) Contamination of over 50% of water supply (exceeds primary drinking water standards). Or
Disaster Loss	As Necessary.	As Necessary.	As Necessary.	As Necessary.	As Necessary.	As Necessary.

6.4.9 Current Stage

The District Board of Directors approved Ordinance 21-1 on October 13, 2021, which declared a Stage Two Drought Condition and authorized staff to implement Water Shortage Stage 2 measures. A copy of Ordinance 21-1 is provided in **Appendix K**. The District will select from a menu of options to achieve the Stage 2 demand reduction goal as provided in **Table 39**.

6.5 REVENUE AND EXPENDITURE IMPACTS AND MEASURES TO OVERCOME IMPACTS

Surplus revenues that the District collects are put into reserves for Capital Improvements and for emergencies. The District has a policy to maintain approximately six months of operating expenses in reserves. Because the District rates are structured such that 49.5 percent of revenue is collected through sales, 50 percent through service charge and 0.5 percent through other sources, a decrease in sales has a limited impact on revenues. Given District reserve policy, immediate rate increases would not be necessary to meet expenses. The District does have the ability to implement a drought surcharge, if needed, with approval from the Board of Directors. No adjustments are anticipated in short-term expenditures as the result of water shortage stages.

6.6 IMPLEMENTATION

This section provides methods for implementing the WSCP, including compliance with annual water supply and demand assessments, communication protocols, monitoring and reporting procedures, and future WSCP updates.

6.6.1 Legal Authority

The District has the authority to implemented and enforce this WSCP. Water must be used beneficially and reasonably under California Constitution Article X, Section 2 and Water Code section 100 , and in the interest of the people and the public welfare. Sections of Water Code Chapter 3 commencing with Section 350 of Division 1, provide the authority for the governing body of a water agency to declare a water shortage and to adopt and enforce water conservation restrictions. (CWC §§ 350-359, 375-378.0.). Under California law, including CWC Chapters 3.3 and 3.5 of Division 1, Parts 2.55 and 2.6 of Division 6, Division 13, and Article X, Section 2 of the California Constitution, the District is authorized to implement the water shortage actions outlined in this WSCP. In water shortage cases, shortage response actions to be implemented will be at the discretion of the District and will be based on an assessment of the supply shortage, customer response, and need for demand reductions as outlined in this WSCP.

6.6.2 Annual Supply and Demand Assessment

Beginning 2022, the District will be required to prepare and submit to DWR an annual water supply and demand assessment (Annual Assessment) by July 1 of each year. The purpose of the Annual Assessment is to determine if there will be a shortfall in District water supplies for the current year and one dry year. The Annual Assessment will comply with DWR's Annual Assessment guidance document that is being currently being developed by DWR and anticipated to be available to water suppliers by the first Annual Assessment deadline. The steps and timing to complete the Annual Assessment and submit the final report are listed in **Table 43** to provide consistency year-after-year regardless of District staff changes. This timeline serves as a guideline for preparing the Annual Assessment and may be modified based on relevant circumstances.

The Annual Assessment will rely on the District's water and supply demand model, described in **Section 6.4**, to determine the potential for a supply shortage in the current year (next 12 months) and the following year (next 24 months), and the severity of the water supply shortage based on current trends in demand and supply availability. To evaluate reliability, the Annual Assessment will evaluate its overall water supply, current year unconstrained customer demand, current year available supply, relevant infrastructure capabilities and constraints, and planned water use for current year considering dry subsequent year.

Table 43: Annual Assessment Process

Timeline	Assessment Process
March - April	District determines available local supplies.
	Evaluate Cachuma Project Water using District's supply projection model
	Evaluate existing CCWA supplies
	Coordinate with the Carpinteria GSA and evaluate groundwater supplies
April – May	District determines total available supply.
	District determines infrastructure constraints (including water quality conditions limiting local sources).
	District determines expected demand for current year and one subsequent dry year.
	District compares supply and demand and makes a determination of the water supply reliability.
June	The District's Board of Directors reviews and approves Annual Assessment determination.
	Annual Assessment report to be submitted to the state by July 1.

A formal decision-making process will occur each year to approve the water supply reliability determination of the Annual Assessment. The Annual Assessment will document anticipated shortages and, if any, appropriately trigger shortage response actions, associated compliance and enforcement actions, and communication actions. These results will be presented to the District's Board of Directors for approval. If the Annual Assessment determines a potential supply shortage, the Board of Directors' approval of the Annual Assessment, with potential coordination with CCWA, will also serve as a formal declaration of any foreseen water shortage level, and trigger recommendations for specific shortage response actions.

