

Casitas Municipal Water District
WATER RESOURCES COMMITTEE
Baggerly/Spandrio
Alternate: Brennan

April 16, 2019 – 10:00 A.M.
at
Casitas Municipal Water District
1055 Ventura Ave.
Oak View, CA 93022

AGENDA

1. Roll Call
2. Public Comments
3. Board Comments.
4. Manager Comments.
5. Review of the 2016 Urban Water Management Plan Update.
6. Review Matilija Deep Well Project Technical Advisory Committee proposal.
7. Presentation of Robles Fish Passage Fish Screen Enhancements Alternatives Analysis.
8. Presentation of 2019 Water Supply Assessment.

Right to be heard: Members of the public have a right to address the Board directly on any item of interest to the public which is within the subject matter jurisdiction of the Board. The request to be heard should be made immediately before the Board's consideration of the item. No action shall be taken on any item not appearing on the agenda unless the action is otherwise authorized by subdivision (b) of ¶54954.2 of the Government Code.

If you require special accommodations for attendance at or participation in this meeting, please notify our office in advance (805) 649-2251, ext. 113. (Govt. Code Sections 65954.1 and 54954.2(a). Please be advised that members of the Board of Directors of Casitas who are not members of this standing committee may attend the committee meeting referred to above only in the capacity of observers, and may not otherwise take part in the meeting. (Govt. Code Section 54952.2(c)(6)



**PUBLIC REVIEW DRAFT
RETAIL URBAN WATER MANAGEMENT PLAN
2016 UPDATE**

APRIL 2019



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Prepared by:
Milner-Villa Consulting, LLC



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PUBLIC REVIEW DRAFT - RETAIL UWMP 2016 UPDATE

**PUBLIC REVIEW DRAFT
RETAIL URBAN WATER MANAGEMENT PLAN
2016 UPDATE**

APRIL 2019

Prepared for:

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APPENDICES

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Appendix B – UWMP Act and Related Regulations

Appendix C - *[deleted]*

Appendix D – CMWD Notifications and Resolution for UWMP

Appendix E – UWMP Required Tables

Appendix F – SBX 7-7 Required Tables

Appendix G – CMWD Water Rates

Appendix H – CMWD Water Supply and Use Status Report

Appendix I – Ojai Basin Groundwater Management Plan

Appendix J – CMWD Consumer Confidence Report

Appendix K – CMWD Water Conservation Resolutions

Appendix L – CMWD CUWCC BMP Coverage Report

Appendix M – Examples of CMWD Public Outreach Materials

Appendix N – Public Comments Received

Appendix O – UWMP Checklist by Subject

Appendix P – Ventura River Groundwater Management Plan (Executive Summary)



FREQUENTLY USED ABBREVIATIONS AND ACRONYMS

AB	Assembly Bill
AF	acre-foot
AFY	acre-foot per year
AWWA	American Water Works Association
BMP	Best Management Practice
CADDW	California Division of Drinking Water
CADWR	State of California Department of Water Resources
CCR	Consumer Confidence Report
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CII	Commercial, Industrial, Institutional, water use sectors
CIMIS	California Irrigation Management Information System
CMWD	Casitas Municipal Water District (or Casitas MWD)
CUWCC	California Urban Water Conservation Council
CVWD	Carpinteria Valley Water District
CWC	California Water Code
DMMs	Demand Management Measures
gpcd	gallons per capita per day
gpm	gallons per minute
HCF	hundred cubic feet
NOAA	National Oceanic and Atmospheric Administration
OBGMA	Ojai Basin Groundwater Management Agency
OVSD	Ojai Valley Sanitary District
r-gpcd	residential gallons per capita per day
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SWP	State Water Project
SWRCB	State Water Resources Control Board
UWMP	Urban Water Management Plan
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
VRWC	Ventura River Watershed Council
WSCP	Water Shortage Contingency Plan

Definitions for selected terminology are provided in **Appendix A**.



EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The Casitas Municipal Water District (Casitas MWD) is pleased to release this Retail Urban Water Management Plan (UWMP). The Casitas MWD is required to prepare the UWMP as per requirements by the California Department of Water Resources (CADWR). The UWMP elements comply with the requirements of California Water Code (Section 10610-10656).

This UWMP meets the requirements for the UWMP. Urban water suppliers 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 Casitas MWD water supply. This UWMP is a public statement of the goals, objectives, and strategies needed to maintain a reliable water supply for the Casitas MWD'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:

- Summarize description of the Casitas MWD water system
- Quantify projected water demands over the period 2020-2040
- Quantify available water resources over the period 2020-2040
- Summarize reliability of water resources for existing and future demands, in normal, dry, and multiple dry water-years, over the period 2020-2040
- Summarize water conservation and efficient water use programs.

The Casitas MWD notified applicable local agencies and organizations regarding preparation of the UWMP and planned public meeting dates and times. Casitas MWD encourages representatives from those organizations and the public to provide comments on the UWMP and attend Casitas MWD's public meetings. Casitas MWD provided notification via newsletter to customers, direct letters, Casitas MWD Facebook page, and via Casitas MWD website: <http://www.casitaswater.org>. The Casitas MWD will submit the adopted UWMP to the CADWR. Additional details related to public outreach for the UWMP are provided in **Section 1**.

ES.2 SYSTEM DESCRIPTION

Casitas MWD lies in southern California's semi-arid coastal plain. Specifically, the Casitas MWD is located in western Ventura County (see **Figure 2-1**) where there is a history of drought, water supply shortages, and corresponding efforts to develop local water supplies. The Casitas MWD service area includes approximately 137.5 square miles. The area has and continues to be solely dependent upon local water supplies. Local rainfall contributes to the Ventura River Watershed by replenishing Lake Casitas,



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local ground water sources, and the Ventura River. **Figure 2-2** indicates the service area for Casitas MWD.

The climate within Casitas MWD' service area is Mediterranean, which is characterized by cool, wet winters and warm, dry summers. However, climate does vary significantly based on distance from the Pacific Ocean, elevation, area drainage, and slope aspect. Winter low temperatures can fall below freezing in inland areas and rise above 100 degrees Fahrenheit in the summer, affecting higher water demand from customers. Temperatures along the coast are moderated by the ocean and seldom reach the inland extremes. Average monthly temperatures range from 35.9 F (January low) to 91.5 F (August high). Maximum recorded temperature is 119 F (June 16, 1917), while the minimum recorded temperature is 13 F (January 6, 1913). Precipitation, as reported at Ojai, averages 21.2 inches annually. Nearly 96 percent of annual local rainfall occurs from October to April. Maximum recorded annual precipitation is 47.30 inches (1978), while the minimum recorded annual precipitation is 4.35 inches (1947). Maximum recorded daily precipitation is 9.05 inches (February 24, 1913). Additional details related to local climate are provided in **Section 2**.

The main source of water supply for Casitas MWD is Lake Casitas, which has a maximum capacity of 254,000 acre-feet of water (AFY). Casitas MWD maintains two primary retail systems including the Casitas System and the Ojai System. The Casitas System includes one (1) well with a capacity of approximately 300 acre-feet per year. Casitas MWD's Casitas System includes approximately ninety-seven (97) miles of main and distribution pipelines, nine (9) pumping plants, four (4) chlorination stations, and thirty million (30,000,000) gallons of treated water stored in fourteen (14) steel reservoirs. Casitas MWD also operates a sixty-five million (65,000,000) gallon per day pressure filtration treatment plant. The Casitas MWD Ojai System includes six (6) active wells with a maximum production of approximately 2,600 AFY, two (2) active connections to CMWD treated surface water supply, and two (2) standby connections to the CMWD treated surface water supply, and 1.99 million gallons (1,990,000) of treated water storage (SWRCB, 2017a). Additional details related to Casitas MWD facilities are provided in **Sections 2 and 4**.

As previously noted, in June 2017 the Casitas MWD finalized the purchase of the Golden State Water Company's Ojai Division. This purchase added approximately 2,857 retail residential and commercial customers. **Table ES-1** indicates that Casitas MWD has a 2015 retail customer population of approximately 17,421 and a projected 2040 population of 19,651.

Casitas MWD is the primary and or backup water supply for nine water purveyors within the Casitas MWD and for some individual agricultural customers with ground water wells. Using conservative (high) estimates, the Casitas MWD projects the service area population to reach 72,063 by the year 2020 and 79,622 by 2040 (CMWD, 2016). The low population growth is likely to limit overall customer water demand in the future because most of this growth is likely to occur in resale agencies service area, which will allow other agencies ground water sources to supplement the increased demand.



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**TABLE ES-1
CMWD RETAIL CUSTOMER POPULATION**

POPULATION	2015	2020	2025	2030	2035	2040
CMWD system (1,2)	9,944	10,193	10,447	10,709	10,976	11,251
Ojai system (3,4,5)	7,477	7,700	7,870	8,030	8,200	8,400
TOTAL	17,421	17,893	18,317	18,739	19,176	19,651

Notes:

- (1) CMWD, 2018.
- (2) Casitas MWD retail customers population for 2015-2040 based on growth rate 0.5 percent per year (SCAG, 2016).
- (3) Southern California Association of Governments, 2017, Profile of the City of Ojai.
- (4) Southern California Association of Governments, 2016, Regional Transportation Plan-Sustainable Communities Strategy.
- (5) SCAG data; population for 2025 and 2030 estimated using SCAG forecast for 2020 to 2035 with equal amount of increase in each period.

ES.3 SYSTEM WATER USE

Total annual water demand includes water delivered to the various Casitas MWD retail customer classifications, resale customers, agricultural customers, minor losses in the distribution system due to leaks, and flushing of the system for water quality maintenance. The phrase “water demand” and “water use” will be used interchangeably throughout this document. Casitas MWD total water demand can vary dramatically from year to year, ranging from 11,694 acre-feet in 1993 (wet water-year) to 24,416 acre-feet in 1989 (dry water-year) (CMWD, 2016). Water demand is closely tied to local precipitation, with the data showing a major reduction in water demand during wet years, compared to dry years.

During dry water-years, resale and agricultural water demand for Casitas MWD water supply can increase dramatically when local ground water sources become diminished or no longer available. During dry periods, resale and agricultural customers rely more on Casitas MWD’s surface water, and in some cases rely exclusively on water deliveries from Lake Casitas, until ground water supplies are replenished by rainfall events. Depending on the severity and duration of the drought period, it could be anticipated that one or more resale agencies and/or agricultural customers will have limited ground water supply and may rely on Casitas MWD for the balance of essential water supply needs.

Casitas MWD’s Lake Casitas reservoir is managed as a long-term water supply with an annual safe-yield of 20,540 acre-feet (updated in 2015) based on the historical 1944-1965 (21 years) drought cycle under certain conditions, as highlighted in the “Water Supply and Use Status Report” (CMWD, 2004). In 1989, Casitas MWD’s supply and demand studies indicated water demand was approaching the annual safe-yield and any significant increase above existing levels could ultimately lead to demand out-stripping supplies. A continued water supply deficit could lead to future supply shortages during long-term drought conditions. In 1992, Casitas MWD adopted the Water Efficiency and Allocation Program (WEAP). The WEAP was adopted to encourage efficient use of water, to reduce overall water demand, and, to ensure



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the annual safe-yield of supply would not exceed the critical 21,920 acre-feet per year average (CMWD, 1992).

Table ES-2 summarizes the CMWD total water sales to retail, agricultural, and resale customers for the period 2011-2015. As previously noted, local agricultural water demand is historically the highest water demand for Casitas MWD. **Table ES-2** also indicates that Casitas MWD sales to agricultural and resale customers can vary dramatically from year to year. Agricultural customer groups have a much stronger influence on Casitas MWD water demands during low rainfall periods. Agricultural customers have a higher rate of increase in water demand during low annual rainfall years because their primary ground water sources become depleted quickly and they then must rely on Casitas MWD’s surface water supplies. **Table ES-2** indicates that total annual average water sales to CMWD retail customers, agricultural customers, and resale customers within the Casitas MWD service area was 16,145 AF for the period 2011-2015, including a low of 13,431 AF in 2011 to a high of 18,296 AF in 2014. See **Section 3.3** for additional details.

**TABLE ES-2
CMWD TOTAL WATER SALES 2011-2015**

CATEGORY (1,2)	2011	2012	2013	2014	2015
Sales to Retail Customers (3)	2,292	2,655	2,779	2,657	2,507
Sales to Agricultural Customers	4,880	7,603	8,305	9,265	7,502
Sales to Resale Customers	6,259	4,998	7,159	6,374	5,489
TOTAL	13,431	15,256	18,243	18,296	15,498

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded.
- (2) Sales does not include water losses due to production, treatment, storage, nor distribution.
- (3) Retail sales in this table includes only Casitas MWD system customers. Retail sales for the Ojai system are included in this table in sales to resale customers since CMWD purchased the Ojai system in June 2017.

Table ES-3 summarizes the Casitas MWD retail water uses for 2015 including the CMWD system and Ojai system. In 2015, Casitas MWD total retail water demands were 3,990 AF. Residential sales in 2015 (including single-family and multiple-family accounts) was the largest retail customer demand with 2,798 AF (70.1%). Demands by commercial customers in 2015 were 587 AF (14.7%) for the second largest retail customer demand. **Table ES-3** excludes sales to other agencies and agriculture. Retail sales for the CMWD system and Ojai system are separated in **Table ES-3** since the Casitas MWD finalized the purchase of the Golden State Water Company’s Ojai Division in June 2017. This purchase added approximately 2,857 retail residential and commercial customers. See **Section 3.3** for additional details.

Casitas MWD prepared a water audit as defined by the American Water Works Association. For calendar year 2015, Casitas MWD estimated total water losses (for the CMWD system) at approximately 1,247 AF for all sales including wholesale, retail, and agricultural. This audit does not account for losses within



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the systems of the resale customers. The most recent water loss audit for the Ojai system (2010) indicated an estimated loss of 250 AF (GSWC, 2011).

**TABLE ES-3
CMWD RETAIL WATER USE FOR 2015**

CATEGORY	CMWD SYSTEM (AFY) (1)	OJAI SYSTEM (AFY) (1)	TOTAL	PERCENT OF RETAIL WATER DEMAND
Residential (2)	1,512	1,286	2,798	70.1
Commercial	587	(3)	587	14.7
Industrial	29	1	30	0.8
Interdepartmental/Govt.	159	32	191	4.8
Agriculture (4)	0	0	0	0
Sales/Transfers/Exchanges (5)	0	0	0	0
Other (6)	219	165	384	1.0
TOTAL	2,506	1,484	3,990	100

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded. Does not include water losses.
- (2) Includes accounts for single-family and multi-family residential.
- (3) Included with residential.
- (4) Excludes sales for agricultural customers. Agriculture water demand for 2015 included 8,048 AF.
- (5) Excludes sales to wholesale agencies.
- (6) Includes accounts for fire, temporary, transfers and exchanges, etc.

Table ES-4 summarizes the Casitas MWD projected total water demands for the period 2020-2040. Total water demands for the period 2020 to 2025 are projected to be approximately 17,200 AFY (average water-year). For the period 2020 to 2025 (during average water-years), sales to other agencies are projected to be 4,065-4,259 AFY, agricultural sales of 8,000 AFY, and non-agricultural retail sales of 4,941-5,135 AFY. For the period 2030 to 2040, total water demands are projected to be approximately 17,500 AFY. For the period 2030 to 2040, sales to other agencies are projected to be 3,880-4,183 AFY, agricultural sales of 8,000 AFY, and non-agricultural retail sales of 5,317-5,6200 AFY. Casitas MWD projects that agricultural sales and retail sales will remain consistent for the period 2020 to 2040 due to current and future demand management measures implemented within the service area. See **Section 3.6** for additional details.

Table ES-5 summarizes the Casitas MWD projected total retail water demands for the period 2020-2040. Retail water demands for period 2020 to 2040 retail water demands are projected to be approximately



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4,941 AFY to 5,620 AFY (during an average water-year). Residential sales (including single-family and multiple-family accounts) are anticipated to be the largest single demand category through 2040. Casitas MWD estimates that retail sales will increase for the period 2020 to 2040 primarily due to an increase in residential demands within the service area. See **Section 3.6** for additional details.

**TABLE ES-4
CMWD PROJECTED TOTAL WATER SALES 2020-2040**

CATEGORY (1)	2020	2025	2030	2035	2040
Sales to other agencies	4,259	4,065	4,183	4,032	3,880
Agricultural sales	8,000	8,000	8,000	8,000	8,000
Retail sales (2)	4,941	5,135	5,317	5,468	5,620
TOTAL	17,200	17,200	17,500	17,500	17,500

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded. Data does not include water losses.
- (2) Includes sales to CMWD system and Ojai system retail customers.

In November 2009, SB X7-7, The Water Conservation Act of 2009 (CWC, 10608-10608.44; see **Appendix B** for details), was signed into law as part of a comprehensive water legislation package. The Water Conservation Act addresses both urban and agricultural water conservation. 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 Casitas MWD compliance are provided below.

The Casitas MWD compliance with the California Water Conservation Act of 2009 includes the following:

- Baseline period - 10-year: 2001-2010
- Baseline period - 5-year: 2006-2010
- Population 10-year range (2001-2010): 15,540 to 16,894
- Population compliance year 2015: 17,421
- Gross water use 10-year average (2001-2010): 5,082 acre-feet
- Gross water use 5-year average (2006-2010): 4,606 acre-feet
- Gross water use compliance year 2015: 3,282
- Baseline per capita use 10-year avg. (2001-2010): 281 gpcd
- Baseline per capita use 5-year avg. (2006-2010): 266 gpcd
- Gallons per capita per day compliance year 2015: 168 gpcd
- Target Method: Method 1 – 20 Percent Reduction



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- 2015 water use target: 246 gpcd
- 2020 water use target: 225 gpcd
- Actual water use compliance year 2015: 168 gpcd
- Did CMWD meet 20X2020 2015 Interim Target water demand (gpcd)? Yes.

See **Section 3.8** for additional details.

**TABLE ES-5
CMWD PROJECTED RETAIL WATER USE 2020-2040**

CATEGORY (1,2)	2020	2025	2030	2035	2040
CMWD Residential (3)	1,600	1,650	1,700	1,750	1,800
CMWD Commercial	600	622	644	666	690
CMWD Industrial	30	35	40	45	50
CMWD Interdepartmental/Govt.	160	165	170	175	180
CMWD Agriculture (4)	0	0	0	0	0
CMWD Resale (5)	0	0	0	0	0
CMWD Other (6)	220	235	250	265	280
Ojai System Retail (7)	2,331	2,428	2,513	2,567	2,620
TOTAL	4,941	5,135	5,317	5,468	5,620

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded. Data does not include water losses.
- (2) Excludes sales to other agencies.
- (3) Includes accounts for single-family and multi-family residential.
- (4) Excludes sales for agricultural customers.
- (5) Excludes sales to wholesale agencies.
- (6) Includes accounts for fire, temporary, transfers and exchanges, etc.
- (7) Projections for Ojai system based on Golden State UWMP (GSWC, 2010).

ES.4 SYSTEM WATER SUPPLIES

The primary source of water for the Casitas MWD is from the collection and storage of precipitation and runoff from the local Ventura River watersheds into Lake Casitas. The watershed encompasses 226 square miles (144,833 acres) (VRWC, 2015). Flow in the Ventura River fluctuates seasonally and from year to year as is typical with many southern California systems. According to the peer reviewed Casitas MWD “Water Supply and Use Status Report” (2004), safe-yield of the Ventura River Project during a 21-year drought period is approximately 20,840 AF (total includes Lake Casitas surface water and ground water from Mira Monte well). All water extractions from Lake Casitas are made at Casitas Dam through



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the intake structure, pipelines, and treated to meet State water quality standards prior to the delivery to the first water customer.

Casitas MWD relies on local surface water and local ground water sources to meet the water demands of the area. **Table ES-6** summarizes the quantities of water supplies in the Casitas MWD water portfolio for Fiscal Years 2011-2015. **Table ES-6** indicates that Casitas MWD produced an average total water supply for retail customers of 4,652 AFY for the period 2011-2015, with a range from 4,210 AF (2015) to 5,066 AF (2013). This total includes the CMWD system and Ojai system (formerly GSWC). **Table ES-6** indicates that Casitas MWD produced an annual average surface water supply for retail customers of 3,004 AFY for the period 2011-2015 (includes the CMWD system and Ojai system) with a maximum of 3,472 AFY (2013). **Table ES-6** indicates that Casitas MWD produced an annual average ground water supply for retail customers of 1,648 AFY for the period 2011-2015 (includes the CMWD system and Ojai system) with a maximum of 2,000 AFY (2011). See **Section 4.2** for additional details.

**TABLE ES-6
CMWD WATER SUPPLIES FOR RETAIL CUSTOMERS 2011-2015**

WATER SUPPLY SOURCES (1)	2011	2012	2013	2014	2015
CMWD system surface water (1)	2,225	2,423	2,606	2,615	2,455
CMWD system ground water (1)	67	232	173	42	54
Ojai system surface water (2)	114	491	866	743	482
Ojai system ground water (2)	1,933	1,760	1,421	1,337	1,219
Imported surface water	0	0	0	0	0
Transfers in or out (3)	0	0	0	0	0
Exchanges in or out	0	0	0	0	0
Recycled water	0	0	0	0	0
Desalination	0	0	0	0	0
Other	0	0	0	0	0
TOTAL	4,339	4,906	5,066	4,737	4,210

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded. Fiscal Years.
- (2) Source, SWRCB, 2017a. Water sold by GSWC.
- (3) Transfer to Carpinteria Valley Water District.

Casitas MWD will continue to rely on surface water and ground water sources to meet the anticipated water demands of the service area through the year 2040. **Table ES-7** summarizes the quantities of



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projected water supplies in the Casitas MWD water portfolio for the period 2020 to 2040. **Table ES-7** indicates that for the period 2020-2040 projected water supplies will be 23,440 AFY. **Table ES-7** indicates that local surface water will be approximately 20,540 AFY (88 % of total) for the period 2020 to 2040. **Table ES-7** indicates that for the period 2020 to 2040 average annual ground water extracted will be approximately 2,900 AF (12 % of total). See **Section 4.4** for additional details.

**TABLE ES-7
CMWD PLANNED WATER SUPPLIES 2020-2040**

WATER SUPPLY SOURCES (1)	2020	2025	2030	2035	2040
Local surface water (Lake Casitas)	20,540	20,540	20,540	20,540	20,540
CMWD system ground water	300	300	300	300	300
Ojai system ground water	2,600	2,600	2,600	2,600	2,600
Imported surface water	0	0	0	0	0
Transfers in or out (2)	0	0	0	0	0
Exchanges in or out	0	0	0	0	0
Recycled water	0	0	0	0	0
Desalination	0	0	0	0	0
Other	0	0	0	0	0
TOTAL	23,440	23,440	23,440	23,440	23,440

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded.
- (2) Transfer to Carpinteria Valley Water District.

Casitas MWD does not anticipate any specific future infrastructure projects that will develop more water for the system for the period 2020 to 2040. Casitas MWD plans to utilize the program management of the safe-yield of Lake Casitas to balance water supplies within the CMWD service area. Casitas MWD anticipates implementation of extensive demand management measures to offset an increase in population and reduce inefficient use of water. Casitas MWD will continue to support the water use allocation program with customer specific allocations. The Casitas MWD, City of Ventura, and United Water Conservation District are actively exploring the potential to build a pipeline from western Camarillo to eastern Ventura to provide SWP water to these agencies. The agencies are currently conducting preliminary environmental and engineering assessments. Additional details regarding this potential project will be provided in the next UWMP. The Casitas MWD is currently preparing a comprehensive water resources plan. Findings from this report will be included in the next UWMP



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update. Casitas MWD does not anticipate producing nor receiving desalinated water, recycled water, transfers, or exchanges for the period 2020 to 2040.

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 emissions of greenhouse gases are leading to serious consequences for California including, but not limited to the following: higher air and water temperatures, rising sea levels, increased droughts and floods, decreased amount and duration of state-wide snow pack, and extreme variability in weather patterns. These changes are anticipated to intensify over the 20-year planning horizon of this UWMP. Even if all emissions of greenhouse gases ceased today, some of these consequences would be unavoidable because of the increase in greenhouse gases recorded over the last 100 years and the fact that the climate system changes slowly. Many of these climate changes would affect the availability, volume, and quality of California water resources. See **Section 4.5** for additional details.

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. There will be more competition for scarce water supplies between people and the environment. Resolving this conflict will be one of the biggest challenges confronting water agencies. The goal of the Casitas MWD is to manage the available surface water and ground water resources as efficiently as possible while meeting the requirements of the customers. It is worth noting, however, that the Casitas MWD control over local water supplies is limited; thus management practice changes will need to be adaptive in nature.

ES.5 WATER SUPPLY RELIABILITY ASSESSMENT

Analysis of water supply reliability is one of the primary requirements of the Urban Water Management Plan. This UWMP includes assessments for an average water-year, single dry water-year, multiple dry water-years, and minimum three-year water supply. In order to plan for a reliable water supply, Casitas MWD 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.

Lake Casitas is sized, constructed, and operated as both a primary water source and a backup water supply for the ground water basins of western Ventura County. Lake Casitas is a long-term water storage facility, so precipitation (or lack of precipitation) in any single year does not change the projected safe-yield of a long-term period (20+ years). Casitas MWD selected Fiscal Year 2014 as the most recent year that closely represents a single dry water-year. The Fiscal Year 2014 total surface water delivery from Lake Casitas is 18,811 acre-feet. The minimum storage level of Lake Casitas in Fiscal Year 2014 is 131,511 acre-feet. The actual water use in Fiscal Year 2014 is 19,093 acre-feet.

Table ES-8 summarizes the Casitas MWD projected normal water-year supply and demands for the period 2020-2040. Casitas MWD selected Fiscal Year 2011 as the most recent year that closely represents



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a normal water-year. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at 20,540 AF, 300 AF of Mira Monte Well ground water, and 2,600 AF of Ojai system ground water. Casitas MWD may extract more Lake Casitas water than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF from Lake Casitas to meet local demands. Casitas MWD chose to use a conservative (high) projection of retail water demand of 4,941 AFY (2020) to 5,620 AFY (2040). **Table ES-8** indicates that, for a normal water-year during the period 2020-2040, Casitas MWD’s water supply will exceed retail water demand by 17,820 to 18,499 AFY. See **Section 5.3.3** for additional details.

**TABLE ES-8
CMWD PROJECTED SUPPLY AND DEMAND COMPARISON FOR NORMAL WATER-YEAR FOR 2020-2040**

	2020	2025	2030	2035	2040
Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820

Notes:

Source, CMWD, 2018. All values in AF, rounded.

(1) Combined Lake Casitas surface supply, Casitas system ground water, and Ojai system ground water.

(2) Combined demands for Casitas and Ojai systems. Excludes sales for resale and agricultural customers.

Table ES-9 summarizes the Casitas MWD projected single dry water-year water supply and water demands for the period 2020-2040. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at 20,540 AF, 300 AF of Mira Monte Well ground water, and 2,600 AF of Ojai system ground water. However, the Casitas MWD may extract more Lake Casitas water than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF from Lake Casitas to meet local demands. Casitas MWD chose to use a conservative (high) projection of retail water demand of 4,941 AFY (2020) to 5,620 AFY (2040). **Table ES-9** indicates that, for a single dry water-year during the period 2020-2040, Casitas MWD’s water supply will exceed retail water demand by 17,820 to 18,499 AFY. See **Section 5.3.3** for additional details.