6.6.3 Communication Protocols

Timely and effective communication is a key element of WSCP implementation. A well-informed public is generally more willing to adhere to requests to voluntarily conserve or change water use patterns and will be more likely to comply if mandatory restrictions are needed. Public information campaigns support voluntary and mandatory reduction measures by increasing awareness of current or future water shortages and providing guidance on water conservation. The WSCP details the protocols and procedures that the District will implement at each stage of a declared water shortage to help customers comply with the water shortage actions. For each level of water shortage, public outreach efforts are expanded to reach greater water demand reductions. The District uses its website https://cvwd.net/ as one of its tools to communicate shortage level and associated water restrictions. Other proposed outreach include, but are not limited to, social media posts, bill inserts or newsletters, flyers and post-cards, presentations at community events, and press releases. Entering a WSCP Stage requires Board approval, and therefore would also be noticed to the public through the Board meeting materials and public Board meetings. See **Table 44** for a summary of the communications protocols for each level.

Table 44: Communications Protocols and Processes

Shortage Condition	Stage	Customer Reduction Goal	Type of Rationing Program	Communication Protocols
Up to 10 Percent	1	10%	Voluntary	Expand public information campaign
10 to 20 Percent	2	20%	Mandatory	Expand public information campaign
20 to 30 Percent	3	30%	Mandatory	Expand public information campaign
30 to 40 Percent	4	40%	Mandatory	Expand public information campaign
40 to 50 Percent	5	50%	Mandatory	Expand public information campaign
Greater than 50 Percent	6	>50%	Mandatory	Expand public information campaign

6.6.4 Monitoring and Reporting

Monitoring and reporting key water use metrics is fundamental to water supply planning and management. Actively monitoring the effectiveness of the WSCP is also essential to ensure that the response actions are achieving their intended water use reduction purposes, or if improvements or new actions need to be considered. Monitoring for customer compliance tracking is also useful in enforcement actions. This section describes the metrics currently monitored by the District, as well as procedures for reporting the metrics to the State.

Under normal water supply conditions, the District monitors and reports water supply and demand monthly. Automated metering infrastructure will be in place across the District's system to provide near-real-time data on water use. During a drought or water shortage emergency, the District will determine water savings made from implementing the stages or the WSCP by reviewing and comparing production reports. Each customer can be evaluated for compliance with shortage response actions.

The WSCP is an adaptive management plan that can be revised and refined to ensure its shortage response actions are effective and produce desired results. Results of monitoring and reporting efforts will be used to evaluate the effectiveness of shortage actions. If demand reductions consistently fall short of the target and water shortage thresholds are triggered, the District Board of Directors may declare increasingly severe water shortage stages and associated demand management programs to accomplish the necessary reductions.

At this time the UWMP is being updated, DWR is in the process of preparing guidelines for monthly reporting of water production and other water uses to the State, along with associated enforcement measures. If necessary, this Plan will be updated once the guidelines are finalized to include any metrics not currently monitored in this Plan. Reporting to DWR will be consistent with future regulation for monthly reporting.

6.6.5 Plan Refinement Procedures

This WSCP will be adopted on October 27, 2021 by the District's Board of Directors, following a public hearing. The WSCP is an adaptive management plan that is designed to be responsive to the effectiveness of water shortage actions during declared water shortage. As such, the WSCP is subject to adjustments and refinements as needed to ensure that actions are appropriate and effective. In the event that water shortage response actions are not producing the necessary demand reductions, the District will take adaptive measures necessary to achieve further demand reductions, which may include adding new or modifying existing water use restrictions, creating targeted outreach programs, or implementing additional conservation incentive programs. Additionally, the WSCP can be updated at any time by the District, with approval from the Board of Directors, separate from updates to the UWMP.

7. DEMAND MANAGEMENT MEASURES

7.1 UWMP REQUIREMENTS

This section will include the following:

- Description of the nature and extent of each demand management measure implemented over the past five years, including water waste prevention ordinances, metering, conservation pricing, public education and outreach, assessment and management of distribution system real loss, conservation program coordination and staffing, and other demand management measures that significantly impact water use. (CWC §10631(f)(1))

7.2 INTRODUCTIONS

"Demand management," as applied to water conservation, refers to the use of measures, practices, or incentives implemented by water utilities to permanently reduce the level or change the pattern of demand for a utility service. Historically, the District has actively pursued water demand management. There have been and continue to be many programs implemented by the District, in conjunction with the Santa Barbara County Water Agency and other local water purveyors through the Regional Water Efficiency Partnership (RWEP). The Urban Water Management Planning Act requires the UWMP include a description of seven (7) specific demand management categories (DMMs) (CWC §10631(f)(1)).

The California Urban Water Conservation Council (CUWCC) was formed in 1991 to increase efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities. The goal of the CUWCC was to integrate urban water conservation Best Management Practices (BMPs) into the planning and management of California's water supplies. CUWCC was composed of hundreds of urban water suppliers and environmental organizations. The District was a signatory to the CUWCC document titled, *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU, CUWCC, 2007) and was therefore a member of the CUWCC. The MOU included a list of BMPs for demand management which are very similar to the measures required by the UWMP Act. In 2017, the CUWCC transitioned from the CUWCC to the California Water Efficiency Partnership (CalWEP) as a refocused and restructured organization envisioned to help achieve efficiency gains by helping its members meet legislative and regulatory requirements.

7.3 DEMAND MANAGEMENT MEASURES

The District administers several demand management programs for residential, commercial, and agricultural customers. These measures will be organized according to the following categories as required by the UWMP (CWC §10631(f)(1)):

- water waste prevention ordinances
- metering
- conservation pricing
- public education and outreach
- programs to assess and manage distribution system real loss
- conservation program coordination and staffing support
- other demand management measures that significantly impact water use

7.3.1 Water Waste Prevention Ordinances

The District has an existing water waste ordinance (Ordinance 19-2, see copy in **Appendix K**). This ordinance is a beneficial tool to curb misuse and waste of potable water within the District. Provisions of the ordinance can be utilized during periods of normal water supply and supply deficiency. Violation of this ordinance may be cause for water service

to be shut-off and the connection sealed by the District; water shall not be turned on again until reconnection and accrued monthly service fee and charges are paid.

The District has updated its water shortage contingency planning documents to reflect up to date policy, moving from three (3) to six (6) stages using the latest water supply and demand data as points of reference. A copy of the 2020 Water Shortage Contingency Plan is included in this UWMP as Section 6.

7.3.2 Metering

The District meters all water sources and all water sold to customers. Accuracy of the District's meters has improved significantly since the completion of its comprehensive meter replacement program in 2018. Approximately 4,450 older meters were replaced with new ultrasonic meters as part of the District's automatic meter infrastructure (AMI) system implementation initial phase.

The District completed an AMI pilot program of 102 meters ranging in size from ¾-inch to 2-inch meters dispersed throughout the District. The District is currently implementing the AMI system for the remaining meters and anticipates the system will be online in the near term. The meter reads are collected by cellular network providing near real-time water consumption data. This data not only assists the District with early leak identification but customers as well. Through a secure on-line platform, District customers have the ability to review, monitor and analyze their water consumption and set leak alert notifications. The AMI system will help reduce water loss due to leaks, reduce water waste, and save customers money.

7.3.3 Conservation Pricing

District water rates are based on the cost of providing services to all accounts. The District currently has inclining block water rates where the cost per unit of water increases with the quantity of water used for municipal and industrial (M&I) accounts. For inclining block rate structures, the block (quantity) shift points are generally based upon the unique demand characteristics of each user class and are focused on user demand points to enhance water usage awareness. An inclining block rate tends to decrease water use (i.e. promote water conservation) due to the economic disincentive to waste water.

District customers are billed monthly for 100 percent of the volume of water used. The District has a 3-tier rate structure for Single Family and Multi-Family Residential customers, a 2-tier rate structure for Commercial, Industrial and Public Authority customer classes, and a uniform rate structure for Agricultural class customers. The commodity rate per hundred cubic feet (HCF) for all customer classes is dependent on usage and elevation of the property. Agricultural customers with residential units pay a Residential Equivalency fee that covers drinking water treatment related costs.

Monthly Service Charges for individually metered dwelling units or structures include a basic component to fund costs associated with meter maintenance, customer service, and billing *and* a State Water Project (SWP) component to fund 100 percent of the District's SWP debt obligation. The Monthly Service Charges varies with meter size. .

The District also has a Capital Improvement Program (CIP) and an Agricultural Operations and Maintenance (Ag O&M) charge. The CIP charge pays the District's non-SWP debt obligations and capital project costs associated with projects helping the District meet current and proposed drinking water quality standards set by the United States Environmental Protection Agency (EPA) and enforced by the California State Water Board. The Ag O&M charge appears only on the bills of agricultural customers. This charge funds the portion of costs that are collected from other customer classes through the CIP charge.