The historical record provides information regarding ‘a multiple dry year’ occurrence in a drought period, which results in an escalation of water demands. During multiple dry water-years, surface flow in the Ventura River becomes non-existent and the ground water in the Ventura River and Ojai Basins are diminished due to well extractions, natural drainage, and a lack of replenishment from rainfall. Water demands on Lake Casitas have been observed to escalate significantly due to multiple years of less than



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average rainfall and the transition from ground water sources to the Lake Casitas supply. Further escalation in Lake Casitas demands resulted from the water demands of local agriculture that needed to supplement the lack of rainfall with an alternate water supply in order to continue to produce crops.

**TABLE ES-9
CMWD PROJECTED SUPPLY AND DEMAND COMPARISON FOR SINGLE DRY WATER-YEAR FOR 2020-2040**

	2020	2025	2030	2035	2040
Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820

Notes:

Source, CMWD, 2018. All values in AF, rounded.

(1) Combined Lake Casitas surface supply, Casitas system ground water, and Ojai system ground water.

(2) Combined demands for Casitas and Ojai systems. Excludes sales for resale and agricultural customers.

As previously noted, Lake Casitas is a long-term water storage facility so precipitation (or lack of precipitation) in any three-year period, does not change the projected safe-yield of a long-term period (20+ years). Casitas MWD selected Fiscal Years 1987-1988-1989 as the most recent three-year period that closely represents the multiple dry water-years. Local average precipitation for Fiscal Years 1987-1989 is 12.55 inches. The average surface water delivery for Fiscal Years 1987-1989 is 23,289 acre-feet. The minimum storage level of Lake Casitas for Fiscal Years 1987-1989 is 160,587 acre-feet. The actual average water use in Fiscal Years 1987-1989 is 23,216 acre-feet.

Table ES-10 summarizes the Casitas MWD projected multiple dry water-year water supply and water demands for the period 2020-2040. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at 20,540 AF, 300 AF of Mira Monte Well ground water, and 2,600 AF of Ojai system ground water. However, the Casitas MWD may extract more Lake Casitas water than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF from Lake Casitas to meet local demands. Casitas MWD chose to use a conservative (high) projection of retail water demand of 4,941 AFY (2020) to 5,620 AFY (2040). **Table ES-10** indicates that, for a multiple dry water-years during the period 2020-2040, Casitas MWD’s water supply will exceed retail water demand by 17,820 to 18,499 AFY. See **Section 5.3.3** for additional details.



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**TABLE ES-10
CMWD PROJECTED SUPPLY AND DEMAND COMPARISON FOR MULTIPLE DRY
WATER-YEARS FOR 2020-2040**

		2020	2025	2030	2035	2040
First Year	Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
	Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
	DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820
Second Year	Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
	Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
	DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820
Third Year	Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
	Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
	DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820

Notes:

Source, CMWD, 2018. All values in AF, rounded.

(1) Combined Lake Casitas surface supply, Casitas system ground water, and Ojai system ground water.

(2) Combined demands for Casitas and Ojai systems. Excludes sales for resale and agricultural customers.

The Casitas MWD evaluated minimum water supplies which would be available during a three-year period 2016-2018. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at 20,540 AFY, 300 AF of Mira Monte Well ground water, and 2,600 AF of Ojai system ground water. Therefore, the three-year minimum water supply is 23,440 AF for the period 2016 to 2018 (and beyond) as summarized in **Table ES-11**. However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF from Lake Casitas to meet local demands. See **Section 5.3.3** for additional details.



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TABLE ES-11
CMWD PROJECTED MINIMUM WATER SUPPLY FOR 2016-2018

	2016	2017	2018
PROJECTED MINIMUM WATER SUPPLY (AFY)	23,440	23,440	23,440

Notes:
Source, CMWD, 2018. All values in AF, rounded.

ES.6 WATER SHORTAGE CONTINGENCY PLANNING

The Casitas MWD has a variety of programs to respond to water shortage contingencies. These include prohibitions on water waste, water allocations for all customers, and staged demand reduction measures. The Casitas MWD has the authority to restrict the use of CMWD water during any emergency caused by drought, or other potential or existing water shortage. The Casitas MWD prohibits the wastage of CMWD water or the use of CMWD water during such periods for any purpose other than household uses or such other restricted uses as the CMWD determines to be necessary. The Casitas MWD may also prohibit use of CMWD water during such periods for specific uses which it finds to be nonessential. See **Section 6** for additional details.

Casitas MWD has developed water allocations for all its customers. Casitas MWD water allocations are assigned to properties or water purveyors, are not transferable from one property or water purveyor to another, and may not be sold or traded by Casitas MWD customers. Casitas MWD Board of Directors reserve the right to alter allocations for any customer class at any time and the term allocation shall not mean an entitlement or imply a water right. Each and every water service provided by Casitas MWD is metered and a basic water use allocation is established for each customer account that provides a reasonable amount of water for the customer's needs and property characteristics. Each Casitas MWD water service shall be assigned either a monthly water allocation in terms of units, or an annual water allocation in terms of units and acre-feet. The assignment of allocations shall be based on reasonable and necessary water use, the application of water conservation practices and standards, and other relevant factors associated with water use during Stage 1 conditions at Lake Casitas. Water allocations may change by action of the Casitas MWD Board of Directors based on the Lake Casitas storage level or trend, water use trends, and the performance by customer classification in meeting water consumption reduction goals.

The primary source of water that is available to the Casitas MWD is the amount of water stored behind Casitas Dam, forming Lake Casitas. The quantity of water stored in Lake Casitas is dependent upon several factors, including: the local hydrology, watershed conditions, diversions from the Ventura River, lake evaporation, and water deliveries to beneficial uses. There may be times during which Casitas MWD must consider implementing staged water demand reductions to ensure a sustainable water supply and prevent a complete depletion of water supply in Lake Casitas. The Casitas MWD has assigned five stages of water storage in Lake Casitas that serve as a guidance to triggering the implementation of water use reduction goals and measures.



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The primary goals of the Staged Demand Reduction Program are the following:

- Conserving the water supply for the greatest priority and public benefit
- Mitigating the effects of a water shortage on public health, safety, and economic activity.

The General Manager shall report to the Board of Directors each year with an assessment of the current water storage in Lake Casitas and local ground water basins, current water use trends, predicted weather conditions, and an evaluation of current water use reduction goals. The Casitas MWD Board of Directors may, at their sole discretion, declare that a specific stage condition of water supply in Lake Casitas exists and implement the appropriate demand reduction goals and measures in response to current and/or predicted water availability conditions. The resolutions will address a particular water shortage with the appropriate guidelines, procedures, regulations, and implementation of the Water Shortage Contingency Plan. Provisions of the resolution shall be developed and implemented in a timely manner to provide water service during emergency conditions to all of Casitas MWD’s customers in a fair and equitable manner and in recognition of the given conditions.

Casitas MWD has established the implementation of various Stages of action based on the amount of water in storage in Lake Casitas, as shown in **Table ES-10**.

**TABLE ES-10
CMWD DEMAND REDUCTION STAGE CONDITIONS**

STAGE	STAGE TITLE	LAKE CASITAS STORAGE (%)	LAKE CASITAS STORAGE ACTION LEVEL (AF)
1	Water Conservation	100% to 50%	254,000 to 127,000
2	Water Shortage Warning	50% to 40%	127,000 to 100,000
3	Water Shortage Eminent	40% to 30%	100,000 to 75,000
4	Severe Water Shortage	30% to 25%	75,000 to 65,000
5	Critical Water Shortage	25% to 0%	65,000 to 3,000

Notes:

Source, CMWD, 2018.

Demand reduction goals and measures begin with Stage 1, where reasonable and appropriate water allocation assignments are made to each Casitas MWD service connection. End water users are encouraged to implement Best Management Practices that conform to State requirements for water conservation and water use efficiency measures. Upon determination of a Stage 2 condition, and continuing through Stage 5 conditions, the primary action to achieve the demand reduction goal is the adjustment of allocations. Adjustments of allocations were made available for each classification during Stage 1 by a reduction of the allocation during the duration of the declared Stage condition.



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ES.7 DEMAND MANAGEMENT MEASURES

Casitas MWD has a long history and strong commitment to water use efficiency. In 1992 the Casitas MWD Board of Directors adopted a series of ordinances, resolutions, and a Water Efficiency and Allocation Program (WEAP) in response to the increasing water demands and declining water storage in Lake Casitas experienced during the 1987-1991 drought period. The collective work in 1992 set the starting point for a system of water allocation assignments and demand response criteria that are based on the level of water storage in Lake Casitas. Casitas MWD Board of Directors adopted a Water Shortage Contingency Plan in 1992, by Resolution No. 92-11, that set water use reduction goals for the various stages of Lake Casitas storage. The Casitas MWD Board adopted Resolution 2014-0038 (drought emergency regulations) that supplemented the Water Shortage Contingency Plan and limited the outdoor irrigation of ornamental landscapes or turf with potable water. Casitas MWD Resolution 15-02 includes permanently prohibited uses of water that are in effect year round. Provisions of this Ordinance apply to all persons, corporations, public or private entities, governmental agencies or institutions, or any other direct water customers of the Casitas MWD. The Casitas MWD Board approved Resolution 15-30 which authorized implementation of a Conservation Penalty. Casitas MWD recently updated the WEAP (2015). The purpose of the WEAP is to provide guidance on water supply and demand strategies that implement the following:

- Conserve the water supply of the Ventura River Project, Lake Casitas and other water resources that are in the direct control of Casitas MWD, for the greatest public benefit
- Mitigate the effects of a water shortage on public health and safety and economic activity
- Allocate water use so that a reliable and sustainable supply of water will be available for the most essential purposes under all water storage conditions of Lake Casitas
- Adapt to changing conditions of water supply demand and constraints.

Casitas MWD staff generally includes a full-time Water Conservation Manager, full-time Water Conservation Specialist, full-time Water Conservation Analyst, and part-time Water Conservation Coordinator. Casitas MWD staff provide many water conservation services including but not limited to the following: report preparation, response to customer questions, perform water use surveys, administer rebate programs, coordinate public information and outreach programs, plan and participate in special events and education programs, and conduct public speaking events. Additional details related to water use efficiency and demand management are provided in **Section 7**.



SECTION 1: INTRODUCTION

1.1 PURPOSE

The Casitas Municipal Water District (Casitas MWD) is pleased to release this Retail Urban Water Management Plan (UWMP). The Casitas MWD is required to prepare the Retail UWMP as per requirements by the California Department of Water Resources. The UWMP elements comply with requirements in California Water Code (Section 10610-10656).

Provided below is an introduction to the Urban Water Management Planning Act.

1.2 URBAN WATER MANAGEMENT PLANNING ACT

1.2.1 Summary

This UWMP meets the requirements for the UWMP as per California Water Code (Section 10610-10656) which requires urban water suppliers to prepare an UWMP to promote water conservation and efficient water use. This UWMP provides planning information on the reliability and future availability of the Casitas MWD water supply. This UWMP is a public statement of the goals, objectives, and strategies needed to maintain a reliable water supply for the Casitas MWD'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 20-year period
- Identify and quantify water resources over a 20-year period
- Summarize reliability of water resources for existing and future demands, in normal, dry, and multiple dry years, over a 20-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 Casitas MWD's water resource needs. It serves as a long-range planning document for Casitas MWD'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 western Ventura County. The intention of the UWMP is to demonstrate Casitas MWD's water supply reliability over the next 25 years, in 5-year increments. The plan addresses Casitas MWD's water system and includes a description of water supply sources, magnitudes 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 Casitas MWD's efforts to implement water conservation strategies for urban water supplies. The UWMP represents Casitas MWD's commitment to a long-term plan to ensure water reliability into the future. A copy of the current Urban Water Management Planning Act is provided in **Appendix B**.



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1.2.2 History

In 1983, the California Legislature enacted the Urban Water Management Planning Act (AB 797; Water Code, Division 6, Part 2.6, Section 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 Casitas MWD 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 December 31 in the years ending in 0 and 5. A copy of the current Urban Water Management Planning Act is provided in **Appendix B**.

The Legislature enacted two measures that modified the Urban Water Management Planning Act in 1991. The first measure requires water suppliers to include an urban water shortage contingency analysis as part of its urban water management plan (AB 11). This measure also exempts the implementation of urban water shortage contingency plans from the California Environmental Quality Act (CEQA). The second measure requires an UWMP to: describe and evaluate water recycling activities, to be updated once every five years, include an estimate of projected potable and recycled water use, and to describe activities relating to water audits and incentives (AB 1869). Another provision of this bill requires agricultural water suppliers to include in their informational reports and water management plans, a description of water recycling activities.

In 1993, the Legislature enacted a measure, which allows members of the California Urban Water Conservation Council (CUWCC) to submit to the state a copy of their annual report to the Council to satisfy current reporting requirements relating to urban water management plans (AB 892). The Legislature enacted two measures in 1994. The first measure authorizes an urban water supplier to recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan (SB 1017). Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" (CUWCC, 2000) is deemed to be reasonable. The second measure requires water suppliers to consider recycled water in their urban management plans (AB 2853).

In 1995, the Legislature enacted two additional measures. The first measure requires urban water suppliers to include, as part of their urban water management plans, a prescribed water supply and demand assessment of the reliability of their water service to their customers during normal, dry, and multiple dry water years (AB 1845). The assessment shall compare total water supply sources available to the supplier with the total projected water use over the next 20 years, in 5-year increments. It also requires the supplier to provide the water service reliability assessment to any city or county within which it provides water within 60 days of the adoption of its urban water management plan. The second measure made the following changes to the Urban Water Management Plan Act (SB 1011):

- Revised the components required to be included in the plan.



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- Required urban water suppliers to update their plans at least once every five years on or before December 31 in the years ending in 5 and 0.
- Required urban water suppliers to include a prescribed water supply and demand assessment.
- Required suppliers to encourage active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during preparation of the plan.
- Required the urban water supplier, prior to adopting the plan, to make the plan available for public inspection and hold a public hearing thereon.
- Deleted the provision requiring action alleging failure to adopt a plan to be commenced within 18 months after commencement or urban water service after January 1, 1984.
- Defined “demand management” and “recycled water,” revised the definition of “plan”, and deleted the definition of “conservation.”
- Exempted suppliers who were implementing a conservation program from conducting a cost-benefit analysis of those conservation programs.
- Required the Department of Water Resources to submit a report to the Legislature summarizing the status of plans on or before December 31 in the years ending in 1 and 6.

In September of 2000, the Legislature approved AB 2552, which required urban water suppliers to submit their UWMPs to cities and counties where the water supplier provides water. The intent of this new requirement was to help ensure that city and county planning agencies have reliable water supply information on which to make growth decisions.

Additional changes approved in 2001 include AB 901, SB 221, SB 610, and SB 672. AB 901 required the UWMP to include information relating to the water quality of source supplies, and the manner in which the water quality affects water management strategies and supply reliability. This bill required the plan to describe plans to supplement a water source that may not be available at a consistent level of use. SB 221 prohibited a city or county from approving a residential subdivision of more than 500 units unless the city council or the board of supervisors provides written verification from the area’s water service provider that a sufficient water supply is available for the development. SB 610 required additional information to be included as part of the UWMP for urban water supplies whose water supply includes ground water. It required a city or county that determines that a development project is subject to the California Environmental Quality Act, to identify any public water system that may supply water for the project and to request that system to prepare a specific water supply assessment. It required urban water suppliers to include in the UWMP a description of all water supply projects and programs that may be undertaken to meet total projected water use. This Bill required the DWR to take into consideration whether an urban water supplier has submitted an updated UWMP, in determining eligibility for funds made available pursuant to any program administered by DWR. SB 672 required urban water suppliers to describe in the UWMP, water management tools and other options used by that agency to maximize resources and minimize the need to import water from other regions.



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There were many new requirements adopted by the State over the period 2005 to 2010, that must be included in this UWMP including the following:

- 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 multi-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.

1.2.3 Recent Changes to UWMP Act

Recent changes to the UWMP include the following:

- Water suppliers 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 required to submit their 2015 plan to the DWR by July 1, 2016.
- 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 plan to quantify and report on distribution system water loss.



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- 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.

A copy of the current Urban Water Management Planning Act is provided in **Appendix B**. Copies of the required data tables are provided in **Appendices E and F**.

1.4 PLAN COORDINATION

The Casitas MWD's UWMP must include the following:

- 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)).
- Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016 (CWC, 10621(d)).
- 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 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).
- The 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 plan has been adopted as prepared or modified (CWC, 10642).
- Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library (CWC, 10644(a)).
- 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)).



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- The plan, or amendments to the plan, submitted to CADWR shall be submitted electronically (CWC, 10644(a)(2)).
- 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).
- Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier (CWC, 10620(b)).
- 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)).
- 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).

Casitas MWD coordinated its UWMP planning efforts with several agencies (see list in **Table 1-1**) to ensure the accuracy of the data and issues presented in this plan. **Table 1-2** lists the agencies that participated in the development of this UWMP. Public comment was solicited on the Plan in the form of a community workshop and public hearing for the general public, taxpayers, water users, local governments, and state agencies.

1.5 PLAN NOTIFICATION AND PARTICIPATION

Casitas MWD notified local agencies and organizations listed in **Table 1-1** regarding preparation of the UWMP and anticipated public meeting dates and times. Casitas MWD encouraged representatives from those organizations and the public to attend Casitas MWD's public meetings. Casitas MWD plans to mail a letter in April 2019 to all the agencies listed in **Table 1-1** in accordance with the requirement to provide notice to applicable cities, counties, and local agencies at least 60 days prior to the public hearing (see **Appendix D** for additional details). Casitas MWD plans to hold a community workshop in May 2019 to receive comments on the Draft UWMP. A copy of the Draft UWMP will be available for review at Casitas MWD's website (www.casitaswater.org). The Draft UWMP will be available for review during normal business hours at the Casitas MWD office located at 1055 Ventura Avenue, Oak View, California, 93022. Casitas MWD 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. Copies of public comments received are provided in **Appendix N**.



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**TABLE 1-1
ORGANIZATION PARTICIPATION**

AGENCY	NOTIFIED OF PLAN PREPARATION	REQUESTED COPY OF DRAFT PLAN	COMMENTED ON DRAFT PLAN	NOTIFIED OF PUBLIC MEETINGS	ATTENDED PUBLIC MEETINGS	SENT COPY OF FINAL PLAN
California Department of Water Resources	✓					
California State Water Resources Control Board						
California State Library						
Carpinteria Valley Water District						
Faria Beach Homeowner's Association						
Oak View Library						
City of Ojai, City Manager						
Ojai Basin Groundwater Agency						
Ojai Valley Land Conservancy						
Ojai Valley News						
Ojai Valley Sanitary District						
County of Ventura, Supervisor Bennett						
Ventura County Watershed Protection District						
City of Ventura, City Manager						
Ventura Water, General Manager						
Ventura River Watershed Coordinator						



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1.6 PLAN ADOPTION AND SUBMITTAL

Casitas MWD plans to hold a public hearing on June 26, 2019 in Casitas MWD’s Board Room. Casitas MWD noticed and advertised the public hearing in accordance with all the requirements of the UWMP. The Board of Directors plan to adopt the UWMP following the public hearing. Proof of this public hearing is provided in **Appendix D**, which also contains a copy of the resolution adopting the 2016 UWMP. The Casitas MWD plans to submit the adopted UWMP, in electronic format, to the CADWR within the 30-day requirement.

1.7 PLAN IMPLEMENTATION

Following adoption of the UWMP, Casitas MWD will utilize the UWMP as a summary and resource for discussions regarding water demands, water supplies, and demand management. This UWMP indicates that it is imperative for Casitas MWD to maximize its water resources, water use efficiencies, and minimize losses and inefficiencies because 100 percent of the water supply comes from local sources. This UWMP document will assist Casitas MWD to address local water supply management issues. Implementing water conservation and demand management strategies will allow Casitas MWD to manage local water supplies throughout a long-term drought and avoid supply depletion. Details regarding the extensive Casitas MWD demand management programs are provided in Sections 6 and 7.

1.8 REPORT FORMAT

This UWMP is divided into seven primary sections including the following:

- Section 1 provides an introduction to the UWMP.
- Section 2 describes the Casitas MWD’s service area.
- Section 3 defines the Casitas MWD’s water uses.
- Section 4 defines the Casitas MWD’s water supplies.
- Section 5 defines the Casitas MWD’s water supply reliability assessment.
- Section 6 describes the Casitas MWD’s water shortage contingency planning.
- Section 7 describes the Casitas MWD’s demand management measures (i.e., water conservation programs).

The UWMP is based upon the requirements of the Urban Water Management Planning Act, as coordinated by the California Department of Water Resources (CADWR). Format of this UWMP follows the DWR’s Guidance Manuals for UWMP (2016) to ensure and easily verify that the information presented here meets all the DWR requirements. A copy of the UWMP checklist is provided in **Appendix O**.

The Casitas MWD is a wholesale and retail water agency. Casitas MWD adopted a combined Urban Water Management Plan/Agricultural Water Management Plan (UWMP/AWMP) as a wholesale water agency in 2016. Casitas MWD purchased the Golden State Water Company’s Ojai Division in June 2017. The CADWR notified Casitas MWD to prepare an UWMP for the retail customers within one year of purchase of the Golden State Water Company’s Ojai Division (due June 2018). A one year extension was



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approved by CADWR to prepare the Casitas MWD retail UWMP (due June 2019). The Casitas MWD prepared this UWMP in compliance with the UWMP requirements for a retail agency with available data through 2015.

1.9 AUTHORIZATION

The Casitas MWD authorized Milner-Villa Consulting, LLC (MVC) to provide consulting services related to preparation of this UWMP under an Agreement dated July 12, 2017 and amendments.

1.10 CONTACT INFORMATION

A copy of the adopted UWMP will be available at Casitas MWD's website at <http://www.casitaswater.org> and available during normal business hours at the Casitas MWD office located at 1055 Ventura Avenue, Oak View, California, 93022. Please direct any questions regarding this UWMP to Mike Flood, General Manager, Casitas MWD, (805) 649-2251.



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SECTION 2: SYSTEM DESCRIPTION

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 2020, 2025, 2030, 2035, and 2040 (optional) (CWC, 10631(a)).
- Describe other demographic factors affecting the supplier's water management planning (CWC, 10631(a)).

2.2 DESCRIPTION OF CASITAS MWD

2.2.1 Location

Casitas MWD lies in southern California's semi-arid coastal plain. Specifically, the Casitas MWD is located in western Ventura County (see **Figure 2-1**) where there is a history of drought, water supply shortages, and corresponding efforts to develop local water supplies. The Casitas MWD service area includes approximately 138 square miles. The area has and continues to be solely dependent upon local water supplies. Local rainfall contributes to the Ventura River Watershed by replenishing Lake Casitas, local ground water sources, and the Ventura River. **Figure 2-2** indicates the service area for Casitas MWD.

2.2.2 Terrain and Soils

The Casitas MWD service area lies primarily within the Ventura River watershed. This watershed has three distinct landform zones: the mountains and foothills of the Transverse Ranges, the broad valley floors, and the coastal zone (VRWC, 2015). These zones define the watershed and influence its hydrology in many important ways, from how much and where it rains, to how much water it can store, to the biodiversity of its ecosystems.

Mountains and foothills dominate the watershed. Only 35 square miles (15 percent) of the watershed are flat (with a slope of 10 percent or less) (VRWC, 2015). This includes the broad valley floors where most of the residences and farms are concentrated, and the coastal zone. The coastal zone includes the delta and coastline, the delta being the land at the mouth of the river formed over time by the deposition of sediments carried by the river. The delta surrounds and contains the Ventura River estuary, a dynamic zone of interaction between the fresh and salt waters of river and ocean and their hydrologic and biologic systems.

**FIGURE 2-1
VICINITY MAP**



Dramatically steep, folded and faulted, rocky and erodible: these are the notable geologic characteristics of the Ventura River watershed’s mountains (VWRC, 2015). In just 10 miles (direct line), the surface of the watershed rises from sea level to the top of Mount Arido at 6,010-foot elevation (gain of 601 feet per mile). Even steeper is the elevation gain from downtown Ojai, at 746-foot elevation, to the top of Chief Peak at 5,560-foot elevation in just six miles (gain of 802 feet per mile). These dramatically steep mountains of the watershed squeeze more water out of the air, but shed that water quite quickly, making for fast-moving “flashy” storm flows.

**FIGURE 2-2
CASITAS MWD SERVICE AREA**



Geologically, the mountains are primarily comprised of 3-million to 70-million-year-old (Tertiary) sedimentary rocks—sandstones, siltstones, conglomerates, and shales originally deposited in horizontal layers (VRWC, 2015). Although these bedrock sequences have been severely deformed by folding and faulting, they remain well consolidated and have low permeability relative to the unconsolidated alluvial deposits of the valley floors. They are, however, highly erosive.

**FIGURE 2-3
SOILS WITHIN VENTURA RIVER WATERSHED**





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The 15 percent of the watershed that is relatively flat is found largely along the broad valley floors associated with the Ventura River, its stream channels, alluvial fans, and river terraces (VRWC, 2015). This includes the area of the City of Ojai, the orchards of the Ojai Valley’s east end, the valley floor of Upper Ojai, and the broad valley along the main stem of the Ventura River. These broad, flat valley floors are largely filled with relatively shallow unconsolidated alluvial deposits of silt, sand, gravel, cobbles, and boulders eroded from the surrounding mountains over millions of years.

In the coastal zone, significant landforms include the Ventura River delta and the beach. The delta is the area of land where the Ventura River meets the Pacific Ocean. As fast-moving, sediment-filled floodwaters approach the ocean, they spread out and slow down, depositing boulders, cobble, and sediments. Over time, this deposition has built up a two-mile long, arc-shaped bulge in the coastline that extends from beyond Emma Wood State Beach above the river mouth to just short of the Ventura pier.

Soils are classified by the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) into one of four hydrologic soil groups—A, B, C, or D—based on the water infiltration rate when the soils are not protected by vegetation, are thoroughly wet, and are receiving precipitation from long-duration storms (VRWC, 2015). Finer-grained soils (clays) have very low water-infiltration rates but a high water holding capacity compared with larger-grained soils (sands and small gravels) that exhibit the opposite characteristics.

The map of the watershed’s hydrologic soil groups (see **Figure 2-3**) indicates that the areas of significant infiltration of water into the soil are the alluvial fan heads (near Senior, McNell, Thacher, and San Antonio creeks), as well as in Upper Ojai, and on land under and adjacent to the Ventura River itself (VRWC, 2015). These areas, indicated as group “B” on the map, are generally composed of coarser sediments.

Jurisdictions within the watershed area include the following: County of Ventura (49.1%), US Forest Service (47.7%), City of Ojai (1.9%), City of Ventura (1.2%), and Santa Barbara County (3.9%) (VRWC, 2015).

2.3 SERVICE AREA CLIMATE:

The climate within Casitas MWD service area is Mediterranean, which is characterized by cool, wet winters and warm, dry summers. However, climate does vary significantly based on distance from the Pacific Ocean, elevation, area drainage, and slope aspect. Details regarding temperature, precipitation, effective precipitation, and evapotranspiration are provided below.

2.3.1 Temperature

Winter low temperatures can fall below freezing in inland areas and rise above 100 degrees Fahrenheit in the summer, affecting higher water demand from customers. Temperatures along the coast are moderated by the ocean and seldom reach the inland extremes. Coastal marine fog occurs throughout the year but usually is present from May until July, generally burning off in the inland areas, but may persist all day on the coast. Hot, dry easterly winds (locally known as Santa Ana’s) typically occur in the fall,



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which increases evapotranspiration (ET) and increases agricultural and landscape water use. Average monthly temperatures range from 35.9 F (January low) to 91.5 F (August high) (WRCC, 2016). See **Table 2-1** for additional data. Maximum recorded temperature is 119 F (June 16, 1917), while the minimum recorded temperature is 13 F (January 6, 1913) (WRCC, 2016).