The District has the ability to implement a drought surcharge during dry water years. The District has the legal authority to evaluate and set rates for its customers.

Inclining block rate pricing may also include seasonal rates and/or excess-use surcharges to reduce peak demands during summer periods.

7.3.4 Public Education and Outreach

The District recognizes the continued need for a public information program to maintain and increase the public's awareness of water and the need to use it wisely. Public information is used to promote the water conservation ethic and inform the public of the benefits derived from conserving a valuable resource. Providing current water conservation information is a key part of the District's program activities. The District also partners with the Green Business Program and collaborates with other Santa Barbara county water providers through the Regional Water Efficiency Program (RWEP) which is coordinated by the Santa Barbara County Water Agency. The on-going programs have been proven successful and are well received by customers. Increased educational and outreach programs were especially important during the last drought and current dry period. It is recommended that the District continue to support these public information programs including various special events, sponsor activities, workshops, and prepare materials that promote awareness of demand management and water conservation issues. Education and outreach materials should be available in both English and Spanish. Several of these events, activities, and materials are described below.

The District prepares an annual Consumer Confidence Report (CCR) that is designed to inform customers about the quality of water and services provided. The District's CCR also includes water conservation elements. A copy of the current CCR is provided in **Appendix I**. In addition, the District has prepared news articles and releases, water bill inserts, announcements, social media posts, print ads, hand-outs, brochures, and website postings to convey a water conservation message.

There are numerous opportunities throughout the year to promote water conservation. Examples include the USEPA's "Fix a Leak" week in March, "Water Awareness Month" in May, Smart Irrigation Month in July, and "Water Efficiency Month" in August. The District takes advantage of these designated observation periods to communicate with customers the importance of water conservation especially during dry periods or drought with many of the outreach methods previously mentioned as well as linked resources from sources such as American Water Works Association, USEPA, or other water agencies**.**

District staff makes presentations to community groups such as schools, farm associations, public service clubs, and Chambers of Commerce. Staff are available to discuss the impact of short-term and long-term water supply issues. In addition, the District has and will continue to support the availability of Spanish translation services at public hearings. Bilingual speakers have been available for English and Spanish audiences also. The District intends to continue to support these public information programs.

Primary focus of the District's school education programs is to educate students on water resource issues, water use, and conservation. The program educates students about where water comes from, how it is used, and ways to save and use water efficiently while meeting State and local education requirements. The District, in conjunction with Santa Barbara County Water Agency, provides school assembly productions, "H2O, Where Did You Go" and "Waterology" presented by Shows That Teach. These school assembly productions help future water users realize that water in California and specifically in Carpinteria is a precious commodity that cannot be taken for granted. From 2015 through 2020, the District reached over 2,170 students with these two school assembly productions.

The District also supports and promotes the Santa Barbara County Water Agency annual High School Video Contest. Winners of the annual contest create a public service announcement that conveys the importance of water conservation in Santa Barbara County. Winning videos have aired on local television stations and movie theaters.

7.3.5 Programs to Assess and Manage Distribution System Real Losses

Over the last several years, the District's program to assess and manage distribution system real losses has included main replacements, main break and system leak repairs, a comprehensive meter replacement of approximately 4,450 older positive displacement meters with ultra-sonic meters, valve exercising, and fire hydrant check valve installation. A copy of the District's fiscal year 2019-2020 water audit is provided in **Appendix G**.

Additional District efforts include the following:

- Continue to meet current standards for water system losses of below 10 percent. The District will continue to use the AWWA calculator.
- Participate in the annual AWWA Water Loss Technical Assistance Program (TAP) to perform water loss audits and conduct audit validations.
- A component analysis on the water system was completed in 2017 and every 4 years after to identify the various components of real losses.
- Identified real losses will be analyzed and a determination will be made as to the cost effectiveness of potential water loss reduction actions. If any individual or group of actions are determined to be cost effective, the District will begin a program to implement such actions.
- All reported leaks, including the District's side or customer's side, are currently addressed immediately. If a customer's use increases by 90 percent, after reading the meter, then the District flags the account and the customer is contracted to let them know they may have leak.
- The District has completed its largescale meter replacement and AMI project, which will allow the District to reduce non-revenue water loss significantly and better conduct water loss component analyses.