2.3.2 Precipitation

Precipitation, as reported by the United States National Oceanic and Atmospheric Administration (NOAA), weather station No. 46399 located at Ojai, averages 21.2 inches annually (WRCC, 2016). For comparison, the average precipitation at the NOAA Ventura station near the coast is 14.5 inches annually. Nearly 96 percent of annual local rainfall occurs from October to April. See **Table 2-1** for additional data. Maximum recorded annual precipitation is 47.30 inches (1978), while the minimum recorded annual precipitation is 4.35 inches (1947) (WRCC, 2016). Maximum recorded daily precipitation is 9.05 inches (February 24, 1913).

2.3.3 Effective Precipitation

Effective precipitation is the amount of precipitation that is actually added and stored in the soil. There are numerous methods for calculating effective precipitation including empirical-based (direct measurement) and formula-based (indirect estimate). All estimates of the effectiveness of precipitation depend on several factors such as the amount and intensity of precipitation, character and water holding capacity of the soil, and plant characteristics, etc. The estimated effective precipitation is calculated based on a formula-based method (USBR, 1967) for agricultural land. The formula uses an effectiveness percentage as applied to increments of monthly precipitation. For example, for the first 1 inch of monthly precipitation, the effectiveness percentage is 90 to 100 percent. The effectiveness percentage decreases to 0 to 10 percent for monthly precipitation greater than 6 inches. The number of effective inches per month is converted to gallons based on the factor of 27,116 gallons per acre per inch of precipitation (USGS, 2016). The estimated effective precipitation for the agricultural land within the Casitas MWD service area for the Fiscal Years 2011 to 2015 ranges from approximately 3,479 AF (2013) to 7,504 AF (2011).

2.3.4 Evapotranspiration

Evapotranspiration (ET or ETo) is defined as the water lost from an area through the effects of evaporation from the ground surface and transpiration from the vegetation. Sun, wind, temperature, and humidity are some of the factors that influence how much water various plants need for any given day. This information is helpful to our customers that have agriculture or large landscapes. It allows them to adjust their watering practices so they are the more efficient in the application of water.

The Casitas MWD operates two weather stations with ET sensors (see Casitas MWD website: <http://www.casitaswater.org/lower.php?url=exapotranspiration-data-et>). One weather station is in the Rincon area near the coast and the other station is in the Ojai Valley. The weather conditions can vary significantly further inland, which creates different water needs for those customers. The data collected from these stations is updated to the Casitas MWD website daily.



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**TABLE 2-1
CLIMATE DATA**

MONTH	AVERAGE MAXIMUM TEMPERATURE (°F) (1)	AVERAGE MINIMUM TEMPERATURE (°F) (1)	AVERAGE PRECIPITATION (INCHES) (1)	2015 EVAPOTRANSPIRATION (INCHES) (2)
January	66.6	35.9	4.92	2.22
February	67.9	38.0	4.94	2.42
March	70.1	39.9	3.53	3.94
April	74.0	43.1	1.42	4.83
May	77.4	46.9	0.40	5.99
June	83.4	50.3	0.07	6.02
July	90.9	54.5	0.02	6.50
August	91.5	54.3	0.04	6.54
September	88.7	52.1	0.27	5.19
October	82.1	46.7	0.66	3.73
November	74.7	40.3	1.82	2.38
December	67.9	36.4	3.13	1.65
Annual	77.9	44.9	21.22	51.39

Notes:

- (1) Western Region Climate Center, Ojai Station No. 046399, 2016.
- (2) Casitas MWD, 2016.

Average annual ET for the Ojai Valley weather station is 51.39 inches as indicated in **Table 2-1**. **Table 2-1** indicates that the 2015 ET for the months of May, June, July, and August are approximately 6 inches per month.

2.4 HISTORY OF CASITAS MWD

The western portion of Ventura County, California, which includes unincorporated portions of Ventura County, the City of Ojai, and the City San Buenaventura, struggled with water shortage issues in the early to middle 1900's. At the beginning of the 1900's, western Ventura County began to experience growth in agriculture and population. The primary growth areas, the City of Ventura and Ojai Valley, relied on either diverting river flows or ground water pumping to satisfy water demands. By the 1930's, the local agriculture and cities began to experience drought conditions and question the reliability of their water supplies. The first half of the twentieth century experienced several drought periods and caused western Ventura County to consider various options to increase local water supply reliability.

In 1952, formation of the Ventura River Municipal Water District (VRMWD, which in 1971 was renamed Casitas Municipal Water District) was quick to follow with a request of the United States Department of the Interior, Bureau of Reclamation (USBR) to make a water requirement and water supply study for western Ventura County. Customers of the VRMWD had been noting the progress of the Cachuma Project in Santa Barbara County and were pleased with the effective handling of the Cachuma Project.



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By March 1953, VRMWD and the USBR entered into a cooperative investigation contract. By the fall of 1953, USBR investigators completed reconnaissance-level studies to determine the approximate long-range water requirements, comparison of the merits of available dam sites, and determination of the river diversion and storage capacity required to meet the long-term water needs of the area (Bennett, 1967). The feasibility study also considered the recreational benefits that the project would have for the area.

The USBR summarized the approach to estimating safe-yield for the Ventura River Project's (Project) as follows: "In general, for smaller reservoirs the most intense drought is critical, while for larger reservoirs the drought with the greatest product of length times mean deficiency is critical. Reconnaissance studies indicated that for Casitas MWD Reservoir [now Lake Casitas] at 250,000 acre-feet the greatest drought of record (length times mean deficiency) is critical" (USBR, 1954).

Construction of the Project was completed in 1959 and Lake Casitas filled for the first time in 1978, with demands for water developed to full safe-yield levels by 1990. The Project serves as a primary supply for many direct customers and as a supplemental, or backup supply, for ground water users during times of drought. Additional details regarding the physical system of the Project are provided below in Section 2.5 and history of the Project are provided in Section 4.3.

In June 2017, the Casitas Municipal Water District finalized the purchase of the Golden State Water Company's Ojai Division. This purchase added approximately 2,857 residential and commercial customers (population of approximately 7,121) to the Casitas MWD system. A feasibility study completed in 2011, by Richard Hajas and Ojai Flow, concluded Ojai customers would financially benefit from the sale of the water system to Casitas. Casitas began the process of assessing the acquisition of the Ojai water system in a way that would not financially impact existing Casitas' customers (ie, Ojai Division customers will pay for the purchase of the water system). On August 27, 2013, 87 percent of voters in Golden State's Ojai service area voted to support Casitas' purchase of the Ojai water system, and to form the Ojai Community Facilities District to assess properties to pay for bond funding to purchase the system.

2.5 CASITAS MWD PHYSICAL SYSTEM - DISTRIBUTION FACILITIES AND WATER TREATMENT

Casitas MWD's water supply comes completely from local water sources. The main source of water supply for Casitas MWD is Lake Casitas, which has a full capacity of 254,000 acre-feet of water. The reservoir when full covers a surface area of 2,760 acres and has 32 miles of shoreline. It is 200 feet at its deepest spot. Source water for Lake Casitas is direct rainfall on the lake surface, local watershed runoff from Coyote and Santa Ana Creeks, and diversions from the Ventura River made through the Robles Diversion Facility and canal. Maximum diversion rate at the Robles Diversion Facility is 500 cubic feet per second. Additional details provided in Section 4.



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2.5.1 Casitas MWD System

Casitas MWD operates a 65 MGD pressure filtration treatment plant that enables Casitas MWD to meet the regulations set forth in the State of California Surface Water Treatment Rules. The Casitas MWD filtration plant continues to meet its original water quality objectives. Casitas MWD further treats the filtered water with chloramination for disinfection and additives for corrosion control, as directed by the State Department of Drinking Water.

Casitas MWD maintains and operates one (1) well with a capacity of approximately 300 acre-feet per year (see Section 4 for additional details). Water from the well exceeds the State's maximum contaminate level for nitrate. However, CMWD blends the ground water with Lake Casitas water to meet health and safety regulatory standards for nitrate before delivery to the Casitas MWD customers.

Casitas MWD's distribution system includes approximately ninety-seven (97) miles of main and distribution pipelines, and nine (9) pumping plants. The system includes 30 MG of treated water stored in fourteen (14) steel reservoirs located throughout the Casitas MWD service area. Most customers are furnished between 50 to 80 pounds per square inch pressure at their meters. Casitas MWD meters all of its direct service customers, including meters on all connections to other water agencies. Resale water agencies in the Casitas MWD service area meter their own customers.

2.5.2 Ojai System

The Ojai system includes six (6) active wells with a maximum production of 2,950 gpm, two (2) active connections to CMWD treated surface water supply (see Section 4 for additional details, and two (2) standby connections to the CMWD treated surface water supply. The water distribution system consists of five (5) booster pump stations, and six (6) pressure zones that range from 35 to 125 pounds per square inch (psi) (SWRCB, 2017a). CMWD, the owner and operator of OWS, maintains six (6) treated water reservoirs that can store up to a total of 1.99 MG of water. Water from the San Antonio Manganese Filtration Treatment Plant feeds the San Antonio Reservoir first before being delivered to the distribution system and other storage reservoirs. The Ojai system includes 2,855 active connections. Casitas MWD meters all its retail customers.

2.6 CASITAS MWD RESALE CUSTOMERS

The following is a list of the various agencies that are resale classification customers of the Casitas MWD.

- Hermitage Mutual Water Company
- Meiners Oaks Water District
- Senior Canyon Mutual Water Company
- Siete Robles Mutual Water Company
- Sisar Mutual Water Company
- Tico Mutual Water Company
- City of Ventura
- Ventura River Water District.



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2.7 SERVICE AREA POPULATION

As previously noted, in June 2017 the Casitas MWD finalized the purchase of the Golden State Water Company’s Ojai Division. This purchase added approximately 2,857 retail residential and commercial customers. Table 2-2 indicates that Casitas MWD has a 2015 retail customer population of approximately 17,421 and a projected 2040 population of 19,651. See Table 2-2 and Appendix E, Table 3-1 for details.

TABLE 2-2
CMWD RETAIL CUSTOMER POPULATION

Table with 7 columns: POPULATION, 2015, 2020, 2025, 2030, 2035, 2040. Rows include CMWD system (1,2), Ojai system (3,4,5), and TOTAL.

Notes:

- (1) CMWD, 2018.
(2) Casitas MWD retail customers population for 2015-2040 based on growth rate 0.5 percent per year (SCAG, 2016).
(3) Southern California Association of Governments, 2017, Profile of the City of Ojai.
(4) Southern California Association of Governments, 2016, Regional Transportation Plan-Sustainable Communities Strategy.
(5) SCAG data; population for 2025 and 2030 estimated using SCAG forecast for 2020 to 2035 with equal amount of increase in each period.

Casitas MWD is the primary and or backup water supply for nine water purveyors within the Casitas MWD and for some individual agricultural customers with ground water wells. The current population forecast for Casitas MWD’s entire service area reflects a very low growth period through the year 2040. There is a large population within the Casitas MWD’s boundaries that are served by other water agencies. Casitas MWD’s largest customer, the City of Ventura, and the City of Ojai are projected to have a 0.5 percent annual increase in population during the period 2020 to 2040 according to data from the Southern California Association of Governments (SCAG, 2016). This average annual population growth rate is approximately the same as for the whole of California as indicated by the California Department of Finance (2015) for the period 2015-2060. Using conservative (high) estimates, the Casitas MWD projects the service area population to reach 72,063 by the year 2020 and 79,622 by 2040. These population increases are dependent on availability of Casitas MWD’s surface water supply and local ground water. The low population growth is likely to limit overall customer water demand in the future because most of this growth is likely to occur in resale agencies service area, which will allow other agencies ground water sources to supplement the increased demand.

2.8 CURRENT LAND USE

Land use within the Casitas MWD service area includes agriculture, residential, and commercial properties. Land use within the CMWD service area is regulated by the City of Ojai and City of Ventura



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within their respective boundaries, and by the County of Ventura for the unincorporated area of the Casitas MWD.

Agricultural customers within the Casitas MWD service area include approximately 5,372 acres of irrigated crops. Irrigated crops include avocados, hay, lemons, oranges, pasture grass, strawberries, tangerines, and walnuts.

2.9 FUTURE LAND USE

Land use within the Casitas MWD service area will continue to include agriculture, residential, and commercial properties through the 2040 planning period. Future development of areas within the Casitas MWD will be regulated by the City of Ojai, City of Ventura, County of Ventura, and County of Santa Barbara within their respective boundaries. As previously noted, areas within the CMWD service area are projected to have a 0.5 percent annual increase in population during the period 2020 to 2040 according to data from the Southern California Association of Governments (SCAG, 2016).

2.10 CMWD OPERATIONS

2.10.1 Operating Rules and Regulations

Casitas MWD is responsible for operation of Lake Casitas and the distribution system (see Section 2.5 for details).

A copy of the Casitas MWD's Rates and Regulations for Water Service (2009) is available at the website: <http://www.drivecms.com/uploads/casitaswater.org/Rates%20&%20Regs%20Board%20Adopted%2012%2016%202009.pdf> . Copies of the Casitas MWD's Rules and Regulations are also available upon request. In addition, water shortage allocation policies for the Casitas MWD are provided in Section 6. Copies of these documents are available from Casitas MWD upon written request.

The Casitas MWD prepared and regularly updates the Casitas Dam Emergency Action Plan and CMWD Emergency Response Plan (2004a).

2.10.2 Water Delivery Measurements

All of the Casitas MWD surface water supplies and ground water supplies are metered. The Casitas MWD utilizes turbine meters for meters 2 inches and larger. These meters have an accuracy of 98 percent to 102 percent. For meters 2 inches and smaller, the Casitas MWD utilizes propeller meters. All the Casitas MWD direct customers are metered. Casitas MWD has meters for all of the Resale customers.

2.10.3 Water Rate Schedules and Billing

The Casitas MWD currently has inclining block water rates (also known as conservation rate), where the cost per unit of water increases with the quantity of water used for all residential accounts. Customers are billed monthly for 100 percent of the volume of water used. A copy of the Casitas MWD current rate schedule is provided in **Appendix G**. A copy of the Casitas MWD current rate schedule is also available on the Casitas MWD website:



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<http://www.drivecms.com/uploads/casitaswater.org/2013-4.pdf> .

The current commodity rate for agricultural customers is \$0.624 to \$0.904 per 100 cubic feet (HCF) depending on elevation of the property. The current commodity rate for agriculture-residential customers is \$0.602 to \$1.770 per HCF depending on usage and elevation of the property. The current commodity rate for all residential customers is \$0.602 to \$2.614 per HCF depending on usage and elevation of property. The current commodity rate for commercial, industrial, resale, other, temporary, and recreational customers is \$0.827 to \$1.785 per HCF depending on customer category, usage, and elevation of the property. In addition, the Casitas MWD has an additional meter fee per customer meter size (see copy of rate schedule in **Appendix G**). The current monthly meter fee ranges from \$23.34 per month (5/8 to 3/4 inch) to \$812.42 (6-inch).

The Casitas MWD has the legal authority to evaluate and set rates for its customers. Casitas MWD rates are subject to change. Casitas MWD is currently evaluating a change in waters rates. Casitas MWD may reduce the inclining block rate structure to one or two blocks.

2.11 PREVIOUS WATER MANAGEMENT ACTIVITIES

The Casitas MWD has prepared several applicable documents related to local water resources management. including, but not limited to, the following:

- CMWD. 2016. Urban Water Management Plan and Agricultural Water Management Plan Update 2016. Copy available on CMWD website.
- CMWD. 2015. Water Efficiency and Allocation Program. Copy provided in **Appendix K**.
- CMWD. 2010. Operations Plan – Marion R. Walker Pressure Filtration Plant
- CMWD. 2004. Water Supply and Use Status Report. Copy provided in **Appendix H**.
- CMWD. 1988. Ojai Groundwater Basin Study. Prepared by Murray, Burns, and Kienlen.

The Casitas MWD is currently preparing a comprehensive water resources plan. Findings from this report will be included in the next UWMP update.

Applicable documents prepared by other agencies related to local water resources management include, but not limited to, the following:

Golden State Water Company. 2011. Urban Water Management Plan. Prepared by Kennedy/Jenks Consultants.

Ojai Basin Groundwater Management Agency. 2014. 2011 and 2012 Annual Report.

Ojai Basin Groundwater Management Agency. 2007. Ojai Basin Groundwater Management Plan (and updates). Copy provided in **Appendix I**.

Ojai Valley Sanitary District. 1992. Reclaimed Water Feasibility-Marketing Study. Prepared by Boyle Engineering.



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Ventura County Watershed Protection District. 2014. County of Ventura 2013 Water Supply and Demand. Prepared by HydroMetrics.

City of Ventura. 2016. 2015 Urban Water Management Plan for City of Ventura. Prepared by Kennedy/Jenks Consultants.

City of Ventura. 2015. Comprehensive Water Resources Report (and updates). Prepared by Michael Baker International.

City of Ventura. 2007. Feasibility Study on the Reuse of Ojai Valley Sanitary District Effluent- Final Facilities Planning Report. Prepared by Brown and Caldwell, et al.

Ventura River Watershed Council. 2015. Ventura River Watershed Management Plan.

Watersheds Coalition of Ventura County. 2014. Integrated Regional Watershed Management Plan (addendums included).



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SECTION 3: SYSTEM WATER USES

3.1 UWMP REQUIREMENTS

This section will include the following:

- Quantify past, current, and projected water use, identifying the uses among water use sectors (CWC, 10631(e)(1)).
- Report the distribution system water loss for the most recent 12-month period available (CWC, 10631(e)(3)(A)).
- Include projected water use needed for lower income housing projected in the service area of the supplier (CWC, 10631.1(a)).
- Retail suppliers shall adopt a 2020 water use target using one of four methods (CWC, 10608.20(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 interim target by December 31, 2015 (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 progress in meeting their water use targets. The data shall be reported using a standardized form (CWC, 10608.40).

3.2 RETAIL CUSTOMER CLASSIFICATIONS

3.2.1 Residential

Residential customers are typically single-family residences. The residential classification also includes a limited amount of multiple-family residential accounts. Residential customers represent approximately 70 percent of Casitas MWD annual retail water demands. Limited growth in water demands for this category are likely due to several factors including limited new housing due to economic and land planning factors, and implementation of Casitas MWD water conservation best management practices. Casitas MWD anticipates limited growth in water demands in this category through 2040.



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3.2.2 Multiple-Family Residential

The Casitas MWD recently added the customer category for multiple-family residential. Data regarding annual use and trends are very limited at this time. Casitas MWD does not anticipate significant growth in this category through 2040.

3.2.3 Commercial

Commercial customers directly served by the Casitas MWD range from small restaurants, gas stations, beauty shops and small strip malls to two local golf courses. Casitas MWD is implementing water conservation best management practices that are likely to reduce some water usage.

3.2.4 Industrial

A limited number of industrial customers are served directly by the Casitas MWD. Industrial services are primarily oil field and gas production facilities. High-pressure water injection for oil recovery is the primary use of the industrial demand. The changes in the economics of the oil industry may result in greater oil pumping, which could result in greater water usage in this sector. Recently, a large oil producer converted a part of its Casitas MWD water demand to an alternative ground water source and lessened the demand for Casitas MWD water.

3.2.5 Interdepartmental-Institutional-Government

This classification is for the Casitas MWD's own services, which includes the Lake Casitas Recreation Area, Dam tender's house, and Casitas MWD's office. This classification also includes government and non-profit organizations.

3.2.6 Other

Includes accounts for fire, temporary, transfers and exchanges, etc.

3.2.7 Agricultural

Agricultural classification includes customers with agricultural properties with total water use of greater than 50 units per month. The United States Bureau of Reclamation has classified approximately 12,500 acres of land as irrigable lands within Casitas MWD district boundaries. Casitas MWD provides water service to nearly 5,400 acres of irrigated lands. Some agricultural lands are served by a private well or receive water from other water agencies. Casitas MWD water is provided for primarily avocado and citrus orchards, and a small amount of flowers, strawberries, apples and walnuts. Agricultural water demand will fluctuate depending on weather conditions, but generally demands an annual average of 2.5 acre-feet per acre for inland areas and 2.0 acre-feet per acre on the coast. Agricultural properties with minor residential water use. Total water use must be less than 50 units per month. Sales of water to agricultural properties is not considered an urban water demand and therefore excluded from the retail demands.

3.2.8 Resale

Within Casitas MWD's boundaries there are nine other public and private water agencies known as resale customers (see **Section 2.6** for list). Most of the resale agencies are primarily dependent upon available local ground water as one of their main sources of water supply. The resale agencies rely on Casitas MWD as a primary supply, and/or supplemental supply, and/or drought contingency supply. Sales of



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water to resale customers is not considered an urban water demand and therefore excluded from the retail demands.

3.3 CURRENT WATER USE

Total annual water demand includes water delivered to the various Casitas MWD customer classifications, minor losses in the distribution system due to leaks, and flushing of the system for water quality maintenance. The phrases “water demand” and “water use” will be used interchangeably throughout this document. Casitas MWD retail water demand can vary dramatically from year to year depending on several factors with weather as one the primary factors. Water demand is closely tied to local precipitation. During wet years, there is a major reduction in water demand compared to dry years.

During dry water-years, resale and agricultural water demand for Casitas MWD water supply can increase dramatically when local ground water sources become diminished or no longer available. During dry periods, resale and agricultural customers rely more on Casitas MWD’s surface water, and in some cases rely exclusively on water deliveries from Lake Casitas, until ground water supplies are replenished by rainfall events. Depending on the severity and duration of the drought period, it could be anticipated that any one or more resale agencies and or agricultural customer will have limited ground water supply and may rely on Casitas MWD for the balance of essential water supply needs.

The historical record of annual water deliveries from Lake Casitas is significantly impacted by drought conditions. Locally, years with above average precipitation are associated with low water demand, and years with below average rainfall are associated with increases in water demand. Resale and agricultural customer groups have a much stronger influence on Casitas MWD water demands during low rainfall periods, as compared to the Casitas MWD residential customers that exhibit minimal response to weather conditions. Residential water demand represents a small portion of the overall demand (sales for wholesale, retail, and agricultural) within Casitas MWD service area. Agricultural customers have a higher rate of increase in water demand versus residential customers during low annual rainfall years because their primary ground water sources become depleted quickly and they then must rely on Casitas MWD’s surface water supplies. Casitas MWD’s water demand has historically increased during drought conditions due to the nature of Casitas MWD being a backup water supply to local ground water resources that quickly diminish during drought conditions. Casitas MWD’s Lake Casitas reservoir is managed as a long-term water supply with an annual safe-yield of 20,840 acre-feet (CMWD surface and ground water) based on the historical 1944-1965 (21 years) drought cycle under certain conditions as highlighted in the “Water Supply and Use Status Report” (CMWD, 2004). A copy of this report is provided in

Appendix H.

In 1989, Casitas MWD’s supply and demand studies indicated water demand was approaching the annual safe-yield and any significant increase above existing levels could ultimately lead to demand outstripping supplies. A continued water supply deficit could lead to future supply shortages during long-term drought conditions. In 1992, Casitas MWD adopted the Water Efficiency and Allocation Program (WEAP). The WEAP encourages efficient use of water to reduce overall water demand, and to ensure the annual safe-yield would not exceed the critical 21,920 acre-feet per year average (1992). Average



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demand is not anticipated to increase above the current safe-yield of 20,840 AF (CMWD surface and ground water) that is derived from the “Water Supply and Use Status Report”. (CMWD, 2004). Casitas MWD has taken additional steps to limit future demand, including changes in the allocation program. The Ojai City Council adopted a growth management plan that restricted housing and population growth to less than 1 percent.

Table 3-1 summarizes the CMWD total water sales to retail, agricultural, and resale customers for the period 2011-2015. As previously noted, local agricultural water demand is historically the highest water demand for Casitas MWD. **Table 3-1** also indicates that Casitas MWD sales to agricultural and resale customers can vary dramatically from year to year. Agricultural customer groups have a much stronger influence on Casitas MWD water demands during low rainfall periods. Agricultural customers have a higher rate of increase in water demand during low annual rainfall years because their primary ground water sources become depleted quickly and they then must rely on Casitas MWD’s surface water supplies. **Table 3-1** indicates that total annual average water sales to CMWD retail customers, agricultural customers, and resale customers within the Casitas MWD service area was 16,145 AF for the period 2011-2015, including a low of 13,431 AF in 2011 to a high of 18,296 AF in 2014.

**TABLE 3-1
CMWD TOTAL WATER SALES 2011-2015**

CATEGORY (1,2)	2011	2012	2013	2014	2015
Sales to Retail Customers (3)	2,292	2,655	2,779	2,657	2,507
Sales to Agricultural Customers	4,880	7,603	8,305	9,265	7,502
Sales to Resale Customers	6,259	4,998	7,159	6,374	5,489
TOTAL	13,431	15,256	18,243	18,296	15,498

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded.
- (2) Sales does not include water losses due to production, treatment, storage, nor distribution.
- (3) Retail sales in this table includes only Casitas MWD system customers. Retail sales for the Ojai system are included in this table in sales to resale customers since CMWD purchased the Ojai system in June 2017.

Table 3-2 summarizes the Casitas MWD retail water uses for 2015 including the CMWD system and Ojai system. In 2015, Casitas MWD total retail water demands were 3,990 AF. Residential sales in 2015 (including single-family and multiple-family accounts) was the largest retail customer demand with 2,798 AF (70.1%). Demands by commercial customers in 2015 were 587 AF (14.7%) for the second largest retail customer demand. **Table 3-2** excludes sales to other agencies and agriculture. Retail sales for the CMWD system and Ojai system are separated in **Table 3-2** since the Casitas MWD finalized the purchase of the Golden State Water Company’s Ojai Division in June 2017. This purchase added approximately 2,857 retail residential and commercial customers.



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**TABLE 3-2
CMWD RETAIL WATER USE FOR 2015**

CATEGORY	CMWD SYSTEM (AFY) (1)	OJAI SYSTEM (AFY) (1)	TOTAL	PERCENT OF RETAIL WATER DEMAND
Residential (2)	1,512	1,286	2,798	70.1
Commercial	587	(3)	587	14.7
Industrial	29	1	30	0.8
Interdepartmental/Govt.	159	32	191	4.8
Agriculture (4)	0	0	0	0
Sales/Transfers/Exchanges (5)	0	0	0	0
Other (6)	219	165	384	1.0
TOTAL	2,506	1,484	3,990	100

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded. Does not include water losses.
- (2) Includes accounts for single-family and multi-family residential.
- (3) Included with residential.
- (4) Excludes sales for agricultural customers. Agriculture water demand for 2015 included 8,048 AF.
- (5) Excludes sales to wholesale agencies.
- (6) Includes accounts for fire, temporary, transfers and exchanges, etc.

3.4 WATER LOSSES

Casitas MWD prepared a water audit as defined by the American Water Works Association. For calendar year 2015, Casitas MWD estimated total water losses (for the CMWD system) at approximately 1,247 AF for all sales including wholesale, retail, and agricultural. This audit does not account for losses within the systems of the resale customers. The most recent water loss audit for the Ojai system (2010) indicated an estimated loss of 250 AF (GSWC, 2011). See **Appendix E Table 4-4** for additional details.

3.5 CURRENT WATER USE FOR-LOWER INCOME HOUSEHOLDS

One of the requirements of the UWMP Act is the evaluation of demands for lower income households. (CWC, 10631.1) 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”.



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The Casitas MWD service area includes areas within the jurisdiction of the County of Ventura and City of Ojai. There are an unknown number of dwelling units designated as very-low income or low-income occupants within the Casitas MWD service area under County of Ventura jurisdiction. There are approximately 162 dwelling units designated as very-low income or low-income occupants within the Casitas MWD service area under City of Ojai jurisdiction. The Casitas MWD 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 3.3** and **Table 3-1**. The Casitas MWD provides water to all customers to meet customer demands including water necessary for lower income single-family households and multiple-family households.

3.6 PROJECTED WATER USE 2020-2040

The Casitas MWD is not anticipating a significant change in population growth within its service area boundaries within the next twenty-five years. The low population growth is likely to limit overall customer water demand in the future because most of this growth is likely to occur in resale agencies service area, which will allow other agencies ground water sources to supplement the increased demand. Resale agencies seeking additional water supplies from Casitas MWD will need to negotiate additional water allocations from Casitas MWD and or find other water supplies including additional ground water sources, recycled water, and or implement additional water demand management programs.

Table 3-3 summarizes the Casitas MWD projected water uses for the period 2020-2040. **Table 3-3** indicates the total water demands for the period 2020 to 2025 are projected to be approximately 17,200 AFY (average water-year). For the period 2020 to 2025 (during average water-years), sales to other agencies are projected to be 4,065-4,259 AFY, agricultural sales of 8,000 AFY, and non-agricultural retail sales of 4,941-5,135 AFY. For the period 2030 to 2040, total water demands are projected to be approximately 17,500 AFY. For the period 2030 to 2040, **Table 3-3** indicates that sales to other agencies are projected to be 3,880-4,183 AFY, agricultural sales of 8,000 AFY, and non-agricultural retail sales of 5,317-5,620 AFY. Casitas MWD projects that agricultural sales and retail sales will remain consistent for the period 2020 to 2040 due to current and future demand management measures implemented within the service area. See **Section 3.6** for additional details.

Table 3-4 summarizes the Casitas MWD projected retail water demands for the period 2020-2040 (see **Appendix E Tables 4-2** and **4-3** for additional details). **Table 3-3** indicates the period 2020 to 2040 retail water demands are projected to be approximately 4,941 AFY to 5,620 AFY (during an average water-year). Residential sales (including single-family and multiple-family accounts) are anticipated to be the largest single demand category through 2040.



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**TABLE 3-3
CMWD PROJECTED TOTAL WATER SALES 2020-2040**

CATEGORY (1)	2020	2025	2030	2035	2040
Sales to other agencies	4,259	4,065	4,183	4,032	3,880
Agricultural sales	8,000	8,000	8,000	8,000	8,000
Retail sales (2)	4,941	5,135	5,317	5,468	5,620
TOTAL	17,200	17,200	17,500	17,500	17,500

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded. Data does not include water losses.
- (2) Includes sales to CMWD system and Ojai system retail customers.

**TABLE 3-4
CMWD PROJECTED RETAIL WATER USE 2020-2040**

CATEGORY (1,2)	2020	2025	2030	2035	2040
CMWD Residential (3)	1,600	1,650	1,700	1,750	1,800
CMWD Commercial	600	622	644	666	690
CMWD Industrial	30	35	40	45	50
CMWD Interdepartmental/Govt.	160	165	170	175	180
CMWD Agriculture (4)	0	0	0	0	0
CMWD Resale (5)	0	0	0	0	0
CMWD Other (6)	220	235	250	265	280
Ojai System Retail (7)	2,331	2,428	2,513	2,567	2,620
TOTAL	4,941	5,135	5,317	5,468	5,620

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded. Data does not include water losses.
- (2) Excludes sales to other agencies.
- (3) Includes accounts for single-family and multi-family residential.
- (4) Excludes sales for agricultural customers.
- (5) Excludes sales to wholesale agencies.
- (6) Includes accounts for fire, temporary, transfers and exchanges, etc.
- (7) Projections for Ojai system based on Golden State UWMP (GSWC, 2010).



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3.7 PROJECTED WATER USE FOR LOWER INCOME HOUSEHOLDS

The Casitas MWD 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 3.6 and **Table 3-4**. The Casitas MWD provides water to all customers to meet customer demands including water necessary for lower income single-family households and multiple-family households. The Casitas MWD anticipates sufficient water supply to meet the demands of all lower income households for the period 2020-2040.

3.8 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, the CADWR prepared a 20x2020 Water Conservation Plan (CADWR, 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; see **Appendix B** for details), was signed into law as part of a comprehensive water legislation package. The Water Conservation Act addresses both urban and agricultural water conservation. 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 Casitas MWD compliance are provided below. In addition, details are provided in Section 7 regarding the present and proposed Casitas MWD measures, programs, and policies to be used by Casitas MWD customers and resale customers to achieve 20x2020 water use reduction targets.

3.8.1 Baseline Water Use

Water suppliers must define a 10- year base period (or 15-year) (also known as baseline) for water use that will be 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. Methodology 3: Base Daily Per Capita Water Use describes the calculations. The Casitas MWD choose the 10-year baseline period 2001 to 2010, and the 5-year baseline period 2006-2010.



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3.8.2 Water Use Targets

An urban retail water supplier, as defined above, must set a year 2020 water use target and a 2015 interim target using one of four methods. (CWC, 10608.20(a)(1)) The 2020 water use target will be calculated using one of the following four methods:

- Method 1: Eighty percent of the water supplier's baseline per capita water use
- Method 2: Per capita daily water use estimated using the sum of performance standards applied to indoor residential use; landscaped area water use; and CII uses
- Method 3: Ninety-five percent of the applicable state hydrologic region target as stated in the 20x2020 Water Conservation Plan
- Method 4: Urban water use target is calculated by estimating the baseline per capita use and subtracting total water savings (savings from metering, indoor residential, commercial, industrial, institutional, landscape, and water loss).

The target may need to be adjusted further to achieve a minimum reduction in water use regardless of the target method (this is explained in Methodology 3). The Water Code directs that water suppliers must compare their actual water use in 2020 with their calculated targets to assess compliance. In addition, water suppliers will report interim compliance in 2015 as compared to an interim target (generally halfway between the baseline water use and the 2020 target level). 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 gallons per capita per day (GPCD). Water suppliers have some flexibility in setting and revising water use targets:

A water supplier may set its water use target and comply individually, or as part of a regional alliance. The Casitas MWD chose to comply as an individual water agency. A water supplier may revise its water use target in its 2015 or 2020 urban water management plan or in an amended plan. A water supplier may change the method it uses to set its water use target and report it in its 2015 urban water management plan. Urban water suppliers are not permitted to change target methods after they have submitted their 2015 UWMP.

3.8.3 Data Reporting

CADWR will collect data pertaining to urban water use targets through three documents:

- (1) through the UWMP from the individual supplier
- (2) through the regional UWMP
- (3) through regional alliance reports.

Water suppliers that comply individually must report the following data in their UWMP (applicable UWMP dates are included in parentheses).

- Baseline Gross Water Use and Service Area Population (2010, 2015, 2020)
- Individual 2020 Urban Water Use Target (2010, 2015, 2020) and Interim 2015 Urban Water Use Target (2010)
- Compliance Year Gross Water Use (2015 and 2020) and Service Area Population (2010, 2015, 2020)



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- Adjustments to Gross Water Use in the compliance year (2015, 2020)
- Water suppliers who choose Target Method 2 also must provide Landscaped Area Water Use and Baseline CII Water Use data (2010, 2015, and 2020).

3.8.4 Casitas MWD Compliance Summary

The Casitas MWD compliance with the California Water Conservation Act of 2009 includes the following:

- Baseline period - 10-year: 2001-2010 (see **Appendix F Table 1**)
- Baseline period - 5-year: 2006-2010 (see **Appendix F Table 1**)
- Population 10-year range (2001-2010): 15,540 to 16,894 (see **Appendix F Table 3**)
- Population compliance year 2015: 17,421 (see **Appendix F Table 3**)
- Gross water use 10-year average (2001-2010): 5,082 acre-feet (see **Appendix F Table 4**)
- Gross water use 5-year average (2006-2010): 4,606 acre-feet (see **Appendix F Table 4**)
- Gross water use compliance year 2015: 3,282 (see **Appendix F Table 4**)
- Baseline per capita use 10-year avg. (2001-2010): 281 gpcd (see **Appendix F Table 5**)
- Baseline per capita use 5-year avg. (2006-2010): 266 gpcd (see **Appendix F Table 5**)
- Gallons per capita per day compliance year 2015: 168 gpcd (see **Appendix F Table 5**)
- Target Method: Method 1 – 20 Percent Reduction (see **Appendix F Table 7**)
- 2015 water use target: 246 gpcd (see **Appendix F Table 8**)
- 2020 water use target: 225 gpcd (see **Appendix F Table 7A**)
- Actual water use compliance year 2015: 168 gpcd (see **Appendix F Table 9**)
- Did CMWD meet 20X2020 2015 Interim Target water demand (gpcd)? Yes.

See **Appendix E Tables 5-1 and 5-2** and **Appendix F Tables 1 to 9** for additional details.



SECTION 4: SYSTEM SUPPLIES

4.1 UWMP REQUIREMENTS

This section will include the following:

- Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, 2035, and 2040 (optional) (CWC, 10631(b)).
- Indicate whether ground water is an existing or planned source of water available to the supplier (CWC, 10631(b)).
- Indicate whether a ground water management plan has been adopted by the water supplier or if there is any other specific authorization for ground water management. Include a copy of the plan or authorization (CWC, 10631(b)(1)).
- Describe the ground water basin (CWC, 10631(b)(2)).
- 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)(2)).
- For unadjudicated basins, indicate whether the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition (CWC, 10631(b)(2)).
- Provide a detailed description and analysis of the location, amount, and sufficiency of ground water pumped by the urban water supplier for the past five years (CWC, 10631(b)(3)).
- Provide a detailed description and analysis of the amount and location of ground water that is projected to be pumped (CWC, 10631(b)(4)).
- Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis (CWC, 10631(d)).
- 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 multiple-dry years (CWC, 10631(g)).
- Describe desalinated water project opportunities for long-term supply (CWC, 10631(h)).
- Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source (CWC, 10631(j)).
- For wastewater and recycled water, coordinate with local water, wastewater, ground water, and planning agencies that operate within the supplier's service area (CWC, 10633).
- Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal (CWC, 10633(a)).



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- 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)).

4.2 CURRENT WATER SUPPLIES

Casitas MWD relies on surface water and ground water sources to meet the water demands of the area. **Table 4-1** indicates that the Casitas MWD average water supplies produced for retail customers is 4,652 AF for the period 2011-2015, with a range from 4,210 AF (2015) to 5,066 AF (2013). Each of the current water supply sources are summarized in the following sections including source limitations (physical or political), and water quality.

4.2.1 Local Surface Water

Table 4-1 summarizes the quantities of water supplies in the Casitas MWD water portfolio for Fiscal Years 2011-2015. **Table 4-1** indicates that the Casitas MWD produced a surface water supply for retail customers for an annual average of 3,004 AF for the period 2011-2015 (includes the CMWD system and Ojai system). The range of surface water supply produced for retail customers is 2,339 AF (2011) to 3,472 AF (2013). In addition, see **Appendix E, Table 6-8** for additional details.

4.2.1.1 Introduction

The primary source of water for the Casitas MWD is from the collection and storage of precipitation and runoff from the local Ventura River watersheds. The Ventura River lies within the Transverse Ranges in western Ventura County and a small portion in eastern Santa Barbara County (see **Figure 4-1**). The watershed encompasses 226 square miles (144,833 acres) and is 33.5 miles long from upper Matilija Canyon to the Pacific Ocean (VRWC, 2015). A copy of the Ventura River Groundwater Management Plan (VRWC, 2015) is provided in **Appendix P**. The Ventura River is the watershed's primary waterway. Matilija Creek and the North Fork of Matilija Creek converge to form the Ventura River approximately 15 miles from the Pacific Ocean. Its two principal tributaries are San Antonio Creek from the east and Coyote Creek from the west.

Topography in the watershed is rugged with steep gradients ranging from 40 feet per mile at the mouth to 150 feet per mile at the headwaters. Elevation within the watershed ranges from 6,010 feet above sea



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level in Matilija Canyon to 0 feet above sea level at the Ventura River estuary. The gradient at Robles dam is 70 feet per mile, at highway 150 is 70 feet/mile, 50 feet/mile at confluence with San Antonio Creek, 40 feet/mile at Foster Park and 40 feet/mile from Foster Park to the ocean (RWQCB, 2002).

**TABLE 4-1
CMWD WATER SUPPLIES FOR RETAIL CUSTOMERS 2011-2015**

WATER SUPPLY SOURCES (1)	2011	2012	2013	2014	2015
CMWD system surface water (1)	2,225	2,423	2,606	2,615	2,455
CMWD system ground water (1)	67	232	173	42	54
Ojai system surface water (2)	114	491	866	743	482
Ojai system ground water (2)	1,933	1,760	1,421	1,337	1,219
Imported surface water	0	0	0	0	0
Transfers in or out (3)	0	0	0	0	0
Exchanges in or out	0	0	0	0	0
Recycled water	0	0	0	0	0
Desalination	0	0	0	0	0
Other	0	0	0	0	0
TOTAL	4,339	4,906	5,066	4,737	4,210

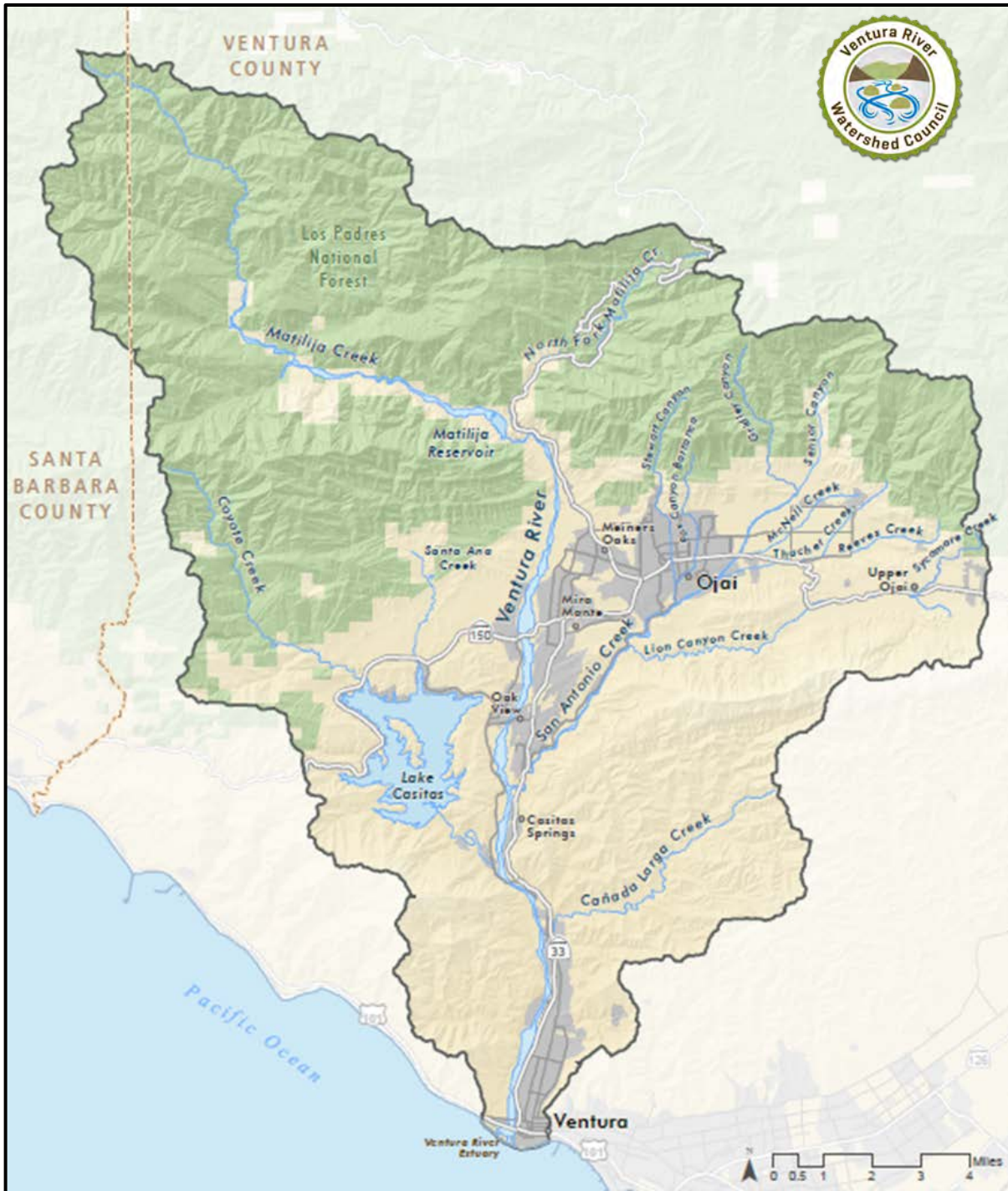
Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded. Fiscal Years.
- (2) Source, SWRCB, 2017a.
- (3) Transfer to Carpinteria Valley Water District.

Precipitation in the Ventura River watershed is extremely unpredictable and characterized by long periods of little or no rainfall followed by short periods of intense precipitation with high runoff peaks. Annual average precipitation within the watershed is approximately 14 inches (and 22 inches at Casitas Dam), with a range from 5 to 40 inches. Additional local climate data provided in Section 2.3. Ground water basins composed of alluvial aquifers are highly interconnected with the surface water system and are quickly recharged or depleted, according to surface flow conditions. Additional details regarding the Ventura River ground water basins are provided in Section 4.5.

Flow in the Ventura River fluctuates seasonally and from year to year as is typical with many southern California systems. Annual average flow of the Ventura River is approximately 13,600 acre-feet. The Ventura River is an interrupted stream made up of reaches that flow perennially (Lower Ventura River) with intervening reaches that flow intermittently. From headwaters to the Robles dam, the river is

FIGURE 4-1
VENTURA RIVER WATERSHED





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perennial (for approximately 10 km). The flow is intermittent from Robles Dam to the confluence with San Antonio Creek. Historically, there has been little or no surface flow in the river in the summer between Hollingsworth Ranch (8 miles above estuary) to the former Soper's Ranch (14 miles inland) (RWQCB, 2002). There is a geologic discontinuity at Casitas Springs that causes ground water to rise and feed a perennial stretch of the surface flow below San Antonio Creek. Surface flows in this reach comes from San Antonio Creek, Live Oaks Acres Creek, small springs and rising ground water. Between the confluence with San Antonio Creek and Foster Park flow is perennial with some disruption at Foster Park by the ground water extraction.

The Lower Ventura River frequently has a perennial flow to the estuary due to rising ground water and treated wastewater discharge. Another major influence on habitats is the seasonal and at times catastrophic winter floods that can significantly alter the path of the river channel, topography of the floodplain and delta, and location of estuarine wetlands. Floods that result in extensive damage have occurred about every 12 years (RWQCB, 2002). The largest flood event between 1929 and 1971 occurred in 1969 and was recorded at 58,000 cubic feet per second (cfs). Channel migration in 1978 and 1982 also caused damage even with lesser flows. Large floods temporarily remove most of the vegetation, greatly alter topography, and completely redefine the habitats and occurrence of vegetation.

Local watersheds are primarily located in the Los Padres National Forest and lands purchased by the United States for protection of the water quality in Lake Casitas. The watersheds within the Forest area do accommodate a small number of residential homes with individual septic systems and minimal public access for recreation. Casitas MWD has also sought cooperative measures to prevent mining and other water quality impact activities in the Forest watersheds. Water quality from the Coyote and Matilija watersheds is not influenced by industrial or municipal waste discharges. Developed land (excluding grazing) comprises only about 13 percent of the total land area in the watershed. Agriculture is the dominant land use. Citrus and avocados are the primary irrigated crops grown, and a significant area of land is used for cattle grazing. Conditions in the watershed remain mostly natural and undeveloped, with 57 percent of its land area in protected status. Most of the watershed's primary streams and drainages remain unchanneled.

4.2.1.2 Supply Alternatives

The western portion of Ventura County, California, which includes unincorporated portions of Ventura County, the City of Ojai, and the City San Buenaventura, struggled with water shortage issues in the early to middle 1900's. At the beginning of the 1900's, western Ventura County began to experience growth in agriculture and population. The primary growth areas, the City of Ventura and Ojai Valley, relied on either diverting river flows or ground water pumping to satisfy water demands. By the 1930's, the local agriculture and cities began to experience drought conditions and question the reliability of their water supplies. Western Ventura County cities and agriculture recognized that local ground water sources and surface diversions alone were not reliable and were inadequate for both agricultural use and for municipal and industrial purposes. Development of an additional water supply was urgently needed in western Ventura County for stabilization of present agriculture and other economic activities, for new irrigated lands, for new industry, a rapidly expanding population, and for new economic opportunities (USBR, 1954).



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In 1933, the State of California issued Bulletin No. 46, Ventura County Investigation, in response to the filing of applications to appropriate water from the extreme headwaters of Sespe Creek (California, 1933). This plan would import Sespe Creek water by way of a proposed tunnel to the Ventura River watershed. Bulletin No. 46 identified that agriculture within the Ventura River Basin had grown to 4,535 acres. Bulletin No. 46 considered, with the lack of any other data, that the 1892 through 1932 period was assumed to have established a normal or long-time average rainfall and run-off, and that all conclusions as to water supply were made on this assumption. It was further recognized in Bulletin No. 46, that Ventura County went through two successions of wet and dry cycles, each cycle persisting for approximately twenty years that were evenly divided between a wet or dry period.

The conclusion of Bulletin No. 46 was that the Ventura River Basin would provide ample supply if the City of Ventura had the ability through its facilities to extract water from the Ventura River. Likewise, in the Ojai Valley, use of ground water appeared to be more than sufficient to meet demand within the Ojai Groundwater Basin. Bulletin No. 46 did recognize that fluctuations in the water table were drastic with wet and dry cycles. However, when the water table was high, there was waste by seepage out of the Basin and it was suggested that spreading of water for basin recharge might come about as development increases.

The significance of Bulletin No. 46 was that there appeared to be plenty of water to meet the demands over the course of the study period. Bulletin No. 46 did not address the conditions that were experienced during the two ten-year dry cycles. This may have promoted local action to consider to appropriate additional water supplies from the Sespe Creek, which is in a different watershed and miles away from the Ventura River Basin. Bulletin No. 46 appears to oversimplify the comparison between the average water availability and the average demand for the forty-year period. However, Bulletin No. 46 recommended actions that were developed in the following decade – primarily for more local water source (Matilija Dam) and recharging the Ojai Groundwater Basin during drought conditions.

By 1940, the County of Ventura began a series of reconnaissance and water supply evaluation studies to consider a variety of dam site alternatives, and to develop a surface water supply on the Ventura River that could buffer the drought and augment ground water supplies. The drought period of 1944 through 1951 was first responded to by the Ventura County Flood Control District with a joint flood control and water storage-spreading project known as the Matilija Dam Project. The Matilija Dam was erected on the Matilija Creek and completed in 1948. By 1950, with little water stored behind the Matilija Dam and the continuation of drought conditions, the County of Ventura pursued additional investigations through consulting engineers and the State of California, as described in Bulletin No. 12 (California, 1950). Bulletin No. 12 recommended development of surface water supplies to augment the local ground water basins. Bulletin No. 12 went one step further in viewing the water needs and water quality issues of the entire Ventura County, by also suggesting water importation from the Colorado River and Feather River. This finding supported the County's interest in development of additional water supplies including the California State Water Project to bring northern California water to southern California. Bulletin No. 12 states the following:



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“As has been stated, the security of existing developments and economies in Ventura County is threatened by water supply shortages which develop during periods of drought, by perennial lowering of ground water levels, and by the intrusion of sea water into pumped aquifers. Furthermore, the growth and enhancement of the economy of portions of the County have been impeded by the lack of firm water supplies. Elimination of present water resource problems and provision for indicated increased future water requirements of the County would require the development of additional water supplies” (California, 1950, pages 3-59).

4.2.1.3 Ventura River Project

In 1952, formation of the Ventura River Municipal Water District (VRMWD; renamed Casitas Municipal Water District in 1971) was quick to follow with a request of the United States Department of Interior, Bureau of Reclamation (USBR) to make a water requirement and water supply study for western Ventura County. The people of the VRMWD had been noting the progress of the Cachuma Project in Santa Barbara County and were pleased with the effective handling of the Cachuma Project. By March 1953, VRMWD and USBR entered into a cooperative investigation contract. By the fall of 1953, USBR investigators completed reconnaissance-level studies to determine the approximate long-range water requirements, comparison of the merits of available dam sites, and determination of the river diversion and storage capacity required to meet the long-term water needs of the area. (Bennett, 1967) The feasibility study also considered the recreational benefits that the project would have for the area. The USBR’s Feasibility Report (1954) recognized the need for water supply development, as stated in the following:

- 1) “Development of an additional firm water supply is urgently needed in the Ventura River Project Area. Although the overall safe yields of the ground-water basins are approximately in balance with the amounts used, maldistribution of the use in relation to the supply now exists. Consequently, additional quantities are needed to serve some areas of insufficient ground-water storage capacity. This situation applies particularly to the developed lands lying around the edge of the Ojai Valley where wells went dry during the recent drought”.
- 2) “The City of Ventura is in critical need of additional water supplies under conditions of present development”.
- 3) “Ventura County is receiving more than its proportionate share of the present population growth of the State. This is due to its favorable location, agriculture, industrial, and commercial activities, and climatic and scenic attractions. This growth is expected to continue”.

As an Appendix to the USBR Report (1954), operational studies were developed for the Ventura River Project. In the Water Resources Appendix, the USBR describes the runoff characteristics of the Ventura River Basin as follows:

“Runoff from stream in the Ventura River Basin is derived almost entirely from rainfall, consequently exhibits the same monthly and seasonal variations as the rainfall. Since there is no accumulation of snow in the watershed, all streams diminish fairly rapidly in flow at the conclusion of the rainfall season. Small summer flows are maintained in the upper reaches of the larger watersheds by springs (Plate 15). Following severe storms, discharge in the Ventura River has been known to increase in a few hours from practically no flow to a rate of thousands of cubic feet per second. Seasonal runoff



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has varied from a maximum in excess of 400 percent of the mean to a minimum of less than 5 percent of the mean”.

The USBR summarized the approach to safe-yield for the Ventura River Project (Project) as follows: “In general, for smaller reservoirs the most intense drought is critical, while for larger reservoirs the drought with the greatest product of length times mean deficiency is critical” (USBR, 1954). The USBR determined in its analysis a safe yield and prediction of future water demands of 28,000 acre-feet annually that would be needed from the supplemental water supply. In the initial sizing of the Project, the USBR considered the Project requirement to provide an adequate water supply during the longest period of drought on record. The USBR determined that a 250,000 acre-foot capacity reservoir was needed to provide this level of annual demand.

The Ventura River Project received overwhelming local support with voters approving to pay for the \$6,400,000 cost by a 31 to 1 margin. The Project also received the support of many federal agencies and moved with a sense of urgency to be authorized by Congress, designed, and construction completed by 1959. The Project included a storage reservoir to be filled from erratic stream flows with the capacity to hold water over a period of several dry years; diversion works to divert water into the reservoir, and a conduit system to convey the water to points of use.