7.3.6 Conservation Program Coordination and Staffing

The District Engineer currently serves as the designated Water Conservation Coordinator managing the District's water conservation programs and one full-time staff person dedicated to implementing the programs. For fiscal year 2020-2021, $51,800 was allocated to the funding of the District conservation program. The conservation program include the following: review and analysis of water use on a District-wide basis; preparation and dissemination of public information materials; posting conservation messaging through print ads, social media platforms and the District website; provide follow-up and response to inquiries or complaints; coordination of water conservation rebate and outreach programs; compile and verify data, coordinate requests for speakers on water topics; and participate in local, regional, and state organizations that promote water conservation.

A copy of the District's BMP reports is provided in **Appendix M**.

7.3.7 Other Demand Management Measures

Wholesale Agency Assistance Programs

Although the District is not a wholesaler, it does participate in regional water management and efficiency programs, such as Santa Barbara County Regional Water Efficiency Program, Santa Barbara County Integrated Regional Water Management Program, Central Coast Water Authority, and Cachuma Operation and Maintenance Board. The District has participated in planning and programs concerning water demand management issues and urban water management in Santa Barbara County and the State of California. Additional benefits of participation include enhanced water resource flexibility in the event of operational disruption, extended drought, or other emergency.

The District intends to continue to participate in these organizations to reinforce relationships with other member agencies to enhance water resource flexibility and proper response to operational disruption, extended drought, or other emergency.

Residential Programs

Survey Programs

Residential water surveys are conducted by trained District employees and are generally at the customer's request. However, the District may also invite, via direct mail, email, social media posts, and the District's web page, all single-

family customers to participate in the residential water saving surveys, to increase participation. Homes built before 1992 can be targeted for this program, because they were constructed prior to revisions in plumbing codes requiring water conserving plumbing fixtures in new construction. The District may conduct focused annual water use audits of the new residential customers.

An interior water savings generally includes the following elements:

- Identify types of water usage and signs of water waste
- Estimate the amount of water used for each device or fixture
- Recommend fixture repair options if necessary
- Identify alternative water usage device or fixture possibilities
- Inform customer on how to read their own water meter
- Inform and educate residents to use and conserve water efficiently
- Inform customers of current District conservation programs.

Interior water savings achieved as the result of common water savings surveys is difficult to predict, however savings of 10 to 30 percent have been reported (Deoreo, 2001; Bruvold, 1993; Nelson, 1992). A moderate degree of lifestyle change may be required to achieve maximum water savings. However, the installation of retrofitted fixtures will result in substantial water savings without a significant change in behavior. Water saving surveys for older single-family homes tend to produce more savings, while newer multiple-family homes tend to produce less savings per housing unit. In addition, customers benefit from reduced energy utility bills due to less hot water used. Between 2015 and 2020, the District conducted 38 residential water surveys.

Plumbing Retrofit

Water savings resulting from retrofit fixtures depends on many factors including age of existing model, model of new fixture, participation rate, number of units installed per household, number of residents per household, and acceptance by customer. Installation of retrofit fixtures in older single-family homes tends to produce less savings per housing unit. For the purposes of this document, calculations of conservative water savings are based on the average of 2.4 residents per household.

The District provides the following free plumbing retrofit items to customers to help reduce both indoor and outdoor water usage, low flow showerheads, flow restrictors for the sink, dye tablets to locate leaks in the toilet, outdoor pressure activated garden nozzles, and irrigation controller rain shut off sensors. The plumbing retrofit program benefits existing customers by reducing their water consumption with little change in lifestyle.

A conservative estimate of interior water savings achieved due to retrofit with only the showerhead and faucet restrictor for single-family and multiple-family homes ranges from approximately 34 to 80 gallons per day (gpd) per housing unit (Deoreo, 2001; Bruvold, 1993; Nelson, 1992; Maddaus, 1987). A formal household water audit implemented in conjunction with a retrofitted plumbing items and/or exterior audit would produce estimated conservative water savings of approximately 20 to 50 gpd per household (CUWCC, 2003; Bruvold, 1993; Nelson, 1992).

In compliance with this BMP, the District provides the following:

- Indoor surveys are offered anytime a high bill or abnormal consumption investigation is requested from a customer and as a condition for a leak repair credit request.
- District advertises free water saving surveys on its bills, newsletters, and website.
- In order to increase the number of surveys completed, the District may provide new financial incentives if a customer agrees to a survey, allow self-surveys by providing a check list for customers, and increase its outreach and education efforts to inform customers of the potential financial benefits.