The key elements of the Project are Casitas Dam and Reservoir (Lake Casitas), the Robles Diversion and Canal on the Ventura River, and the water distribution system that consist of pipelines, pump plants, and storage tanks. **Figure 4-2** provides a photo of Lake Casitas with Casitas Dam located in middle left of photo. Since 1959, Casitas MWD has operated and maintained the Project under a repayment contract to the United States and in conformance with the guidelines, standard operating procedures, standards of the USBR. Casitas MWD was granted the perpetual right to use all water that becomes available through the construction and operation of the Project, subject to the satisfaction of vested rights. The Project was to be operated in conjunction with the Matilija Dam water supply.

Construction of the Project was completed in 1959, Lake Casitas filled for the first time in 1978, while demands for water developed to full safe-yield levels by 1990. The safe-yield refers to a 21-year average water demand (currently 20,840 AFY). The late 1980’s and early 1990s drought resulted in water demands that exceeded the safe-yield levels temporarily, but due to conservation efforts and some industry changes those levels have rarely been reached again. The Project serves as a primary supply for many direct customers and as a supplemental, or backup supply, for ground water users during times of drought.

4.2.1.4 Post Construction

The quantity of Project water is dependent on local rainfall and runoff from the Coyote watershed that is upstream of Casitas Dam and the Matilija watershed that is partially diverted from the Ventura River to storage behind Casitas Dam. The Project has been modeled several times in the past to determine a safe-yield of the Project storage, and recently Casitas MWD has considered additional influences on

**FIGURE 4-2
LAKE CASITAS AND CASITAS DAM**



water supply resulting from the Biological Opinion for the Robles Fish Passage and the planning in progress to remove Matilija Dam. According to the peer reviewed Casitas MWD “Water Supply and Use Status Report” (2004), safe-yield of the Project during a 21-year drought period is approximately 20,840 acre-feet.

All water extractions from Lake Casitas are made at Casitas Dam through the intake structure, pipelines, and treated to meet State water quality standards prior to the delivery to the first water customer. Water quality in Lake Casitas is typical for any deep lake. Key water quality issues that are addressed by Casitas MWD are algae blooms resulting in taste and odors, turbidity, dissolved oxygen levels, protection from human contamination and invasive species. Lake Casitas provides a limited recreational opportunity, but does not allow body contact activities with the waters of Lake Casitas. Casitas MWD manages the recreational aspect of Lake Casitas and provides strict oversight to assure lake water quality is maintained at all times.

On September 28, 1982, the California State Water Resources Control Board issued to Casitas MWD a License for Diversion and Use of Water of the Ventura River and Coyote Creek in Ventura County. License No. 11834 establishes the date of August 16, 1954, as the priority for the water right and the amount of water to which the right is entitled and limited to the amount beneficially used for the stated



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purposes. The total amount of water to be placed to beneficial use (direct diversion plus withdrawal from storage) shall not exceed 28,500 AFY.

The period of 1959 through 1989 was a water use development period during which Casitas MWD made numerous water service connections to serve water to western Ventura County. By 1989, during the third year of a four-year drought period, water demands from Lake Casitas approached and exceeded the safe yield value of Lake Casitas. In 1990, Casitas MWD took specific actions to control the expansion of water use beyond a level experienced in 1989 and further evaluated the safe yield of the Project (CMWD, 1990).

In 2003, Casitas MWD recognized two specific projects, the decommissioning of Matilija Dam and the application of a fish passage at Robles Diversion Dam, that were likely to impact water supply. Casitas MWD proceeded to evaluate the water supply impacts of each project, as described in the 2004 Water Supply and Use Report. The proposed decommissioning of Matilija Dam had gone through several years of study and consideration by federal, state, and local agencies and appeared to be on a rapid track to decommissioning. The storage capacity behind Matilija Dam had diminished by way of collective siltation and was further described as an obstruction to the migration of steelhead trout to the upper reaches of the Matilija Creek. The initial options for natural transport of sediments downstream of Matilija Dam pose a water quality and quantity threat to Casitas MWD's diversions to Lake Casitas. As of 2015, efforts are continuing to find an appropriate project to attain the objectives of decommissioning the dam.

The application of a fish passage facility at Robles Diversion Dam had specific conditions in the Biological Opinion, that water be taken from the diversion and provided downstream of the Robles Diversion for steelhead trout migration and passage. The Robles Fish Passage Facility was constructed at Robles Diversion Dam in 2005 and operational in 2006, at which time the full effect of the Biological Opinion became the standard operating procedure for flow at Robles Diversion Dam. The Biological Opinion may be subject to further revision upon determination of scientific data that would support changes to the current Biological Opinion, and any such revision may impact diversions to and safe yield of Lake Casitas. Presently, Casitas MWD's "Water Use and Supply Status Report" estimates a 360 AFY water demand excess over safe yield under the current Biological Opinion, so any additional impacts on water supply could further strain long term water supplies.

Figure 4-3 provides a summary of storage for Lake Casitas for the period April 2006 to April 2016. **Figure 4-3** indicates that Lake Casitas storage in April 2006 was 252,381 AF, while storage in April 2016 was 106,158 AF. This represents a reduction of over 146,000 AF over 10 years.

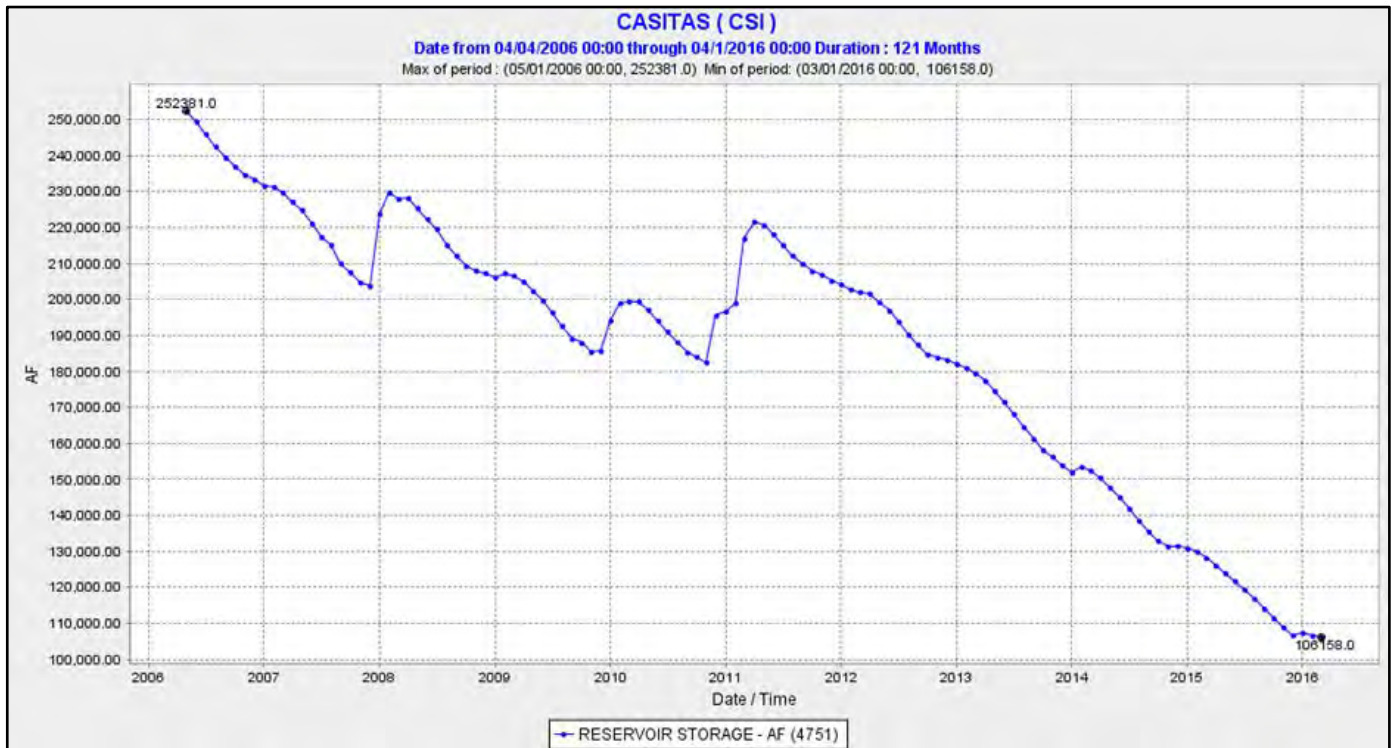
Casitas MWD has evaluated the reliability of the Lake Casitas water supply and its vulnerability to climatic and seasonal variations in weather, changes in water demands, and changes to water supply operations. "The Water Supply and Use Status Report" (CMWD, 2004) considered the historical hydrology of the Ventura River for the period 1945 through 2003 and historical water demands for the period of 1983 through 2003. A copy of this report is provided in **Appendix H**. The hydrology periods studied revealed an extensive drought period, associated with the diminishment of local water supply as



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illustrated in **Figure 4-4**, followed by a series of wet years that result in the restoration of the Lake Casitas water supply as illustrated by **Figure 4-5**. The Report also reviewed historical water demands to provide an indication of water demand growth and the influence of climate on agricultural water use within Casitas MWD’s service area.

**FIGURE 4-3
LAKE CASITAS STORAGE 2006-2016**



The “Water Supply and Use Status Report” (CMWD, 2004) also evaluated the impact to water supplies that could result from federal requirements to release additional water for fisheries and the removal of Matilija Dam from the water system. The change in annual safe yield of the Ventura River Project was calculated to be 1,930 acre-feet per year, providing a resultant safe yield of 20,840 AFY.

4.2.1.5 Ojai System Connections

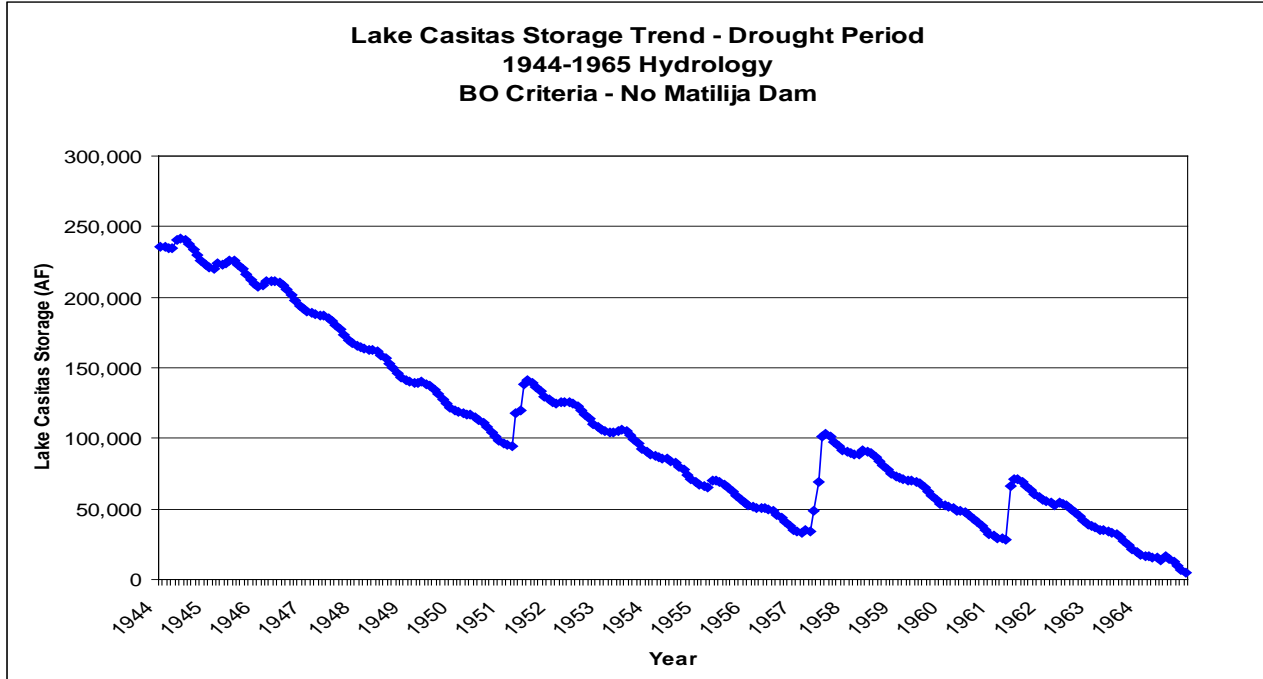
The Ojai system receives water Casitas MWD via the following connections:

- Montgomery and Grand connection, design capacity of 1,350 gpm
- Sierra and Cuyama connection, design capacity of 900 gpm
- Montana and Cuyama connection, design capacity of 900 gpm.

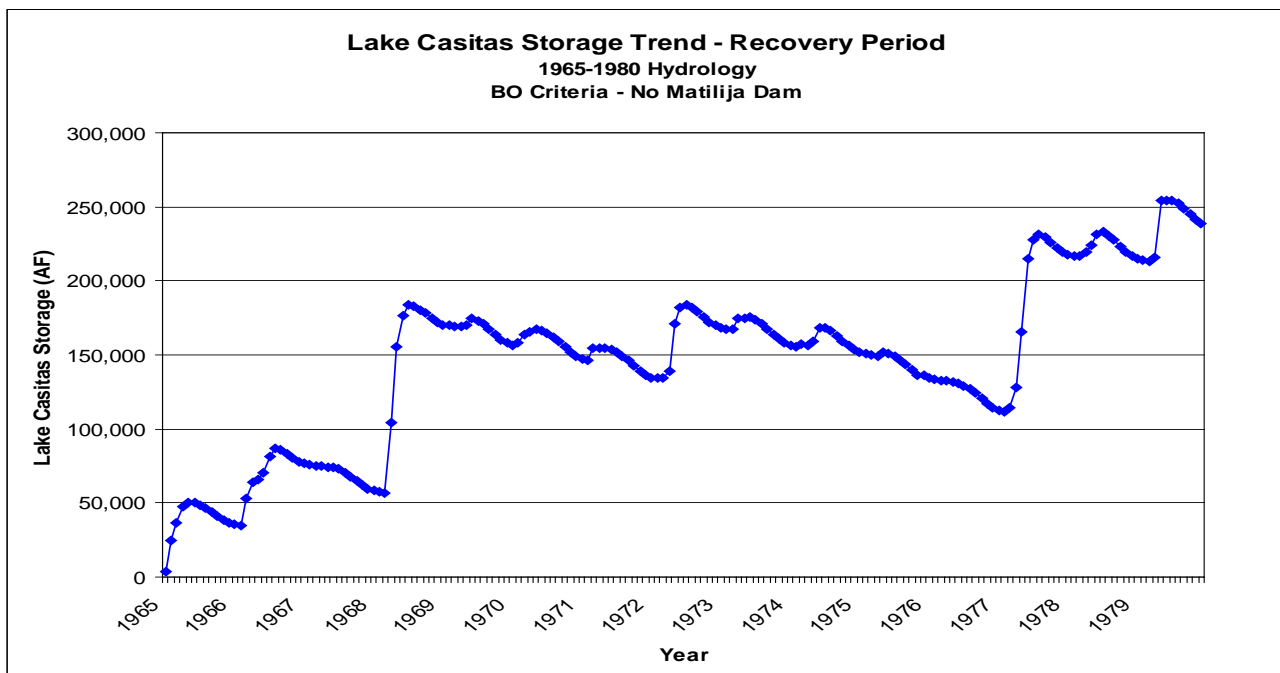
The Ojai system connections to the Casitas MWD have a combined design capacity of 3,150 gpm (5,081 AFY) (GSWC, 2011). In addition, the Ojai system has an emergency fire service connection to Casitas MWD located at the Ojai Valley Inn.



**FIGURE 4-4
LAKE CASITAS STORAGE MODEL BASED ON THE 1944-1965 DROUGHT PERIOD**



**FIGURE 4-5
LAKE CASITAS STORAGE MODEL BASED ON THE 1965-1980 RECOVERY PERIOD**





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4.2.2 Local Ground Water

In the Casitas MWD service area, the Ventura River watershed includes three primary alluvial ground water basins including: Ojai Valley Groundwater Basin/Upper Ojai Groundwater Basin, Upper Ventura River Groundwater Basin, and the Lower Ventura River Groundwater Basin. Each of these basins are summarized below. See **Figure 4-6** for details of the local ground water basins. Additional details regarding the Ventura River watershed are provided in Section 2.3 (climate) and Section 4.3.1 (topography and hydrology). Casitas MWD does not have jurisdiction over extractions within the basins within the Ventura River watershed. Casitas MWD extracts water from the Ojai Basin and Upper Ventura River Basin.

Casitas MWD is the backup water supply to several ground water purveyors of the Ventura River and Ojai Groundwater Basins. The ground water basins are known to be in a depleted state following periods with multiple years of below average rainfall, as occurred during the 1986 through 1990 period. Once these basins have depleted, water demand shifts from the ground water basins to the surface water supply of Lake Casitas.

4.2.2.1 Upper Ventura River Groundwater Basin

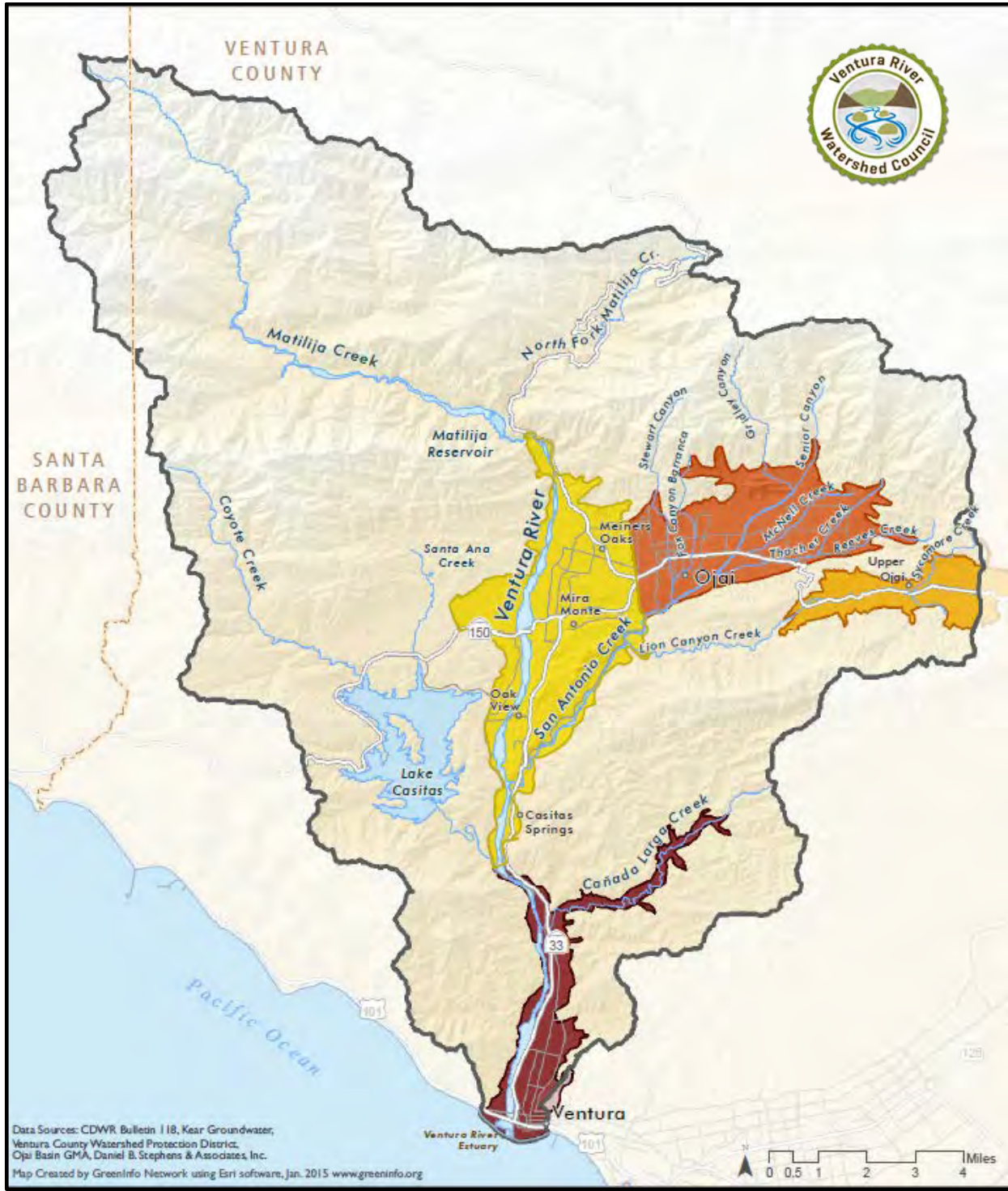
The Upper Ventura River Groundwater Basin (Basin No. 4-3.01) extends from Matilija Dam to Foster Park (north to south). The Basin includes approximately 11.6 square miles of area (7,410 acres) (California, 2004). See **Figure 4-6** for details of the local ground water basins. The Basin is mainly composed of thin alluvial deposits of 20 to 150 feet. Recharge to the Basin is primarily by percolation of flow in the Ventura River and, to a lesser extent, by percolation of rainfall to the valley floor and excess irrigation water. Total storage capacity for this Basin is estimated to be 10,000 to 35,000 AF. A ground water basin's total storage capacity (maximum) does not reflect the amount of available water; much of that water may not be usable or economically recoverable. Recharge by underflow is estimated to be approximately 3,500 AFY (California, 2004). Estimated available (recoverable) storage within the Basin is approximately 9,500 AF (VRWC, 2015). A copy of the Ventura River Groundwater Management Plan (VRWC, 2015) is provided in **Appendix P**.

The Basin depth is extremely limited in some areas, making most wells in this reach of the river under the influence of surface water. Water levels fluctuate seasonally by 5 to 20 feet, but usually recover each year during the winter months. There are approximately 291 water supply wells in the Basin; 162 are active wells. (Ventura County, 2015) Average usage above the Robles Dam over the years is approximately 2,800 acre-feet (CMWD, 1988). A large portion of the extraction within this Basin is for local agricultural customers, only a portion of these customers rely on Casitas MWD in the case of a long-term drought. The Basin is not adjudicated. The CADWR determined this Basin to be a "Medium Priority" for compliance with the Sustainable Groundwater Management Act (SGMA) (CADWR, 2019).

4.2.2.2 Lower Ventura River Groundwater Basin

The Lower Ventura River Groundwater Basin (Basin No. 4-3.02) is that portion of the Ventura River which extends from Foster Park to the Pacific Ocean (north to south). See **Figure 4-6** for details of the local ground water basins. Area within the Basin is approximately 8.3 square miles (5,300 acres)

FIGURE 4-6
VENTURA RIVER GROUNDWATER BASINS





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(California, 2004). A copy of the Ventura River Groundwater Management Plan (VRWC, 2015) is provided in **Appendix P**.

Depth to the water bearing unit is 3 to 13 feet below ground surface in the floodplain and deeper as the ground surface elevation increases towards the edge of the basin. (Ventura County, 2015) Limited information indicates that the total storage capacity for this Basin is approximately 264,000 AF (California, 2004). A ground water basin's total storage capacity (maximum) does not reflect the amount of available water; much of that water may not be usable or economically recoverable. Estimated available (recoverable) storage within the Basin ranges from approximately 2,100 AF (VRWC, 2015) to 21,000 AF (Panaro, 2016).

Recharge of the Basin occurs via percolation of Ventura River water, precipitation to the valley floor, irrigation return flow, and subsurface inflow from the adjacent basins. This Basin had an average yield during the period of 1944-1983 of 7,493 acre-feet (Barnett, 1989). There are approximately 29 water supply wells in the Basin; 14 are active wells. During this historic period, the City of Ventura extracted an average annual yield of 5,506 acre-feet and the other wells between Robles Dam and Foster Park extracted an average annual yield of 1,987 acre-feet. During dry water-years when the full ground water yield is not available, additional water supply must be obtained from alternate sources such as Lake Casitas. The City of Ventura forecasts extractions from the Ventura River at Foster Park for 2015-2025 years at 6,700 acre-feet per year (City of Ventura, 2015). The Basin is not adjudicated.

4.2.2.3 Ojai Groundwater Basin

The Ojai Groundwater Basin (Basin No. 4-2) is located in the Ventura River watershed in Ventura County. See **Figure 4-6** for details of the local ground water basins. The Ojai Basin lies under the City of Ojai and the Ojai Valley's East End. Its surface area is 6,471 acres (10.1 sq. mi.). Source water for the Ojai Basin is local rainfall and runoff that is captured by the alluvium of the Ojai Valley. Thickness of the water-bearing alluvium is as much as 715 feet. During wet periods, artesian conditions or springs can occur in the southwestern part of Ojai Basin, when the elevation to which ground water will naturally rise exceeds the ground surface elevation. The Ojai Basin has a total storage capacity of approximately 70,000 to 85,000AF, with an annual safe-yield of approximately 5,000 AF (California, 2004). A ground water basin's total storage capacity (maximum) does not reflect the amount of available water; much of that water may not be usable or economically recoverable. The CADWR determined this Basin to be a "High Priority" for compliance with the Sustainable Groundwater Management Act (SGMA) (CADWR, 2019).

The Ojai Basin Ground Water Management Agency (OBGMA) was formed in 1992 to protect the Ojai Ground Water Basin. The Ojai Basin serves a large number of people and agricultural acres. There are approximately 337 water supply wells in the Basin, with 188 of them active (Ventura County, 2015). Note, the OBGMA states there are 124 active wells in the Basin (OBGMA, 2014). Wells in the Ojai Basin extract water to meet demands for tree crops (mostly citrus and avocados), residents, and businesses in the City of Ojai and surrounding areas. Water extracted from the Ojai Basin is used by agriculture (54 percent), CMWD (former Golden State Water Company, 41 percent; serves potable water to the City of Ojai), and by individual residential and landscape irrigation (5 percent). Some water from the Ojai Basin is also naturally discharged to San Antonio Creek, supplying native habitats and the animals they support,



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as well as downstream water users. The Ojai Basin is quickly recharged during wet periods, and can be rapidly depleted during periods of drought. Average annual extraction from the Basin for the 10-year period 2003-2012 was 4,984 acre-feet (OBGMA, 2014). Some water supplied by Casitas MWD, for example excess agriculture and landscape irrigation, also provides indirect recharge to the Basin. See **Appendix I** for a copy of the Ground Water Management Plan for the Basin.

4.2.2.4 CMWD Ground Water Facilities

In response to the additional need for water after the Casitas MWD action of 1990 to curb water use expansion, Casitas MWD re-activated the 300 acre feet per year Mira Monte Well. This well is located in the Upper Ventura River Groundwater Basin. See **Figure 4-6** for details of the local ground water basins. Water from this well contains levels of nitrate that exceed the maximum contaminate levels established by the State of California. In order to utilize this water, the Casitas MWD blends or dilutes the well water with water from Lake Casitas to reduce the nitrate level to meet drinking water standards. **Table 4-2** provides a summary of the Casitas MWD wells.

Casitas MWD acquired the Mira Monte Mutual Water Company (MMMWC) in November 1982 along with its Mira Monte Well. The MMMWC had gone out of business and deeded the well to Casitas MWD. The well was known to have high nitrate values. Treatment techniques to make it a stand-alone potable supply are cost prohibitive. Casitas MWD made improvements to blend the high-nitrate well water with Lake Casitas water, reducing the level of nitrate to meet drinking water standards, and amended the domestic water permit with the State Department of Health Services (now Department of Drinking Water). The well has demonstrated an ability to provide approximately 300 acre-feet per year of water supply. The blending process has been subject to interruption, which resulted in occasional shut-downs. The Casitas MWD replaced the pump and electrical motor controls, upgraded communication equipment, and modified monitoring and data reporting.