Landscape Water Survey

Exterior residential water saving surveys may include one of two types - routine and detailed. A routine exterior water audit generally includes the following elements:

- Estimate the size of landscaped area
- Assess in-ground irrigation systems for leaks and broken sprinklers
- Measure precipitation rate of irrigation system
- Evaluate automatic control settings
- Develop suggested irrigation schedules
- Provide customer with public education resources
- Inform customers of current District landscape conservation programs.

Examples of public education resources include links from the District's website, CVWD.net to other water saving websites such as DWR's Save Our Water, EPA's WaterSense, and WaterWiseSB.org. The following printed materials "How to be Water-Wise in Your Garden", "Sustainable Landscaping", "Gardening with California Natives", "Working with Your Gardener", and "Save Water Outside" are also available from the District.

Detailed exterior audits include all of the elements of the routine audit in addition to irrigation uniformity audits and soil assessments. Average exterior water savings achieved as the result of routine water audits for single-family residential is approximately 6 gpd per housing unit (Bruvold, 1993; Nelson, 1992). However, water savings ranging from 10 to 50 gallons per day may be generated via detailed exterior audits (CUWCC, 2000; Hawn, 1997).

- Outdoor surveys are offered anytime a high bill or abnormal consumption investigation is requested from a customer. The District conducted 4 residential landscape-only surveys between 2015 and 2020, and issued rebates for 38,400 square feet of turf conversion, 17 rain barrels, and 5 weather-based irrigation controls.
- The District advertises free water saving surveys on its bills, newsletters and website.
- In order to increase the number of surveys completed, the District may provide new financial incentives if a customer agrees to a survey, allow self-surveys by providing a check list for customers, and increase its outreach and education efforts to inform customers of the potential financial benefits.

High Efficiency Clothes Washing Machine Financial Incentive Programs

On average, clothes washers use approximately 17 percent of the interior water demand for an average single family home (CalWEP, 2018). New clothes washers generally use less water and energy compared to older appliances. Federal standards require front-loading clothes washers manufactured after 2015 to be 15 percent more energy efficient and 35 percent more water efficient compared to similar but older models, while top-loading clothes washers to be 33 percent more energy efficient and 19 percent more water efficient compared to similar but older models. Some of the new high-efficiency clothes washers use up to 52 percent less water and up to 63 percent less energy per load compared to older less efficient models (Vickers, 2001). Water and energy savings vary with the new models, however CalWEP (2018) estimates water savings of approximately 5,100 gallons per new high efficiency clothes washers. Total savings for water, wastewater, and energy were estimated to be $43 to $106 per year (CUWCC, 2003).

The District offers a rebate of $150 for high efficiency residential clothes washers. Rebates are based on the projected combined water and energy savings. The District could encourage the City of Carpinteria to require developers of new homes within the District to install high-efficiency clothes washers in future developments.

In compliance with this BMP, the District provides the following:

- The District currently has a high-efficiency clothes washer rebate program in place. Between 2015 and 2020, the District issued 38 rebates for high-efficiency clothes washers for residential customers.

- Additionally, the District documents whether a home is equipped with high-efficiency clothes washer during water savings surveys. The District will maintain a database of customers with high-efficiency washers.

WaterSense Specification Toilets

WaterSense Specification toilets (WSST) can use up to 20 percent less water than the current federal standard of 1.6 gallons per flush (gpf), while still providing equal or superior performance. The WaterSense label is used on toilets that are certified by independent laboratory testing to meet rigorous criteria for both performance and efficiency. Only high-efficiency toilets that complete the third-party certification process can earn the WaterSense label. High-efficiency (also known as ultra-low flush toilets - ULFT) commonly use approximately 1.28 gallons or less per flush. However, some types use as little as 0.5 gallons per flush. An added benefit is the reduction of water demand on the District's system, thus delaying or eliminating capital improvements. Higher savings are found in high-density housing and commercial/industrial settings. Savings also persist over the entire lifespan of the toilet (approximately 25 years). Water conserved in WSST replacement programs have been shown to be 1.9 to 5.4 gallons of water savings per flush per toilet which equates to 12 to 45 gallons per replacement per day. For the purposes of this report estimated savings is 40 gallons per toilet per day for single-family units and 50 gpd for multi-family units.

California Civil Code, Title 2, Chapter 2, Part 4, Division 2, Article 1.4, Section 1-3, required all noncompliant plumbing fixtures in multiple-family residential and commercial properties must be replaced by the property owner with water-conserving plumbing fixtures on or before January 1, 2019. For single-family residential properties, the law requires, that a seller or transferor of single-family residential, disclose to the purchaser or transferee, in writing, the specified requirements for replacing plumbing fixtures and whether the real property includes noncompliant plumbing on and after January 1, 2017.

It should be recognized that natural replacement (approximately 3 to 4 percent per year) will eventually replace all of the older, high water use models with 1.28 gal/flush or less toilet models as required by the revised plumbing code. However, this would likely take more than 25 years to complete. WSST incentive programs accelerate the water savings and as such can help defer or eliminate other capital investment needs.

The District plans to implement the following actions to increase residential conservation:

- The District will continue its Residential ULFT rebate program in place, providing up to $100 per ULFT replacing inefficient toilets flushing more than 1.6 gallons. Between 2015 and 2020, the District issues 118 rebates for high-efficiency toilets to residential customers.
- The District will continue noting whether a home is equipped with ULFT during water savings surveys. The District will maintain a database of customers with ULFT toilets.

Commercial Industrial Institutional Programs

Objective of this program is to encourage the replacement of fixtures commonly found at commercial, institutional (i.e., government and schools), and industrial (CII) sites having the greatest potential water savings. This program targets sites with the largest water savings potential by marketing directly to their owners and corporate headquarters. Examples of the District's CII programs include water savings surveys, fixture retrofits (WSST, faucets, etc.), and coin operated washing machine replacement.

Estimated water savings for CII programs is 1 percent per year (total of 5 percent). (CUWCC, 2005) Additional water savings may result when combined with other measures such as on-site water saving surveys (landscape irrigation, internal water uses, and ultra-low flush toilet retrofit programs).

The District plans to implement the following actions to increase conservation within commercial, industrial, and institutional customer categories:

- All Commercial, Institutional, and Industrial accounts are classed and ranked by use through our billing system.
- Currently, water saving surveys are offered to CII accounts anytime a high bill, leak detection investigation, or leak repair credit is requested from a CII customer. Between 2015 and 2020, the District conducted 11 CII customer water surveys, and provided 11 high-efficiency clothes washer rebates and 101 high-efficiency toilet rebates to CII customers.
- The District advertises free water saving surveys on its bills, newsletters and website. The District also contacts the largest CII users and offers them surveys directly.

Large Landscape Programs

The objective of landscape water use evaluation is to gather sufficient field data and implement a demand management action plan. This program could provide owners of large landscaped areas (commonly defined as 2 acres or more) with information to enable them to perform timely equipment maintenance and to apply accurate irrigation amounts throughout the year. The District refers interested customers of large landscape to contact the Cachuma Resource Conservation District (CRCD) to perform water use evaluations. These evaluations generally include the following elements:

- Estimate size of landscaped area
- Define soil characteristics
- Assess in-ground irrigation systems for leaks and broken sprinklers
- Measure irrigation system uniformity rate
- Evaluate automatic control settings
- Develop suggested irrigation schedules
- Provide customer with public education materials
- Inform customers of current District landscape conservation programs.

Prior to the large landscape water use evaluations and audits, the District could identify accounts with dedicated irrigation meters and estimate landscape irrigation budgets based on data received from the Department of Water Resources. These budgets and practices to keep water use within the budgeted amounts could be discussed with the customers. Dedicated landscape irrigation meters are recommended for large accounts without such meters. Follow-up contact by District staff with each customer included in the large landscape water use evaluations program is encouraged to develop on-going relationships with these customers.

Benefits from large landscape water use evaluations include water and cost savings, as well as landscape health and appearance. Significant reduction in water demand, estimates range from 15 to 50 percent, can be achieved by modifying exterior vegetation and irrigation practices on landscaping (Hawn, 1997; DWR, 1989; CUWCC, 2003; Texas, 2004). In addition, educational materials regarding external landscaping care can be provided.

In addition, the District could coordinate with the City of Carpinteria, schools, and businesses, regarding large landscape water use evaluations for local facilities with large landscaped areas. This large landscape water use evaluations could include the following: applying only the proper amount of water that is required to maintain the landscaped area in a healthy condition, evaluating the condition and efficiency of the irrigation system including the irrigation controllers, pipes, and sprinklers; making adjustments in the irrigation schedules to achieve proper irrigation efficiency; replacing manual irrigation controllers with automatic irrigation controllers capable of automatic shut off when a sudden pressure loss occurs due to a broken system; installation of soil moisture sensors for all automatic irrigation controllers. The District could require annual large landscape water use evaluation and efficient irrigation for governmental properties with landscaped areas of one acre or more. This evaluation reduces water wastage.