Table 4-3 summarizes the volume of ground water extracted by Casitas MWD for Fiscal Years 2011-2015. **Table 4-3** indicates that the CMWD-Mira Monte well produced 54 AF in 2015 and an average of 114 AFY over the period 2011-2015. See **Appendix E Table 6-1** for additional details.

4.2.2.5 Ojai Ground Water Facilities

Casitas MWD acquired the Ojai system wells in June 2017 from the Golden State Water Company. The wells are located in rural areas and not housed. All the wells can discharge to waste. The six active wells in the Ojai system can produce a maximum of 2,950 gpm. These wells are located in the Ojai Groundwater Basin. See **Table 4-2** for additional details related to the Ojai system wells (SWRCB, 2017a). **Table 4-3** indicates the Ojai system wells produced 1,219 AF in 2015 and an average of 1,534 AFY for the period 2011-2015. See **Appendix E Table 6-1** for additional details.

All the wells discharge to the San Antonio Manganese Filtration Treatment Plant (SAMFTP), before entering the distribution system, due to current and or recent manganese exceedances (SWRCB, 2017a). The manganese removal treatment process consists of two stages – oxidation and filtration. Chlorine is used for the oxidation of the manganese and the contact time is achieved in the 12-inch pipeline between the well heads and the treatment plant. The oxidation process turns the manganese into an insoluble state



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so it can be removed through the filtration process. The SAMFTP horizontal pressure filter is dual media which contains both sand and anthracite. It is 10 feet in diameter and 50 feet in length (SWRCB, 2017a). The filter has four cells. The filtering surface area is approximately 500 square feet (ft²) for the entire length or 125 ft² for each filter cell. The filter is designed to have a filtration rate of 5.6 gallons per minute per square foot (gpm/ft²) at a flow of 2,800 gpm, with all wells operating at maximum capacity. Treated water from the SAMFTP supplies the San Antonio Reservoir.

**TABLE 4-2
CMWD ACTIVE WELL INFORMATION**

WELL NAME	Well Depth (ft)	Highest Perforations (ft below surface)	Pump Capacity (gpm)	Well Yield (gpm)
CMWD - Mira Monte (1)	270	130	350	326
Ojai - Gorham (2)	650	260	800	800
Ojai - Mutual No. 4 (2)	596	150	450	450
Ojai - Mutual No. 5 (2)	622	120	500	500
Ojai - Mutual No. 6 (2)	510	180	400	400
Ojai - San Antonio No. 3 (2)	650	225	400	400
Ojai - San Antonio No. 4 (2)	635	243	400	400

Notes:

- (1) CMWD, 2018.
- (2) Source, CA SWRCB , 2017.

**TABLE 4-3
CMWD GROUND WATER PUMPED 2011-2015**

SOURCE (AFY)	2011	2012	2013	2014	2015
CMWD system (1)	67	232	173	42	54
Ojai system (2)	1,933	1,760	1,421	1,337	1,219
TOTAL GROUND WATER PUMPED	2,000	1,992	1,594	1,364	1,274

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded.
- (2) Source, CA SWRCB, 2017a.



4.2.3 Imported Surface Water - State Water Project

4.2.3.1 Project Facilities

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 is owned by the State of California and operated by the CADWR. 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 20 million urban 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 4-7** 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 consists of 700 miles of canals and pipelines, 33 storage facilities, 21 reservoirs and lakes, 5 hydro-electric power plants, 4 pumping-generating plants, and 20 pumping plants (CADWR, 2013a).

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.

4.2.3.2 Reliability

The CADWR "State Water Project Delivery Reliability Report" 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 reliability is calculated using computer simulations based on 82 years of historical data. The CADWR Report (CADWR, 2013b) includes "Table A" which provides a projection of potential deliveries of imported surface water for the SWP contractors for the average water year scenario, single dry-year scenario, and multiple dry-year scenario. Table A contract amounts do not reflect actual deliveries a contractor should expect to receive.

**FIGURE 4-7
STATE WATER PROJECT FACILITIES**





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The CADWR Report (CADWR, 2013b) also discusses factors having the potential to affect SWP water delivery reliability including the following:

- Restrictions on SWP and Central Valley Project (CVP) operations due to new regulations and legal findings to protect endangered species
- Climate change and sea level rise, which is altering the hydrologic conditions in the State
- Vulnerability of Delta levees to failure due to floods and earthquakes
- Annual snowpack
- Reservoir capacity.

Contractors' requests for SWP water deliveries cannot always be met. In some years there are water shortages, and in other years, water surpluses. It was thought at the time that the SWP was constructed that the system could deliver about 50 percent of the allocations in a very dry year. Deliveries for the 2003-2012 period averaged 2,226,000 AF (53 percent) for Table A allocations (CADWR, 2013b). The 2013 Reliability Report (CADWR, 2013b) provided a projection of CADWR's water delivery reliability of the SWP for the current scenario (year 2013) and future scenario (year 2033). In 2015, SWP contractors received 20 percent of their SWP allocations (CADWR, 2016). For the period 2006-2015, SWP contractors received an average of 49 percent of their SWP allocations. The last 100 percent allocation, difficult to achieve even in wet years due to pumping restrictions designed to protect threatened and endangered fish, was in 2006.

The 2013 Reliability Report (CADWR, 2013b) 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-year (worst case scenario), CADWR estimated delivery of an average of only 11 percent of Table A allocations. In a four-year drought scenario, the CADWR estimated delivery of an average of 31 percent of Table A allocations.

The 2013 Reliability Report (CADWR, 2013b) 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 the following:

- Water availability at the source
- Water rights with priority over the SWP
- Climate change
- Regulatory restrictions on SWP exports
- Ongoing environmental and policy planning efforts
- San Joaquin River/Sacramento River Delta levee failure.



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4.2.3.3 Local SWP Entitlement

Three water agencies in western Ventura County have carried the cost for an entitlement to SWP water since 1972. Casitas MWD is the administrator of the Ventura County's 20,000 AFY entitlement of SWP water, which is distributed to Casitas MWD, City of Ventura, and United Water Conservation District (5,000, 10,000, and 5,000 AFY, respectively). To date, the City of Ventura and Casitas MWD have not received any of the SWP entitlement into the respective service areas.

4.2.4 Transfers and Exchanges

Given the location of the Casitas MWD service area and the lack of physical connections to other water resources in California, there are limited opportunities for water transfers for Casitas MWD. The two opportunities that Casitas MWD may utilize are described in the following sections.

Water transfers and/or exchanges with other agencies in Ventura County may provide opportunities to shift away from the reliance on Lake Casitas' water during times of depleted water storage in Lake Casitas. The City of Ventura has stated an ability to temporarily decrease purchases of the Casitas MWD water supply, i.e., during extremely low water storage levels at Lake Casitas, and utilize the credits the City has in the Fox Canyon Groundwater Basin. There has been recent (2015) uncertainty as to the availability of these water credits. The City of Ventura also may construct a permanent pipeline to the City of Oxnard to purchase SWP water from Calleguas Municipal Water District. The success of this approach to water transfer would be contingent upon the availability and reliability of other water resources, i.e. State water and local ground water banks, during an extended drought period. During the last decade, the reliability of the State Water Project has been questioned and work is ongoing to improve reliability of the State Water supply (see Section 4.4 for additional details on the SWP).

4.2.4.1 Local Ground Water Transfer

In 1985, Casitas MWD approved an emergency transfer of ground water from the Ojai Basin to Casitas MWD customers in the Ojai area. There can be conditions in which Lake Casitas is at minimum storage and local aquifers are replenished by a single rainfall event, and the needs of the Ojai area can only be met by inter-agency agreements to utilize the Ojai Basin. Casitas MWD has worked with many of the local ground water agencies during times of emergencies to provide alternative emergency supplies. The proximity of system interconnections and political decisions make these types of arrangement physically possible. These periods are likely to be short term, or less than six months in duration.

4.2.4.2 Transfer with Carpinteria Valley Water District

Table 4-1 indicates that, for the period 2011 to 2015, Casitas MWD transferred 0 AF to other agencies. Casitas MWD can transfer water to the Carpinteria Valley Water District (CVWD). An 8-inch piped connection exists between the CMWD and CVWD 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 could be installed to convey the additional flow. An emergency water exchange agreement remains in place between Casitas MWD and CVWD. This transfer option is considered a limited potential water supply by both agencies.



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The Casitas MWD provided an annual average of 7.6 AF to CVWD for Casitas MWD customers for the period 2011-2015. The Casitas MWD transfers the CMWD water for sale to CMWD customers adjacent to the CVWD service area (an area without a CMWD pipeline). Therefore, the Casitas MWD considers this water part of the CMWD annual customer demands and not a transfer.

4.2.5 Desalinated Water

Casitas MWD currently does not produce nor receive desalinated water. **Table 4-1** indicates that Casitas MWD does not currently receive desalinated water.

4.2.6 Recycled Water

The Ojai Valley Sanitary District (OVSD) and the City of Ventura provide wastewater collection and treatment within Casitas MWD's boundaries. The OVSD and the City of Ventura provide wastewater collection and treatment within Casitas MWD's boundaries. The OVSD provides treatment (located on north Ventura Avenue adjacent to the Ventura River) for approximately 3,000 acre-feet per year.

The OVSD built a \$30,000,000 tertiary treatment upgrade to its existing plant several years ago. In general, nearly 100 percent of the OVSD treated wastewater is discharged back in the Ventura River for the benefit of the aquatic habitat and the endangered species including but not limited to Southern California Steelhead. Any additional treated water that could be utilized for any other purpose would require the completion of an Environment Impact Report. By agreement for the land use for the Ojai Valley Sanitation Plant, the City of Ventura has retained the first right to claim the OVSD treated effluent water. The City of Ventura and OVSD have evaluated the potential for recycled water production and sale (Ventura, 2007; OVSD, 1992).

Additional details are provided are in **Section 4.4.8**. Casitas MWD currently does not produce nor receive any recycled water. **Table 4-1** indicates that Casitas MWD does not receive recycled water. Additional details related to recycled water are provided in **Appendix E Tables 6-2 to 6-5**.

4.2.7 Other Water Supply Projects

Additional details related to CMWD existing water resources projects are available at the following website: <https://www.casitaswatersecurity.org/>.

4.3 WATER QUALITY

The Casitas MWD has both surface water and ground water sources which present very different water quality issues. Surface water comes from Lake Casitas (from the Ventura River watershed) and the ground water is locally produced via seven wells. The District meets all water quality requirements of the California Division of Drinking Water (CADDW, formerly Department of Public Health). A copy of a recent Consumer Confidence Report (CCR) is provided in **Appendix J**.

The Marion R. Walker Filtration Plant is a high-rate in-line pressure filtration plant. Features include horizontal pressure filters, continuous real-time monitoring and alarm systems, and the application of chlorine. The filter plant clarifies and reduces turbidity in the water. Silt and other natural materials that



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are removed from the water are placed in drying beds and later hauled off to the landfill. The filtration plant also has a pilot plant attached. This is a small-scale treatment plant that simulates the full-scale treatment plant. It is used to evaluate variations in water quality and to offer different treatment options.

A significant amount of water drains into the lake from the watershed, or travels over land before entering the rivers or canal that lead to the lake. Because of this Casitas MWD takes steps to preserve the watershed areas. The Ventura River Watershed Boundary encompasses miles of land stretching from the Santa Barbara County/Ventura County line, throughout the Las Padres National Forest to the service area boundary in Upper Ojai, and south through the City of Ventura to Mills Road. The Project Watershed is the area directly around the lake. The Teague Watershed encompasses approximately 3,500 acres of land-most of it adjacent to the recreation area. There is a total of approximately 228 square miles of watershed area throughout the Casitas MWD service area. In order to more closely supervise the quality of your water, the federal government started buying land in 1974 in what is now the Charles M. Teague Open Space Memorial Park (Teague Watershed). This land is being returned to its natural state as permanent open space. Most of the residents have left the area, except for those who have lifetime leases. Activities that could impact the quality of the water in the watershed are strictly prohibited within the Teague Watershed. Because the Teague Watershed is so important to the quality of the Lake Casitas water, a comprehensive inspection is completed every five years to identify and address any potential problems within the watershed.

The Casitas MWD does not anticipate any current or future changes in the surface water and ground water that would affect water quality.

4.4 PLANNED WATER SUPPLIES 2020-2040

Casitas MWD will continue to rely on surface water and ground water sources to meet the anticipated water demands of the service area. **Table 4-4** summarizes the quantities of available water supplies in the Casitas MWD water portfolio for the period 2020-2040. **Table 4-4** indicates that available water supplies will be 23,440 AFY that for the period 2020-2040. Each of the planned water supply sources are summarized in the following sections. See **Appendix E Table 6-9** for additional details.

4.4.1 Local Surface Water

Table 4-4 indicates that Casitas MWD anticipates that local surface water from the Lake Casitas will provide an average of approximately 20,540 AFY for the period 2020-2040. Casitas MWD does not anticipate any changes or reductions to the Lake Casitas supply. See **Table 4-4** for details.

4.4.2 Local Ground Water

Casitas MWD anticipates that local available ground water will provide an average of 2,900 AFY for the period 2020-2040 (see **Table 4-4**). Casitas MWD does not anticipate any changes or reductions to the local ground water supply. **Table 4-5** summarizes the volume of ground water available to be extracted by Casitas MWD for the period 2020-2040. See **Appendix E Table 6-9** for additional details.



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**TABLE 4-4
CMWD PLANNED WATER SUPPLIES 2020-2040**

WATER SUPPLY SOURCES (1)	2020	2025	2030	2035	2040
Local surface water (Lake Casitas)	20,540	20,540	20,540	20,540	20,540
CMWD system ground water	300	300	300	300	300
Ojai system ground water	2,600	2,600	2,600	2,600	2,600
Imported surface water	0	0	0	0	0
Transfers in or out (2)	0	0	0	0	0
Exchanges in or out	0	0	0	0	0
Recycled water	0	0	0	0	0
Desalination	0	0	0	0	0
Other	0	0	0	0	0
TOTAL	23,440	23,440	23,440	23,440	23,440

Notes:

- (1) Source, CMWD, 2018. All values in AF, rounded.
- (2) Transfer to Carpinteria Valley Water District.

**TABLE 4-5
GROUND WATER AVAILABLE TO BE PUMPED 2020-2040**

WELL (AFY)	2020	2025	2030	2035	2040
Casitas MWD system	300	300	300	300	300
Ojai system	2,600	2,600	2,600	2,600	2,600
TOTAL	2,900	2,900	2,900	2,900	2,900

Notes:

Source, CMWD, 2018. All values in AF, rounded.

4.4.3 Enhanced Demand Management Programs

Casitas MWD will continue to support the water use allocation program with customer specific allocations (see Section 6 for details). Casitas MWD will continue to support and expand the best management practices (BMPs) and water conservation measures with all the customers within the service area. See Section 7 for details related to existing and future BMPs.



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4.4.4 Local Agreements

Casitas MWD could develop a Memorandum of Understanding (MOU) for each local purveyor within the service area. These MOU could provide for the joint participation in programs including but not limited to the following: require a particular type of water waste ordinance be used; require the use of local water reserves before requesting water from Casitas MWD; require participation in a public relations program for water conservation. If an incentive were attached to the program, it may cause other systems to join. Casitas MWD plans to work with other water purveyors to consider a future plan with allocation assignments and surcharges for exceeding allocations.

4.4.5 Transfers and Exchanges

Table 4-4 indicates that, for the period 2020 to 2040, Casitas MWD projects 0 AFY to be transferred to other agencies. See **Appendix E Table 6-9** for additional details. Casitas MWD does not anticipate any changes or reductions to this supply category. Casitas MWD anticipates providing an average of 10 AFY to CVWD for Casitas MWD customers within the CVWD service area (see Section 4.2.4.2 for details). The Casitas MWD considers this water part of the annual customer demands and not a transfer.

4.4.6 Imported Surface Water - State Water Project

As previously noted in Section 4.2.3, Casitas MWD administers the Ventura County entitlement to SWP water and has contracts with the City of Ventura, and United Water Conservation District (UWCD) to redistribute the 20,000 AF entitlement between these three agencies. The Casitas MWD entitlement to SWP water is 5,000 AF, based on 100 percent allocation of annual scheduled deliveries. As of the date of this Plan, Casitas MWD has not made a physical connection to the SWP that would allow SWP water to reach the Casitas MWD boundary.

Casitas MWD's service area, while holding 5,000 AF of annual SWP entitlement, is not able to receive those annual entitlements due to the lack of any physical connection (pipeline or canal) to the SWP to bring SWP water into the service area. Due to the cost of the physical connection, and cost of SWP water, Casitas MWD has not proceeded with the physical connection to the SWP. The Casitas MWD has been involved in several studies to bring SWP water to the service area.

One prior study estimated the preferred pipeline project at approximately \$109 million dollars (equates to nearly \$200 million dollars in 2016) (CMWD, 1987). Casitas MWD's cost would be a proportion of this overall cost that would be shared with the partnering agencies. For example, if three other major water purveyors were involved with this project, Casitas MWD's cost would be approximately 25 percent of the total. Alternative methods to bring State Water to western Ventura County were also considered in a 1990 Study (CMWD et al, 1990). The alternative methods involved ground water banking, interagency coordination, water transfers, and exchanges.

The Casitas MWD, City of Ventura, and United Water Conservation District are actively exploring the potential to build a pipeline from western Camarillo to eastern Ventura to provide SWP water to these agencies. The agencies are currently conducting preliminary environmental and engineering assessments. Additional details regarding this potential project will be provided in the next UWMP.



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4.4.7 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. Currently, there are only four ocean desalination plants in California actively producing water for municipal purposes (Carlsbad, Sand City, Santa Catalina Island, and San Nicolas Island) (Pacific Institute, 2016). A few desalination plants remain idle or are currently being reactivated (i.e., City of Santa Barbara). In addition, there are a few desalination plants that provide water exclusively for commercial and industrial purposes (i.e., Monterey Aquarium and Diablo Canyon Power Plant). Since 2006, only two ocean desalination projects have been built: a small plant in Sand City with a capacity of 0.3 million gallons of water per day, and a much larger 50-million-gallon per day plant in Carlsbad. There are 9 desalination plants proposed to be constructed in California.

Casitas MWD is located approximately 10 miles (headquarters building) inland from the Pacific Ocean coastline of Ventura County, California. This proximity to the Pacific Ocean does provide an opportunity for the Casitas MWD to consider development of desalinated water supplies to supplement surface water supplies and to provide potential increased system reliability, most notably for coastal communities within the Casitas MWD service area. However, for CMWD to move forward with a desalination project a public consensus would need to be developed, followed by a feasibility study to determine whether the project will have a positive cost-benefit result. The City of Ventura and the Rincon beach communities, both customers of Casitas MWD, represent water service areas for which desalination water supplies could possibly be applicable.

There may be opportunities for future joint-agency coordination to build a desalination plant to supplement local surface water and ground water supplies. The City of Ventura's growth projections and the ability of their water supplies to keep up with growth are two of the driving factors that may lead to desalination plan in the Casitas MWD and City of Ventura service areas. The production rate and location of a desalination plant would need to be addressed in a feasibility study.

A desalination supply within the coastal communities would not be reliant upon the pumping and transmission pipelines from Casitas MWD, which are susceptible to short-term outages during storm events. Desalination would decrease demand on existing local water supplies. The Casitas MWD may determine that a desalination project would be feasible if a partnership was to be developed with the City of Ventura, land developers of the Rincon service area, local oil companies, or other agency or organization.

The sole source of potable water for the Rincon coastal area is Lake Casitas. Potable water is pumped from the base of Casitas Dam through a single water transmission pipeline to the inland agricultural areas and to coastal communities. There is an increased energy cost in serving this area because water must be pumped up a 900-foot lift. There are water reliability concerns for this area because in the past the main pipeline serving the area has been severed by landslides following a heavy rainstorm, which temporarily left coastal communities and industries without water supply.



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Use of desalinated water could aid in offsetting Casitas MWD'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 alternatives potentially available to Casitas MWD include:

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

For the period 2020-2040 the Casitas MWD does not plan to prepare a desalination feasibility study, does not plan to construct a desalination treatment plant, nor purchase desalinated water from any agency.

4.4.8 Recycled Water

Casitas MWD currently does not produce nor receive any recycled water. The Casitas MWD has not considered recycled water to meet future water demands. Acceptable uses of recycled water include irrigating crops, parks, and golf courses, as well as water needed for ground water recharge, industrial processes, power plants, fire-fighting, and other similar uses. Increased use of recycled water for non-potable uses could reduce the Casitas MWD's reliance on Lake Casitas resources and reduce use of local ground water supplies.

Issues associated with the use of recycled water include:

- Water quality as it relates to the end use - suitability of recycled water for irrigation of agriculture, irrigation of public parks, ground water 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
- Casitas MWD has no direct access to recycled water
- Existing environmental demands for recycled water within Ventura River.

As noted in Section 4.2.6, the OVSD and the City of Ventura provide wastewater collection and treatment within Casitas MWD's boundaries. The OVSD provides treatment for approximately 3,000 acre-feet per year. The City of Ventura and OVSD have evaluated the potential for recycled water production and sale in the region (Ventura, 2007; OVSD, 1992). See **Appendix E Tables 6-2 to 6-3** for additional details.

However, nearly 100 percent of the OVSD treated wastewater is discharged back in the Ventura River for the benefit of the aquatic habitat and the endangered species including but not limited to Southern California Steelhead. Any additional treated water that could be utilized for any other purpose would require the completion of an Environment Impact Report and permits by State and Federal agencies. In addition, by agreement for the land use for the Ojai Valley Sanitation Plant, the City of Ventura has retained the first right to claim the OVSD treated effluent water.



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The City of Ventura provides tertiary treatment for approximately 10,000 acre-feet per year at the Ventura Water Reclamation Facility (WRF, located at Ventura Harbor adjacent to the Santa Clara River) and has initiated several successful recycling projects within the City. Currently, the City of Ventura’s WRF discharges to the Santa Clara River estuary. The City of Ventura plans to implement a robust recycled water program in the near future. It is likely that any recycled water developed from the OVSD or City of Ventura WRF will benefit the City of Ventura’s water portfolio. There appear to be no other opportunities for Casitas MWD to be directly involved and benefitted by recycled water, given the lack of any other opportunities to acquire recycled water. **Table 4-1** indicates that Casitas MWD does not anticipate the sale of recycled water for the period 2020-2040. See also **Appendix E Tables 6-4 to 6-7** for additional details.

4.4.9 Other Water Supply Projects

Casitas MWD currently does not have any specific future infrastructure projects that will develop more water for the system in the immediate future. Casitas MWD plans to utilize the program management of the safe-yield of Lake Casitas to balance water supplies within the Casitas MWD service area, understanding also that water demands placed on Casitas MWD are likely to exceed safe-yield levels during periods of long-term drought. In addition, Casitas MWD anticipates implementation of additional demand management measures to offset an increase in population and reduce inefficient use of water.

There are additional water supply projects that were suggested in the 2010 UWMP that Casitas MWD has implemented and some that are in need of further investigation. Examples of such projects include:

- San Antonio Recharge Basin - project completed
- Resale water company system retrofit and/or rehabilitation to assist water agencies to rely less on Casitas MWD’s water – Casitas MWD has assisted Senior Canyon Mutual Water Company to improve reliability of ground water resources
- Renegotiate Agreement with City of Ventura – negotiations are in progress
- Aggressive CMWD leak detection and repair program –program in progress
- Excavate the north end of Lake Casitas during low water storage – not implemented, environmental and financial feasibility and justification assessment is needed.

The Casitas MWD prepared a study titled, “Preliminary Water Security Project Analysis” (2016). The Study evaluated the technical and financial feasibility of a list of projects. Projects included in the Study included ground water extraction, State Water Project pipeline, ground water desalter, and several others. Casitas MWD is further evaluating several of the projects identified in the Study. In addition, the Casitas MWD is currently preparing a comprehensive water resources plan. Findings from this report will be included in the next UWMP update. Additional details related to Casitas MWD existing and future water resources projects are available at the following website:

<https://www.casitaswatersecurity.org/>.



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4.5 CLIMATE CHANGE

4.5.1 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. Increases in global emissions of greenhouse gases are leading to serious consequences for California including, but not limited to, the following: higher air and water temperatures, rising sea levels, increased droughts and floods, decreased amount and duration of state-wide snow pack, and extreme variability in weather patterns (CADWR, 2013a; CANRA, 2009). These changes are anticipated to intensify over the 20-year planning horizon of this UWMP. Even if all emissions of greenhouse gases ceased today, some of these consequences would be unavoidable because of the increase in greenhouse gases 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 resources.

4.5.2 Potential Impacts of Climate Change

State and local water resources and water demands may be impacted by climate change via one or more processes including precipitation, air temperature, runoff, sea level change, and flooding. Rainfall variability is expected to increase, leading to more frequent droughts and floods. Runoff from state-wide snowpack may be earlier and less predictable, and precipitation may fall as more rain and less snow. Air temperatures in California are anticipated to increase by 2 to 9 degrees Fahrenheit by the year 2100 (CANRA, 2009). Higher air temperatures may result in more rain and less state-wide snow, diminishing the reserves of water held in the Sierra Nevada snowpack (CANRA, 2009). Spring runoff from state-wide snowpack is occurring earlier now than it did in the first part of the 20th century. This change in runoff could affect availability of spring and summer state-wide snowmelt from mountain areas, including State Water Project water from the Sacramento Delta and local rivers and streams. Total annual exports from the Delta for State and Federal contractors may also decrease by 20 to 25 percent by the year 2100 (CCCC, 2009).

Sea levels have risen by as much as 7 inches along the California coast over the last century (CANRA, 2009). According to some estimates, sea level is projected to rise an additional 2 to 5 feet by 2100 (PPIC, 2011; Pacific Institute, 2009; CA RNA, 2009; CAT, 2008). These sea level increases could significantly impact infrastructure within coastal areas and affect quantity and timing of State Water Project 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.

In the CADWR Water Plan (CADWR, 2013b), 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



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could affect future planning efforts which are typically based on historic conditions. Difficulties in water resources 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.

As such, CADWR will continue to provide updated results from these models as further research is conducted and information becomes available.

4.5.3 Effects of Climate Change on Agriculture’s 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 daytime temperatures daytime, nighttime temperatures, 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 winter 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 and may result in additional costs and temporary production losses.

4.5.4 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 greenhouse gas (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 (CADWR, 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, heat, and discharge, 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



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not-emitted 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 not-emitted. 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 (CADWR, 2013a).

Climate change means more than hotter days. Continued warming of the climate system has considerable impact on the operation of most water districts. Snow in the Sierra Nevada provides 65 percent of California's water supply. Predictions indicate that by 2050 the Sierra snowpack will be significantly reduced. 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 (CADWR, 2013a).

Principles of climate change adaptation include the following:

- The more mitigation that 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.

4.5.5 Local Strategies

As climate change continues to unfold in the coming decades, water agencies may need to mitigate and adapt to new strategies. This may require reevaluating existing agency missions, policies, regulations, facilities, funding priorities, and other responsibilities. Examples of mitigation and adaptation strategies include, but not limited to, the following:

- Prepare long-term facility and sustainability master plans including specific elements for climate change adaptation.
- Increase ground water recharge using additional surface water.
- Promote additional water use efficiency for urban, commercial, and industrial best management practices.
- Consider investing in: infrastructure that promotes adaptation strategies (such as ground water recharge, and recycled water) and existing principal facilities susceptible to impacts of climate change.