The State of California created the Model Water Efficient Landscape Ordinance (MWELO). The DWR updated MWELO in 2015 to increase water efficiency standards. New development projects that include landscape areas of 500 sq. ft. or more are subject to the Ordinance. This applies to residential, commercial, industrial, and institutional projects that require a permit, plan check, or design review. The size threshold for existing landscapes that are being rehabilitated has not changed, remaining at 2,500 sq. ft. Only rehabilitated landscapes that are associated with a building or landscape permit, plan check, or design review are subject to the Ordinance. The City of Carpinteria's Municipal Code, Chapter 15.90, Water Efficient Landscaping, includes provisions that apply to landscapes for local development projects.

The District plans to implement the following actions to increase conservation for customers with large landscapes:

- The District currently has a WaterWise Landscape rebate program in place. The District still has funding available for this program. Between 2015 and 2020, the District issued 99 Landscape rebates resulting in 38,400 square feet of turf conversions.
- The District will be increasing its outreach effort to offer and conduct more surveys with the help of CRCD.
- The District will be conducting a study to better understand large landscape water use in the District. The goal of this study will be to develop a policy regarding large landscape water budgets.

Conjunctive Use

Conjunctive use of groundwater and surface water is the planned balanced use of both types of water, so that the supplies and use of both these types of water can be maximized. During wet years, conjunctive use implies that the plentiful surface water supply is used to its maximum, while groundwater use is minimized. This allows for groundwater supplies to be saved and recharged. During dry years, this plentiful groundwater supply can then be used to help ensure that important surface water supplies are not depleted rapidly. Conjunctive use also encompasses the use of surface waters to artificially recharge the groundwater basin during wet years.

The District currently practices conjunctive use of its groundwater and surface water. During recent wet water years, the District maximized its use of plentiful surface water, while groundwater use by the District was reduced. Conjunctive use allows for the creation of a recharged groundwater basin, which can be used as insurance against potential drought or other impacts on the District's water supply. The District plans to pursue artificial recharge of the groundwater basin with advanced purified recycled water, under the Carpinteria Advanced Purification Project (CAPP).

7.3.8 Agricultural Programs

The District prepared and adopted an Agricultural Water Management Plan (AWMP) in March 2016. The AWMP included many of the measures summarized above. In 2017 the District participated in a study done by CRCD called *Strategic Actions for Enhancing Agricultural Water Efficiency* included in **Appendix N**. The Study analyzed Carpinteria farm operations as to crop, irrigation practice, and agricultural operator priority and interest in efficiency and drought impacts. The study will be used to inform the District's targeted agricultural messaging. Additional agricultural demand management programs are summarized below.

On Farm Irrigation Capital Improvements

The District continues to evaluate an agricultural irrigation efficiency program to offer financial incentives to local farmers for improving the efficiency of on-farm irrigation systems. The program could assist farmers by providing them with technical assistance and reimbursing them for a percentage of the cost of equipment required for irrigation system retrofits that improve irrigation efficiency. Examples of new equipment include, but not limited to, the following: drip/micro irrigation, soil moisture sensors, tensiometers, etc.

Customer Pump Test/Evaluation

The District encourages customers with irrigation pumps to contact Southern California Edison which offers free hydraulic pump tests. For information on pumps and SCE's Pump Test Program, contact SCE, 800-336-2822, or visit the following website: on.sce.com/pumptest. The District encourages that meters be installed on private agricultural wells. Staff will work with Natural Resources Conservation Service and the Environmental Quality Incentives Program (EQIP) program to help farmers apply for funding to assist with the cost of meter installation.

Real Time Crop Irrigation Information

The District added an internet link from the DWR CIMIS website to the District's web links page, and notified customers of new web link. District sends information to agriculture customers via direct mail regarding CIMIS data and benefits of ETo based irrigation. Additional irrigation information is made available to farmers upon request.

On Farm Evaluations

The District supports the availability of on-farm irrigation and drainage system evaluations. The CRCD offers irrigation evaluations via its mobile irrigation laboratory. This program is promoted by the District on its website to is agricultural customers. As part of program participation, farmers are provided with free irrigation system audits/evaluations, which include recommendations for implementation of applicable best management practices and water use efficiency improvements. A potential future element of this program could provide financial incentives to farmers who choose to implement the recommendations made as part of the irrigation system audits/evaluation process.

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