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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 and the environment (i.e., Sacramento Delta and Ventura River). There will be more competition for scarce water supplies between people and the environment. Resolving this conflict will be one of the biggest challenges confronting water agencies.

The goal of the Casitas MWD is to manage the available surface water and ground water resources as efficiently as possible while meeting the requirements of the customers. It is worth noting, however, that the Casitas MWD control over local water supplies is limited; thus management practice changes will need to be adaptive in nature.



SECTION 5: WATER SUPPLY RELIABILITY

5.1 UWMP REQUIREMENTS

This section will include the following:

- Describe water management tools and options to maximize resources and minimize the need to import water from other regions (CWC, 10620(f)).
- Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage (CWC, 10631(c)(1)).
- Provide data for an average water-year, a single dry water-year, and multiple dry water-years (CWC, 10631(c)(1)).
- For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source (CWC, 10631(c)(2)).
- 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).
- Assess the water supply reliability during normal, dry, and multiple dry 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 (2020-2040) (CWC, 10635(a)).
- Provide an estimate of the minimum water supply available during each of the next three water years (2016-2018) based on the driest three-year historic sequence for the agency (CWC, 10632(a)(2)).

5.2 LOCAL WATER SUPPLY RELIABILITY

This section of the Urban Water Management Plan provides a description of the water management tools and options used by Casitas MWD that will maximize resources and minimize the need to import water from other regions. This section assesses the Casitas MWD's ability to provide reliable future water supplies in the event of any circumstance that may pose significant challenges. Section 4 provided a summary of the Casitas MWD water supplies. As noted in **Table 4-1**, 100 percent of the Casitas MWD water supplies are currently obtained from local resources. In addition, the Casitas MWD anticipates that 100 percent of the water resources for the period 2020-2040 will be obtained from local resources (see **Table 4-4** for details).

5.3 ASSESSMENT OF WATER SUPPLY RELIABILITY

5.3.1 Reliability

Analysis of water supply reliability is one of the primary requirements of the Urban Water Management Plan (Water Code Section 10635(a)). This assessment includes: an average water-year, single dry water-



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year, multiple dry water-years, and three-year minimum supply. In order to plan for a reliable water supply Casitas MWD 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.

The Urban Water Management Planning Act requires urban water suppliers to assess water supply reliability and vulnerability to seasonal and climatic shortage. Reliability is a measure of a water service system's anticipated success in managing water shortages.

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 unreliability 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.

Casitas MWD determined that climate, and specifically precipitation, is the factor to most likely influence reliability of local water supplies for the period 2015-2040. Issues associated with climate change were summarized in **Section 4.5**. Other issues that may affect reliability of water supplies include, but not limited to, the following: future water quality of runoff from Matilija Creek associated with the proposed demolition of Matilija Dam, endangered species, invasive species, earthquakes, disastrous storm events, climate change, and lake water quality. Invasive species may impact Lake Casitas water quality and or infrastructure such as intake structures. Potential invasive species include, but not limited to, New Zealand Mud Snails, Quagga Mussels, and Zebra Mussels.

5.3.2 Basis of Water Year Data

As required, Casitas MWD 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 5-1** summarizes the Casitas MWD basis of water-year data. The "volume available" column in **Table 5-1** represents the water supply expected if there were a repeat of the hydrology from that type of year. Casitas MWD selected 2011 as the average water-year, 2014 as the single dry water-year, and 1987-1989 as the multiple dry water-year. As indicated in **Table 5-1**, Casitas MWD determined that the water supply available will be 23,440 AFY in all three base water-year types. See **Appendix E Table 7-1** for additional details.

5.3.3 Reliability Assessment

Casitas MWD prepared an assessment to determine water supply reliability. This assessment includes a comparison of the total projected water demand with the water supplies available for the following conditions: (1) normal/average water-year, (2) single dry water-year, (3) multiple consecutive dry water-



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years, and (4) three-year minimum water supply. Assessment results for each of these conditions are summarized below.

5.3.3.1 Normal Water-Year

A normal water-year can be defined as a year in the historical sequence that most closely represents median local runoff levels and patterns. The Casitas MWD selected Fiscal Year 2011 to represent the normal or average water-year. For the purposes of this assessment, “normal” and “average” water year will be used interchangeably. Fiscal Year 2011 is the most recent year that closely represents a normal water-year. Local precipitation for Fiscal Year 2011 is 24.8 inches. The Fiscal Year 2011 total surface water delivery from Lake Casitas is 14,678 acre-feet. The minimum storage level of Lake Casitas in Fiscal Year 2011 is 221,751 acre-feet. The Casitas MWD delivered 13,549 AF in Fiscal Year 2011.

**TABLE 5-1
BASIS OF WATER YEAR DATA**

WATER-YEAR TYPE	BASE YEAR(S)	VOLUME AVAILABLE (AFY) (1)
Average Water-Year	2011	23,440
Single Dry Water-Year	2014	23,440
Multiple Dry Water-Years	1987	23,440
	1988	23,440
	1989	23,440

Notes:

Source, CMWD, 2018. All values in AF, rounded.

(1) Combined Lake Casitas surface supply, Casitas system ground water, and Ojai system ground water.

Table 5-2 summarizes the Casitas MWD projected normal water-year supply and retail water demands for the period 2020-2040. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at **20,540 acre-feet** (CMWD, 2004; copy provided in **Appendix H**), and 2,900 AF of ground water. However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF of surface water from Lake Casitas to meet local demands. Demand totals included in **Table 5-2** are for retail sales only and exclude sales to wholesale and agricultural customers. **Table 5-2** indicates that, for a normal water-year during the period 2020-2040, Casitas MWD’s water supplies will exceed retail water demand. See **Appendix E Table 7-2** for additional details.

5.3.3.2 Single Dry Water-Year

Lake Casitas is sized, constructed, and operated as both a primary water source and a backup water supply for the ground water basins of western Ventura County. Lake Casitas is a long-term water storage facility so precipitation (or lack of precipitation) in any single year does not change the projected safe-yield of a long term period. As previously noted, Casitas MWD selected Fiscal Year 2014 as the most recent year



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that closely represents a single dry water-year. Local precipitation for Fiscal Year 2014 is 9.50 inches with over 82 percent recorded in February and March. The Fiscal Year 2014 total surface water delivery from Lake Casitas is 18,811 acre-feet. The minimum storage level of Lake Casitas in Fiscal Year 2014 is 131,511 acre-feet. The Casitas MWD delivered 19,093 AF in Fiscal Year 2014.

**TABLE 5-2
CMWD PROJECTED SUPPLY AND DEMAND COMPARISON FOR NORMAL WATER-YEAR FOR 2020-2040**

	2020	2025	2030	2035	2040
Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820

Notes:

Source, CMWD, 2018. All values in AF, rounded.

(1) Combined Lake Casitas surface supply, Casitas system ground water, and Ojai system ground water.

(2) Combined demands for Casitas and Ojai systems. Excludes sales for resale and agricultural customers.

Table 5-3 summarizes the Casitas MWD projected single dry water-year water supply and retail water demands for the period 2020-2040. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at **20,540 acre-feet** (CMWD, 2004; copy provided in **Appendix H**) and 2,900 AF of ground water. However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF of surface water from Lake Casitas to meet local demands. Demand totals included in **Table 5-3** are for retail sales only and exclude sales to wholesale and agricultural customers. **Table 5-3** indicates that, for a single dry water-year during the period 2020-2040, Casitas MWD’s water supplies will exceed retail water demand. See **Appendix E Table 7-3** for additional details.

5.3.3.3 Multiple Dry Water-Years

The historical record provides information regarding ‘a multiple dry year’ occurrence in a drought period, which results in an escalation of water demands. During multiple dry years, surface flow in the Ventura River becomes non-existent and the ground water in the Ventura River and Ojai Basins are diminished due to well extractions, natural drainage, and a lack of replenishment from rainfall. Water demands on Lake Casitas have been observed to escalate significantly due to multiple years of less than average rainfall and the transition from ground water sources to the Lake Casitas supply. Further escalation in Lake Casitas demands resulted from the water demands of local agriculture that needed to supplement the lack of rainfall with an alternate water supply in order to continue to produce crops.



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**TABLE 5-3
CMWD PROJECTED SUPPLY AND DEMAND COMPARISON FOR SINGLE DRY WATER-YEAR FOR 2020-2040**

	2020	2025	2030	2035	2040
Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820

Notes:

Source, CMWD, 2018. All values in AF, rounded.

- (1) Combined Lake Casitas surface supply, Casitas system ground water, and Ojai system ground water.
- (2) Combined demands for Casitas and Ojai systems. Excludes sales for resale and agricultural customers.

As previously noted, Lake Casitas is a long-term water storage facility so precipitation (or lack of precipitation) in any three-year does not change the projected safe-yield of a long-term period. Casitas MWD selected Fiscal Years 1987-1988-1989 as the most recent three-year period that closely represents the multiple dry water-years. Local average precipitation for Fiscal Years 1987-1989 is 12.55 inches. The average surface water delivery for Fiscal Years 1987-1989 is 23,289 acre-feet. The minimum storage level of Lake Casitas for Fiscal Years 1987-1989 is 160,587 acre-feet. The Casitas MWD delivered 23,216 AF in Fiscal Years 1987-1989.

Table 5-4 summarizes the Casitas MWD projected multiple dry water-year water supply and retail water demands for the period 2020-2040. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at **20,540 acre-feet** (CMWD, 2004; copy provided in **Appendix H**) and 2,900 AF of ground water. However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF of surface water from Lake Casitas to meet local demands. Demand totals included in **Table 5-4** are for retail sales only and exclude sales to wholesale and agricultural customers. **Table 5-4** indicates that, for a multiple dry water-years during the period 2020-2040, Casitas MWD's water supplies will exceed retail water demand. See **Appendix E Table 7-3** for additional details.



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**TABLE 5-4
CMWD PROJECTED SUPPLY AND DEMAND COMPARISON FOR MULTIPLE DRY
WATER-YEARS FOR 2020-2040**

		2020	2025	2030	2035	2040
First Year	Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
	Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
	DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820
Second Year	Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
	Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
	DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820
Third Year	Supply totals (AFY) (1)	23,440	23,440	23,440	23,440	23,440
	Demand totals (AFY) (2)	4,941	5,135	5,317	5,468	5,620
	DIFFERENCE (SUPPLY MINUS DEMAND) (AFY)	18,499	18,305	18,123	17,972	17,820

Notes:

Source, CMWD, 2018. All values in AF, rounded.

(1) Combined Lake Casitas surface supply, Casitas system ground water, and Ojai system ground water.

(2) Combined demands for Casitas and Ojai systems. Excludes sales for resale and agricultural customers.

5.3.3.4 Minimum Water Supply for Next Three Years

The Casitas MWD evaluated minimum water supplies which would be available during a three-year period. For planning purposes, Casitas MWD projected that 100 percent of the safe-yield will be available for both Lake Casitas surface water at **20,540 acre-feet** (CMWD, 2004; copy provided in **Appendix H**) and 2,900 AF of ground water. Therefore, the three-year minimum water supply is 23,440 AF resulting from surface water and ground water as summarized in **Table 5-5** (see **Appendix E Table 8-4** for details). However, the Casitas MWD may extract more than the safe-yield in any one year (or years) to meet demands. For example, in 1989, the Casitas MWD extracted 26,180 AF of surface water from Lake Casitas to meet local demands.



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**TABLE 5-5
CMWD PROJECTED MINIMUM WATER SUPPLY FOR 2016-2018**

	2016	2017	2018
PROJECTED MINIMUM WATER SUPPLY (AFY)	23,440	23,440	23,440

Notes:
Source, CMWD, 2018. All values in AF, rounded.

5.4 WATER QUALITY IMPACTS ON RELIABILITY

The water quality of water from Lake Casitas may vary significantly as the Lake storage transitions from full stage to minimum pool. Surface water supply from Lake Casitas is treated by filtration and chloramination prior to the delivery to the distribution system. The treatment process ensures that the water meets all state and federal regulations. At lower levels of Lake Casitas storage there are specific water quality issues that will challenge Casitas MWD’s ability to treat and deliver potable water from Lake Casitas. During a condition of low lake level, the water quality can change unfavorably due to the concentrating of nutrients resulting in the following: lake eutrophication, increased algae blooms, reduction in dissolved oxygen, and increased turbidity during storm events, that could significantly impact filtration treatment process and the rate of water production for the distribution system. Casitas MWD has also been concerned about the release of organic-laden silts from Matilija Dam that, if not properly mitigated during the Matilija Dam decommissioning, can add to the mass balance of nitrogen and phosphorous compounds and increased turbidity of water flowing into Lake Casitas.

Specific actions that Casitas MWD has considered and implemented are lake management strategies such as algae control and hypolimnetic aeration system (CMWD, 2015). The level of the lake management implementation may increase as the problem intensifies during low storage conditions.

Casitas MWD’s ground water source include approximately 2,900 acre-feet of water per year (12.4 percent) compared to the nearly 20,500 acre-feet (87.6 percent) of surface water from Lake Casitas. The CMWD ground water (via Mira Monte well) is blended with Lake Casitas surface water to reduce the level of nitrate to meet drinking water standards. The resulting blended water is well below the maximum contamination level for nitrate. Drought impacts to the well water quality are not understood completely.

Casitas MWD has an agreement with a neighboring water agency to cease pumping at a specific ground water elevation. Over the past twenty years, the ground water elevation has remained above the agreement level. Additional consideration for on-site treatment and additional blending may be required to mitigate the drought caused water quality in the various CMWD wells.

Currently, the CMWD does not anticipate the short-term or long-term loss or reduction of their available surface water or ground water supplies as the result of water quality degradation.



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SECTION 6: WATER SHORTAGE CONTINGENCY PLANNING

6.1 UWMP REQUIREMENTS

This section will include the following requirements:

- Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage (CWC, 10632(a) and 10632(a)(1)).
- Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies (CWC, 10632(a)(3)).
- Identify mandatory prohibitions against specific water use practices during water shortages (CWC, 10632(a)(4)).
- Specify consumption reduction methods in the most restrictive stages (CWC, 10632(a)(5)).
- Indicate penalties or charges for excessive use, where applicable (CWC, 10632(a)(6)).
- Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts (CWC, 10632(a)(7)).
- Provide a draft water shortage contingency resolution or ordinance (CWC, 10632(a)(8)).
- Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis (CWC, 10632(a)(9)).

6.2 WATER WASTE PROHIBITIONS

6.2.1 Priorities of Water Use

Casitas MWD recognizes the following priorities for potable water:

- Public safety, health, and sanitation
- Economic sustainability
- Quality of life for the Casitas MWD's customers

Within each of the customer classifications there may be water uses that are considered non-essential to public health and sanitation and may have no significant impact to the economic productivity of western Ventura County. The non-essential water uses may be asked at any time to be curtailed during times of extreme water shortages. Casitas MWD recognizes that the agricultural crops in western Ventura County are primarily tree orchards that require a substantial period of time before becoming productive, and if fallowed will experience several years of non-production. To maintain water supplies into the future that will meet the local water demands, Casitas MWD and the public may be faced with additional decisions on water use reductions that may impact the agricultural classification.



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6.2.2 Water Waste Prohibitions on Certain Uses

The Casitas MWD has the authority to restrict the use of CMWD water during any emergency caused by drought, or other potential or existing water shortage. The Casitas MWD prohibits the wastage of CMWD water or the use of CMWD water during such periods for any purpose other than household uses or such other restricted uses as the CMWD determines to be necessary. The Casitas MWD may also prohibit use of CMWD water during such periods for specific uses which it finds to be nonessential.

Casitas MWD Resolution 15-02 includes permanently prohibited uses of water that are in effect year round (copy of Resolution 15-02 provided in **Appendix K**). Provisions of this Ordinance shall apply to all persons, corporations, public or private entities, governmental agencies or institutions, or any other direct water customers of the Casitas MWD. The water customers of other water purveyors shall be governed by the prohibitions that are adopted by the other water purveyors. The Casitas MWD water waste prohibitions include the following:

- 1) **General Waste:** Indiscriminate running of water or washing with water which is wasteful and without reason or purpose.
- 2) **Washing of Exterior Surfaces:** The washing of hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, tennis courts, patios or alleys, except when necessary to alleviate safety or sanitary hazards or when broom or other waterless device will not suffice. If necessary, washing may only be done with a bucket or similar container, a hose equipped with a positive shut-off nozzle, a pressure washer, a low-volume high pressure water efficient water broom, or a cleaning machine equipped to recycle the water used.
- 3) **Cleaning of Structures and Vehicles:** The washing of building exteriors, mobile homes, cars, boats or recreational vehicles without the use of a positive shut-off nozzle on either the hose or pressure washer.
- 4) **Watering/Irrigation Runoff Control:** The watering of grass, lawn, groundcover, shrubbery, open ground, crops and trees, including agricultural irrigation, in a manner or to an extent which allows water to run off the area being watered. Every water user is deemed to have under their control, at all times, their water distribution lines and facilities, and to know the manner and extent of their water use and run off.
- 5) **Limits on Watering Hours:** The watering or irrigating of outdoor ornamental landscapes and turf areas between the hours of 10:00 a.m. and 6:00 p.m. Pacific Standard Time on any day. This does not apply to irrigation systems that use drip irrigation and weather-based controllers or stream rotor sprinklers that meet a 70 percent efficiency standard. The General Manager may authorize exceptions, if the customer is not able to water between 10:00 a.m. to 6:00 p.m.
- 6) **Watering During Rainfall:** The watering of grass, lawn, groundcover, shrubbery, open ground, crops and trees, including agricultural irrigation, at any time while it is raining.
- 7) **Drought Restrictions:** Watering/irrigating during publicly declared curtailment period in a manner that is not compliant with drought restrictions.



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- 8) **Plumbing Leaks:** The escape of water through leaks, breaks, or malfunctions within the water user's plumbing or distribution system, for a substantial period of time within which such break or leak should reasonably have been discovered and corrected.
- 9) **Fountains and Decorative Water Features:** The operation of any ornamental fountain using water from the Casitas MWD's domestic water system unless water for such use is re-circulated.
- 10) **Cooling:** The use of water in mechanical equipment purchased and installed after the adoption of this Ordinance that utilizes a single pass cooling system. Water used for all cooling purposes shall be re-circulated.
- 11) **Drinking Water Served Upon Request Only:** Eating and drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, clubs or other public places where food or drinks are sold or served, are prohibited from providing drinking water to customers unless expressly requested. Affected establishments must prominently display notice informing their customers of this requirement using clear and easily understood language.
- 12) **Restaurant Non-water Conserving Dish Wash Spray Valves:** Food preparation establishments, such as restaurants or cafes, are prohibited from using non-water conserving dish wash spray valves.
- 13) **Providing Option to Not Launder Linen and Towels Daily:** Hotels, motels, vacation rentals and other commercial lodging establishments must provide customers the option of not having towels and linen laundered daily. Commercial lodging establishments must prominently display notice of this option in each bathroom using clear and easily understood language.
- 14) **Commercial Car Wash Systems:** Installation of non-recirculating water systems is prohibited in new or renovations of commercial conveyor car washes systems.
- 15) **Turf Irrigation Restrictions:** Irrigating turf or ornamental landscapes during and 48 hours following measurable precipitation.

6.2.3 Exempted Water Uses

- 1) All water use associated with the operation and maintenance of fire suppression equipment or employed by the Casitas MWD for water quality flushing and sanitation purposes shall be exempt from the provisions of this Ordinance.
- 2) Use of water supplied by gray water or rainwater collection system is also exempt; however, use of water from these systems is not exempt from the applicable regulations of the State and local jurisdictions governing the use of such water.
- 3) Supervised testing, adjusting, or repairing of irrigation systems is allowed any time for no more than five (5) minutes per station.



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6.2.4 Violations and Penalties.

- 1) Any person, who uses, causes to be used, or permits the use of water in violation of this Ordinance is guilty of an offense punishable as provided herein.
- 2) Enforcement of Violation. Complaints of water waste will be investigated and enforced by the Casitas MWD in the form of a notice of violation. The following officers and employees of the Casitas MWD are hereby designated and authorized to issue citations for enforcement of this Ordinance:
 - A. Operations and Maintenance Manager
 - B. Public Affairs/Water Resource Manager
 - C. Water Conservation Coordinator
 - D. Utility Workers
 - E. Employees designated by the General Manager.
- 3) Notice of Violation. A Casitas MWD notice to the water customer of a violation of this Ordinance will be issued by either a telephone call, mail, hand-delivery, or posting at the entrance of the violator's premises. The Casitas MWD will issue a written notice that state the time, place, and general description of the violation or repeat of violation, as well as a time frame in which the violation must be corrected. Casitas MWD staff may use discretion when determining the correction time.
- 4) Consequence of Violation. Administrative fines and water service actions may be levied and applied for each violation of a provision of this Ordinance as follows:
 - A. Penalties: Penalties for failure to comply with any provision of the ordinance are as follows:
 1. First Violation: The Casitas MWD will issue a written notice to the water customer and attach a copy of this Ordinance.
 2. Second Violation: If the first violation is not corrected within the time frame specified by the Casitas MWD, or if a second violation occurs within the following twelve (12) months after the first violation notice, a second notice of violation will be issued and an administrative fine of one hundred dollars (\$100.00) shall be levied for the second violation of this Ordinance.
 3. Third Violation: A third violation within the following twelve (12) months after the date of issuance of the second notice of violation is punishable by an administrative fine of two hundred fifty dollars (\$250.00).
 4. Fourth and Subsequent Violations: Each day that a violation of this Ordinance occurs beyond the remedy allowance provided in the third notice of violation is a separate offense, subject to any or all of the following penalties:
 - a. Water service may be turned off or flow may be restricted. Where water service is turned off or flow restricted, it shall be turned on or unrestricted upon correction of the violation and the payment of the reestablishment charges, staff time, and material purchases per the Casitas MWD Rates and Regulations for Water Service in effect at the time.



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- b. A fine of not more than \$600 or imprisonment in the county jail for not more than 30 days, or both the fine and imprisonment, may be imposed upon conviction under Section 71644 of the California Water Code, or fines/penalties as defined and allowable under Section 53069.4 of the Government Code may be imposed.
- B. Payment of Administrative Fines: The water customer is responsible for the full payment of administrative fines. Each administrative fine shall be applied in the customer's regular water billing. Payment of the administrative fine will be the final responsibility of the individual named on the water account. Non-payment of fines will be subject to the same remedies as non-payment of basic water rates, in accordance with the Casitas MWD Rates and Regulations for Water Service.
- C. Appeal: Any customer against whom a penalty is levied pursuant to this Ordinance shall have the right to appeal as follows:
 1. The customer request for an appeal consideration must be in writing, legible, and received by the General Manager within ten (10) calendar days of the issuance of the notice of violation to the customer. Any determination not timely appealed shall be deemed final. The written request for appeal consideration shall include:
 - a. A description of the issue,
 - b. Evidence supporting the appeal, and
 - c. A request for resolution of the dispute.
 2. The General Manager will review the material submitted and make an independent determination of the issue, which shall be mailed to the customer within fifteen (15) calendar days of receipt of the request for appeal.
 3. The General Manager's determination may be appealed in writing within ten (10) calendar days of the mailing of the notice of determination. The appeal of the General Manager's determination shall be heard and considered by the Board of Directors at an upcoming regular meeting of the Board. Notice of the hearing shall be mailed to the customer at least ten (10) calendar days prior to the date of the appeal hearing. The Board may, in its discretion affirm, reverse, or modify the determination. The Board's determination is final.

For additional details related to Casitas MWD water waste prohibitions, see Resolution 15-02 in **Appendix K**.

6.3 STRATEGY FOR MANAGED WATER SUPPLY AND DEMAND

6.3.1 Allocation Principles

Casitas MWD has developed water allocations for all its customers. When the allocation ordinance was adopted in 1992, the ordinance set the allocation of all customers at 80 percent of 1989 usage. Allocation assignment is the connection of the individual customer water use to the Lake Casitas safe-yield. As Casitas MWD has deemed water is available for allocating to new or expanded use, Casitas MWD has created a waiting list and offered the opportunity to purchase limited water allocations to waiting list applicants. An example of water becoming available is the adaption of the Mira Monte Well to the Casitas



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MWD system, providing 300 acre-feet of new water to be allocated within the service area. For the Program, the allocation becomes the point at which excess water use charges are applied to the customer's water bill, encouraging the customer to reduce water use to a level that is at or below the allocation.

Casitas MWD water allocations are assigned to properties or water purveyors, are not transferable from one property or water purveyor to another, and may not be sold or traded by Casitas MWD customers. Casitas MWD Board of Directors reserve the right to alter allocations for any customer class at any time and the term allocation shall not mean an entitlement or imply a water right.

The communities and rural agricultural areas of western Ventura County recognize that there is a reliance on limited local ground water and surface water supply to serve all the beneficial uses within the Casitas MWD, and there is a local responsibility required to sustain those supplies during extended drought periods. The continuous implementation of water conservation education and measures (Best Management Practices) has had a significant influence on the beneficial use and sustainability of local water supplies. Ongoing water conservation efforts can ease the impact on normal activities during drought periods, but may not completely eliminate the need for reductions in water use during periods when Lake Casitas water supplies are severely impacted by extended drought.

The main mechanism to respond to water supply conditions is to rely on informed customers working in partnership with Casitas MWD to limit water use to no more than the assigned water allocation and support the water use limitations with appropriate conservation penalties for water use in excess of the assigned, or adjusted, allocation.

6.3.2 Water Allocation Program

Each and every water service provided by Casitas MWD is metered and a basic water use allocation is established for each customer account that provides a reasonable amount of water for the customer's needs and property characteristics. The following principles are to be followed for the Casitas MWD water allocations:

- Each Casitas MWD water service shall be assigned either a monthly water allocation in the terms of units or an annual water allocation in terms of units and acre-feet.
- Allocation shall not mean an entitlement or imply water rights in favor of the customer.
- The assignment of allocations shall be based on reasonable and necessary water use, the application of water conservation practices and standards, and other relevant factors associated with water use during Stage 1 conditions at Lake Casitas (see details related to Casitas MWD Stage Demand Reduction in Section 6.4).
- The Casitas MWD Board of Directors reserve the right to make individual allocation assignments and to change water allocations at any time within each classification based on the changes to the availability of water stored in Lake Casitas, changes in water use that appears to compromise the reliability of the Lake Casitas water supply, and changes in water conservation practices and standards.



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- Water allocations provided by Casitas MWD are assigned to property or water purveyors and are not transferrable from one property or water purveyor to another.
- Casitas MWD's water allocations shall not be sold, exported, bartered or traded by or between Casitas MWD's customers.
- Casitas MWD water allocated shall not be transported from the property or by any agency served to any other property or agency without prior written agreement with Casitas MWD.

6.3.3 Allocation Assignments to Water Service Classifications

Casitas MWD has established the definitions of water customer classifications as provided by the Casitas MWD Rates and Regulations for Water Service, and has made specific allocation assignments to each and every water account by either (1) written agreement, (2) the application of historical water use data, or (3) the application of documented water use standards. Where deemed necessary, Casitas MWD may perform site specific water use audits and survey to determine the appropriate level of allocation to be assigned to anyone service connection or customer. Water allocations may change by action of the Casitas MWD Board of Directors based on the Lake Casitas storage level or trend, water use trends, and the performance by customer classification in meeting water consumption reduction goals.

The following subsections describe the method used to assign the water allocation for each classification of water service at Stage 1 condition:

6.3.3.1 Business

The following applies to “Business” accounts:

- 1) Water allocation shall be specified as an annual allocation based on a fiscal year (July 1st to June 30th).
- 2) Allocation assigned by recorded agreement.
- 3) Where not defined by recorded agreement, the lesser of the historical water consumption recorded for either 80 percent of the Fiscal Year 1989-1990 water use or the Fiscal Year 2012-2013 water use. An exception can be determined when usage is at or near zero during one of these periods. Estimated usage will be based on reasonable usage that does not include unauthorized expansion of facilities.

6.3.3.2 Fire

There is no water allocation for the “Fire” account classification. This water use is for emergency only, and not a part of a continuing annual water use.

6.3.3.3 Industrial

The following applies to “Industrial” accounts:

- 1) Water allocation shall be specified as an annual allocation based on a fiscal year (July 1st to June 30th).
- 2) Allocation assigned by recorded agreement.



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- 3) Where not defined by recorded agreement, the lesser of historical water consumption recorded for either the 80% of the Fiscal Year 1989-1990 water use or the Fiscal Year 2012-2013 water use. An exception can be determined when usage is at or near zero during one of these periods. Estimated usage will be based on reasonable usage that does not include unauthorized expansion of facilities.

6.3.3.4 Interdepartmental

The following applies to “Interdepartmental” accounts:

- 1) Water allocation shall be specified as an annual allocation based on a fiscal year (July 1st to June 30th).
- 2) The annual allocations for individual Interdepartmental classification services shall be based on the Fiscal Year 2012-2013 water use. An exception can be determined when usage is at or near zero during one of these periods. Estimated usage will be based on reasonable usage that does not include unauthorized expansion of facilities.

6.3.3.5 Irrigation (Commercial Agriculture)

The following applies to “Irrigation” accounts:

- 1) Water allocation shall be specified as an annual allocation based on a fiscal year (July 1st to June 30th).
- 2) Qualifying acreage for each Irrigation account shall be limited to acreage that can be identified as under irrigation prior to March 1, 1992. There will be no allocation for irrigation acreage that has been expanded after March 1, 1992, except as otherwise approved in written and recorded agreement between Casitas MWD and the property owner. Casitas MWD's records and mapping will be the standard for the identification of lands in irrigation prior to March 1, 1992.
- 3) Allocation assignments to lands served by multiple meter services shall consider the proportion of the allocation that each meter is intended to serve. The aggregation of meter readings and allocations from multiple meters shall not be allowed.
- 4) The Stage 1 water allocation assigned to each Irrigation water account is the greater volume of either (1) the water use recorded at each meter service during Fiscal Year 2012-2013 or (2) eighty (80) percent of recorded water volume metered to the account in Fiscal Year 1989-1990, neither of which shall exceed a water volume of 3 acre-feet per acre applied to the qualifying acreage.
- 5) The residential water use for Agricultural/Domestic classification that is directly associated with the irrigation shall be considered as Irrigation for purpose of allocation assignments and meeting the demand reduction requirements for Irrigation.

6.3.3.6 Multiple-Family Residential

The following applies to “Multiple-family residential” accounts:

- 1) Stage 1 water allocations are assigned to each existing Multiple-Family Residential account by either a recorded agreement or based on the standards set in 1992 by Casitas MWD.



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- 2) The Multiple-Family Residential water allocation for each account shall be distributed by either a monthly or hi-monthly scheduling of the allocation.
- 3) A part of the Multiple-Family Residential allocation is provided for health and sanitation and shall be set at **120 units per year per dwelling**, distributed evenly as 10 units per month for each dwelling.
- 4) The essential water use portion of the allocation is not subject to adjustment by the Staged Demand Reduction Program, unless otherwise deemed by the Board to be a necessity during extreme water supply conditions or during emergencies.
- 5) The part of the Multiple-Family Residential allocation that is in excess of the essential allocation shall be specified as a monthly allocation and distributed proportionally to reflect varying seasonal water use, as indicated in **Table 6-1**:

**TABLE 6-1
ANNUAL DISTRIBUTION OF SEASONAL ALLOCATION FOR RESIDENTIAL ACCOUNTS**

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Percent of Total Annual Allocation	0.02	0.02	0.02	0.10	0.10	0.12	0.17	0.17	0.13	0.05	0.05	0.05

Notes:
Source, CMWD, 2018.

The part of the Multiple-Family Residential allocation that is in excess of the essential allocation is subject to adjustment by the Staged Demand Reduction Program.

- 6) Where not previously assigned a residential allocation, a residential allocation shall be based on the following:
 - a) The essential health and sanitation portion of the residential allocation shall be set at **120 units per year per year per dwelling**, and distributed evenly as 10 units each month of the year.
 - b) Non-essential portion of the annual residential allocation shall be based on a maximum limit of 1.99 acres (86,684 square feet) of irrigated landscape area and set as follows:
 - i. For the first 5,000 square feet of landscape area, 15 gallons per square foot
 - ii. For the next 10,000 square feet of landscape area, 10 gallons per square foot
 - iii. For the next increment up to 71,684 square feet of landscape area, 3 gallons per square foot.



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6.3.3.7 Other

The following applies to “Other” accounts:

- 1) Water allocation shall be specified as an **annual** allocation based on a fiscal year (July 1st to June 30th).
- 2) Allocation assigned by recorded agreement
- 3) Where not defined by recorded agreement, the lesser of historical water consumption of either the 80 percent of the 1989-1990 water use, or the Fiscal-Year 2012-2013 water use. An exception can be determined when usage is at or near zero during one of these periods. Estimated usage will be based on reasonable usage that does not include unauthorized expansion of facilities.

6.3.3.8 Resale

The following applies to “Resale” accounts:

- 1) Water allocation shall be specified as an **annual** allocation based on a fiscal year (July 1st to June 30th).
- 2) The Stage 1 allocation for each individual Resale customer shall be mutually agreed to by each water agency and Casitas MWD, be incorporated into a memorandum of understanding (MOU), and assigned to provide water to supplement the Resale agency's primary source of water supply. An annual adjustment to the allocation assignment may be a condition of the MOU.
- 3) An objective of a MOU is to achieve parity between the Resale agency customers and Casitas MWD customers in applying similar overall water use restrictions and financial penalties in each Stage.
- 4) The Resale agency shall determine the reliability of its water sources and ensure that the annual water requirements from Casitas MWD do not exceed their annual water allocation from CMWD.
- 5) The allocation assignment from Casitas MWD shall not be used by the Resale agency for growth within the Resale service area, unless additional allocation for growth is authorized by written agreement with CMWD.
- 6) The Resale agency shall implement water conservation measures in accordance with the State's or California Urban Water Conservation Council's Best Management Practices, responsibly maintain water system metering and pipeline systems to reduce water losses, and when necessary or when asked to do so, implement water demand reduction measures similar to or more restrictive than those imposed by Casitas MWD to assure the continued availability of water for health and safety purposes.

6.3.3.9 Residential

The following applies to “Residential” accounts:

- 1) Stage 1 water allocations are assigned to each existing Residential account by either a recorded agreement or based on the standards set in 1992 by Casitas MWD.
- 2) The Residential water allocation for each account shall be distributed by either a monthly or bi-monthly scheduling of the allocation.



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- 3) A part of the Residential Allocation is provided for health and sanitation and shall be set at **120 units per year**, distributed evenly as 10 units per month for each dwelling.
- 4) The essential water use portion of the allocation is not subject to adjustment by the Staged Demand Reduction Program, unless otherwise deemed by the Board to be a necessity during extreme water supply conditions or during emergencies.
- 5) The part of the Residential Allocation that is in excess of the essential allocation shall be specified as a monthly allocation and distributed proportionally to reflect varying seasonal water use, as indicated in **Table 6-1**. The part of the Residential Allocation that is in excess of the essential allocation is subject to adjustment by the Staged Demand Reduction Program.
- 6) Where not previously assigned a residential allocation, a residential allocation shall be based on the following:
 - a) The essential health and sanitation portion of the residential allocation shall be set at **120 units per year per year per dwelling**, distributed evenly as 10 units each month of the year.
 - b) Non-essential portion of the annual residential allocation shall be based on a maximum limit of 1.99 acres (86,684 square feet) of irrigated landscape area and set as follows:
 - i. For the first 5,000 square feet of landscape area, 15 gallons per square foot;
 - ii. For the next 10,000 square feet of landscape area, 10 gallons per square foot
 - iii. For the next increment up to 71,684 square feet of landscape area, 3 gallons per square foot.

6.3.3.10 Temporary

The following applies to “Temporary” accounts:

- 1) There is no water allocation assigned for the Temporary classification. Temporary water service is not property related on a permanent basis.
- 2) Temporary water use is limited for a short-term of six months or less, for such purposes as construction projects, or short-term water supply emergencies, or temporary backup water to non-metered agricultural parcels.
- 3) Temporary meters that are issued to serve supplemental commercial irrigation shall be temporarily allocated water based on the allocation assignment provided at the time of the application for the Temporary service, based on the same water use standards as provided for the Irrigation classification, and reduced by Stage conditions. The allocation does not extend beyond the period of the temporary water service application of six (6) months, unless the Casitas MWD Board of Directors approves a limited continuance of the temporary service.

6.3.4 Allocation Adjustments.

A Casitas MWD customer may request the reconsideration of their initial assigned Stage 1 water allocation where the request does not include a consideration for either an expansion in the area of use or new construction. The customer shall submit a water allocation adjustment application in order to have



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their request considered by the General Manager of the Casitas MWD. The information contained on the application may be subject to an audit and, if necessary, additional documentation may be required in order to substantiate the requested adjustment.

Adjustments to water allocations that have been assigned through a recorded Water Service Agreement between the property owner, or prior property owner, and Casitas MWD must proceed through an amendatory agreement, will be subject to the capital facility charges for the amount of water provided as the allocation adjustment, and subject to the availability of water allocations.

Adjustments to water allocations will not be granted in amounts that exceed 80 percent of the FY 1989-90 metered usage of water by the meter service account without prior Board approval.

6.3.5 Standards for a Water Allocation Adjustment

Water allocation adjustments may be considered by Casitas MWD during initiation of the WEAP that appropriately assigns a Stage 1 allocation, to ensure that the needs of the water customer are reasonably balanced against the purpose of this Plan. Water allocations may be considered for adjustment for the following:

- Correction of irrigable area square footage
- Correction of number of dwelling units (Multi-family accounts only)
- Exemption granted for a licensed in-home childcare or elderly care facility.

Water allocations will not be adjusted to accommodate the following:

- Pools, ponds, spas, or hot tubs
- In-home businesses or hobbies that use an increased amount of water
- Gardens and orchards
- Homeowner's Association requirements for turf areas in excess of that water allocation specified by Casitas MWD for a Residential classification
- Where an allocation has been assigned through a recorded agreement.

Agricultural Irrigation Allocation Adjustment Standards include the following:

- Limited to acreage planted in commercial agricultural production prior to March 1, 1992. Casitas MWD shall also consider the assignment of an appropriate allocation to lands that are verified as being in a crop rotation status, or temporarily in a fallowed state, having been in a planted status prior to March 1, 1992.
- Comparative (same crop type and average use of various parcels) crop usage in Fiscal Year 2012-2013 for full irrigation, not to exceed 3 AF/acre/year, which is located within a 1-mile circumference of the parcel seeking the appeal for a change in water allocation.

6.3.6 Appeals Process

Customers that are denied an adjustment of water allocation may request a review of the request by submitting a written appeal to the Casitas MWD Water Resources Manager stating the nature of the



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appeal. The appeal shall be reviewed by the Water Resources Manager and a recommendation shall be reported to the General Manager. The decision of the General Manager shall be reported to the customer in written form. If the customer is not satisfied with the General Manager's decision, the customer must request within 10 days that the appeal be placed on the next available agenda of the Casitas MWD Board of Directors. The determination by the Casitas MWD Board shall be final.

6.3.7 Availability of Allocations

The determination of supplies being available for issuance of new allocations of water shall be made upon staff recommendation at a regular Casitas MWD Board of Directors meeting. The determination that water is or is not available shall be within the determination of the Casitas MWD Board. The determination that a supply is available shall be based upon more detailed information about existing supplies, the availability of new supplies, new water supply projects, or contracts or proposed contracts for additional supplies where, in the opinion of the Casitas MWD Board, the supply of water is definite enough to provide the assurance to the County of Ventura that there is a forty-year supply.

6.3.8 Allocation for New or Expanded Water Uses

A customer may request a change to a water allocation assignment for the purposes of obtaining new or expanded use of water that is associated with a new building permit, new or existing conditional use permit, or agricultural irrigation acreage expansion. The approval of an addition or change to the water allocation for new and/or expanded water allocation is subject to Casitas MWD's discretion on the limits of available water allocation and subject to the charges for new and/or expanded water allocation.

When the Board of Directors determine that additional new water supplies are available, either from the safe yield of the existing Casitas MWD project supply or additional new supplies, supplies shall be allocated in accordance with the following criteria:

- No single property owner or applicant for the given type of service (municipal, industrial or agricultural) shall receive a new water allocation greater than 10 percent of the total new available supply or the minimum standard residential allocation, whichever is greater. If the applicant's allocation requirements are not fully met, the applicant may maintain a position of priority until more water is available.
- All applicants seeking an allocation shall provide Casitas MWD with a detailed description of the project, the use of water for which the water is sought, and information on peak flow and annual water requirements. Casitas MWD shall determine meter size and amount of allocation based upon reasonable and necessary needs and Casitas MWD's Rates and Regulations.
- The amount of water to be allocated shall be at Casitas MWD's sole discretion. The assignment of an allocation shall be limited to the availability of water from the Lake Casitas safe yield, and be based on current water demand factors as adopted by the Casitas MWD and as amended. The amount of water required for the project may be calculated and submitted for the consideration of Casitas MWD by a civil engineer, registered in the State of California, representing the project proponent.



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6.4 STAGED DEMAND REDUCTION PRINCIPLES

6.4.1 Staged Demand Reduction Principles

The primary source of water that is available to the Casitas MWD is the amount of water stored behind Casitas Dam, forming Lake Casitas. The quantity of water stored in Lake Casitas is dependent upon several factors including but not limited to the following: local hydrology, watershed conditions, diversions from the Ventura River, lake evaporation, and water deliveries to beneficial uses. There may be times during which Casitas MWD must consider implementing staged water demand reductions to ensure a sustainable water supply and prevent a complete depletion of water supply in Lake Casitas. The Casitas MWD has assigned five stages of water storage in Lake Casitas that serve as a guidance to triggering the implementation of water use reduction goals and measures. The overarching goals of the Staged Demand Reduction Program are the following:

- Conserving the water supply for the greatest priority and public benefit
- Mitigating the effects of a water shortage on public health, safety, and economic activity.

6.4.2 Water Resource Conditions and Actions.

The General Manager shall report to the Board of Directors each year with an assessment of the current water storage in Lake Casitas and local ground water basins, current water use trends, predicted weather conditions, and an evaluation of current water use reduction goals. The time of the reporting can be each April, as the rainfall season is ending and water resources can be evaluated at the maximum for the year, or as Lake Casitas storage reaches a change in Stage action level.

The Casitas MWD Board of Directors may, at their sole discretion, declare that a Stage condition of water supply in Lake Casitas exists and implement the appropriate demand reduction goals and measures in response to current and/or predicted water availability conditions. The resolutions will serve to address a particular water shortage with the appropriate guidelines, procedures, regulations, and implementation of the Water Shortage Contingency Plan. Provisions of the resolution shall be developed and implemented in a timely manner to provide water service during emergency conditions to all of Casitas MWD's customers in a fair and equitable manner and in recognition of the given conditions.

Casitas MWD has established the implementation of various Stages of action based on the amount of water in storage in Lake Casitas, as shown in **Table 6-2** (see also **Appendix E Table 8-1**). As previously noted in Section 4.2, the safe-yield from the Lake Casitas Project is 20,840 acre-feet.

An action to declare and implement a Stage may be by either an action by Casitas MWD Board based on unanticipated changing lake supply conditions or by the following schedule in **Table 6-3**.



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**TABLE 6-2
CMWD DEMAND REDUCTION STAGE CONDITIONS**

STAGE	STAGE TITLE	LAKE CASITAS STORAGE (%)	LAKE CASITAS STORAGE ACTION LEVEL (AF)
1	Water Conservation	100% to 50%	254,000 to 127,000
2	Water Shortage Warning	50% to 40%	127,000 to 100,000
3	Water Shortage Eminent	40% to 30%	100,000 to 75,000
4	Severe Water Shortage	30% to 25%	75,000 to 65,000
5	Critical Water Shortage	25% to 0%	65,000 to 3,000

Notes:
Source, CMWD, 2018.

**TABLE 6-3
STAGE ACTION SCHEDULE**

TARGET DATES	DESCRIPTION
June – April	Monitor water demands, rainfall, reservoir level trend, ground water trends, and diversion and runoff amounts.
Early April	Staff presents water status report and a recommendation to the Casitas MWD Board. Publish a notice of a public hearing if changes are recommended.
Late April	Casitas MWD Board formally declares a Stage, and/or water shortage emergency, adopts recommendations for demand reduction actions.
May	Customer Notification of change in Stage, allocation, and conservation surcharge.
June	Stage demand reduction actions are effective and are implemented.

Notes:
Source, CMWD, 2018.

6.4.3 Demand Reduction Goals and Measures.

Demand reduction goals and measures begin with Stage 1, where reasonable and appropriate water allocation assignments are made to each Casitas MWD service connection. End water users are encouraged to implement Best Management Practices that conform to State requirements for water conservation and water use efficiency measures. Upon determination of a Stage 2 condition, and continuing through Stage 5 conditions, the primary actions to achieve the demand reduction goal is the



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adjustment of allocations. Adjustments in allocations were made available for each classification during Stage 1 by a reduction of the allocation during the duration of the declared Stage condition. See **Table 6-4** for staged water demand reductions by customer classification.

6.4.4 Stage Adjustments to Allocations.

The five stages of storage in Lake Casitas (see **Table 6-2**) and the initial guideline for water allocation adjustments for each classification at each Stage are presented in **Table 6-4**. Upon recommendation of the General Manager and approval of the Board of Directors at the onset of a specific Stage, the Casitas MWD shall apply appropriate demand reduction factors to the allocations for each customer classification, as deemed necessary.

**TABLE 6-4
STAGE WATER DEMAND REDUCTIONS FOR WATER CLASSIFICATIONS**

DEMAND REDUCTION STAGE (1)	1 (2)	2	3	4	5
Volume range of Lake Casitas	254,000 to 127,000	127,000 to 100,000	100,000 to 75,000	75,000 to 65,000	65,000 to 3,000
Percent Lake Casitas storage	100% - 50%	50% - 40%	40% - 30%	30% - 25%	25% - 0%
Water use reduction response goal	20%	20%	30%	40%	50%
Residential and Multiple-family Residential Essential use	0%	0%	0%	0%	0%
Non-essential use	20%	20%	50%	80%	100%
Business	20%	20%	30%	40%	50%
Industrial	20%	20%	30%	40%	50%
Other	20%	20%	30%	40%	50%
Resale	20%	20%	30%	40%	50%
Irrigation	20%	20%	30%	40%	50%
Interdepartmental	20%	20%	30%	40%	50%

Notes:

Source, CMWD, 2018.

(1) Initial Stage 1 Allocations include a 20% reduction from the 1989-1990 demands.

The Board retains the sole discretion to make allocation changes as a result of declaring a change in Stage, or during any Stage, that are more or less severe than that provided in **Table 6-4**. Examples of applying this discretion may include, but not be limited to, the change in any water resource conditions or the demand reduction goals are not being attained by the customer classification.



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Essential use allocations will remain the same and not adjusted, except as otherwise determined by the Casitas MWD Board to be a necessity to preserve water supply during extreme conditions. Measures to achieve the demand reduction goal may be selected from a menu of options as provided in **Table 6-5**, or should water supply conditions become worse than anticipated the Casitas MWD Board may adopt more stringent requirements as deemed necessary.

**TABLE 6-5
STAGE ACTIONS AND WATER DEMAND REDUCTION MEASURES**

WATER SHORTAGE CONDITION	KEY CMWD COMMUNICATIONS AND ACTIONS	CUSTOMER DEMAND REDUCTION MEASURES	PENALTIES AND RATES
<p>Stage 1</p> <p>Supply Range: 100%-50%</p> <p>Demand Reduction: 0%</p> <p>(80% of 1989 use)</p>	<ul style="list-style-type: none"> • Initiate public information and advertising campaign. • Publicize ways to reduce water consumption. • Coordinate conservation actions with other water purveyors and cities. • Perform water audits and promote water efficient use/conversions. • Conduct water workshops. • Temporary staffing for public inquiries, as needed. 	<ul style="list-style-type: none"> • Water Conservation practices requested of all customer classifications. • Adhere to Water Wise Prohibition Ordinance. • Adhere to assigned water allocation or less. 	<ul style="list-style-type: none"> • Consider and implement conservation penalty for water use in excess of allocation. • Consider rates for revenue stabilization and cost of service.
<p>Stage 2</p> <p>Supply Range: 50%-40%</p> <p>Demand Reduction from Stage 1 Allocation: 20%</p>	<ul style="list-style-type: none"> • Declare Stage 2 • Implement demand reductions for each customer classification. • Intensify public information campaign. • Optimize existing water resources. • Intensify leak detection. • Develop appeals staffing. • Consult with major customers to develop conservation plans and water use audits. 	<ul style="list-style-type: none"> • Continue all Stage 1 measures. • Landscape watering restricted to two (2) watering days per week. • Require water audits for large water users; implement recommendations of the water audits. • Businesses display “save water” signage. • Increase public information. 	<ul style="list-style-type: none"> • Consider and implement conservation penalty for water use in excess of allocation. • Consider rates for revenue stabilization and cost of service.

Notes:
Source, CMWD, 2018.

6.4.5 Customer Notification

The customers of each classification shall be notified in a timely and appropriate manner of any and all actions to declare and implement Demand Reduction Stage. The methods of communication to the customer shall be through direct mailings, public meetings, and billing information that provides the customer the comparison of water use with allocation.



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**TABLE 6-5 (Cont.)
STAGE ACTIONS AND WATER DEMAND REDUCTION MEASURES**

WATER SHORTAGE CONDITION	KEY CMWD COMMUNICATIONS AND ACTIONS	CUSTOMER DEMAND REDUCTION MEASURES	PENALTIES AND RATES
<p>Stage 3</p> <p>Supply Range: 40%-30%</p> <p>Demand Reduction from Stage 1 Allocation: 30%</p>	<ul style="list-style-type: none"> • Declare Stage 3 • Implement demand reductions for each customer classification. • Expand and intensify public information campaign. • Provide regular briefing, publish monthly consumption report. • Hire additional temporary staff in customer service, conservation, and water distribution. Water waste enforcement. • Consider moratorium on new service connections. 	<ul style="list-style-type: none"> • Continue with Stage 1 and 2 measures. • Reduced water allocations. • Landscape watering restricted to one (1) watering day per week. • No landscape changes unless xeriscape. 	<ul style="list-style-type: none"> • Consider and implement conservation penalty for water use in excess of allocation. • Consider rates for revenue stabilization and cost of service.
<p>Stage 4</p> <p>Supply Range: 30%-25%</p> <p>Demand Reduction from Stage 1 Allocation: 40%</p>	<ul style="list-style-type: none"> • Declare Stage 4 • Implement demand reductions for each customer classification. • Continue to provide regular media briefings. • Scale up appeals. • Open drought information center. 	<ul style="list-style-type: none"> • Continue with Stage 1 through 3 measures. • Reduced water allocations. • Landscape watering restricted to one (1) watering day per week. • Implement restrictive irrigation delivery schedule. • Minimal water for large landscapes. • Consider prohibition of filling swimming pools and fountains. • Implement restrictive irrigation delivery schedule and quantities greater than 60%. 	<ul style="list-style-type: none"> • Consider and implement conservation penalty for water use in excess of allocation. • Consider rates for revenue stabilization and cost of service.
<p>Stage 5</p> <p>Supply Range: 25%-0%</p> <p>Demand Reduction from Stage 1 Allocation: 50%</p>	<ul style="list-style-type: none"> • Declare Stage 5 • Implement demand reductions for each customer classification. • Minimize outdoor water use and non-essential uses. • Implement aggressive public outreach and education program. • Implement crisis communications plan. • Coordinate with State and local agencies to address enforcement challenges. • Water Shortage Emergency declaration to be considered. 	<ul style="list-style-type: none"> • Continue with Stage 1 through 4 measures. • Reduced water allocations. • Rescind temporary meters issued. • No turf irrigation. • Implement restrictive irrigation delivery schedule and quantities greater than 50%. 	<ul style="list-style-type: none"> • Consider and implement conservation penalty for water use in excess of allocation. • Consider rates for revenue stabilization and cost of service.

Notes:

Source, CMWD, 2018.



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6.4.6 Water Use Reduction Monitoring

During the implementation of the Program, Casitas MWD will perform water use monitoring procedures. Casitas MWD monitors water use throughout the Casitas MWD service area through SCADA at the Casitas Dam source, all pump plants and reservoirs. In addition, all service connection to the Casitas MWD distribution system are metered and monitored on a month or bi-monthly basis. Casitas MWD can detect irregularly high water use within a pressure zone and inquiry and identify the location of the irregular water use. Significant customer increases in water use are investigated by Casitas MWD staff. In general, monitoring of water use is performed during each stage as follows, but may be intensified if conditions warrant.

6.4.6.1 Stages 1 through 4

Water supply conditions, production data and reservoir elevations are recorded daily. Daily and monthly totals are supplied through the Engineering Department and incorporated into the Water Supply Report. Monthly reports include usage and total allocations for each customer category. A list of individual customers whose usage exceeds their allocation is submitted to the Water Conservation Supervisor for monitoring and outreach to assist the customer in attaining the water use reduction goals.

6.4.6.2 Stage 5

Water use monitoring will occur as in Stages 1 through 4, and water production data from the Casitas Dam will be reported to the General Manager on a daily basis.

6.4.7 Water Rates and Conservation Penalty

The Casitas MWD Board of Directors shall annually consider the setting or adjustment of water rates that reflect the cost of water service, consistent with State law. Casitas MWD has implemented a four tier inclining rate structure for the Residential and Multiple-family Residential classifications that represents the proportional cost of service that is attributable to the parcel that is served water.

The Casitas MWD Board of Directors shall annually set the Conservation Penalty for each classification that will be applied to each individual customer billing for each unit of water that is in excess of the customer's allocation, or the adjusted allocation pursuant to a change in Stage. The Conservation Penalty is a regulatory fee that is imposed to curtail the potential for adverse effects of excessive water consumption. Upon determination of a change in Stage, or at such time the Board deems that the customer response does not appear to attain the desired demand reduction goals, the Board may consider the modification of the Conservation Penalty. Revenues recovered from the Conservation Penalty will supplement Casitas MWD's water conservation costs and provide revenue for water shortage related projects. Implementing changes to the WEAP (2015, copy provided in **Appendix K**) will require utility billing system software changes to incorporate the Stage allocations as directed by the Board, as well as including the water use information and Conservation Penalty into the normal billing process.

The Casitas MWD Board of Directors approved Resolution 15-30 which authorized implementation of a Conservation Penalty, imposed as a regulatory charge, be set at \$1.00 per each unit of water use that is in excess of the individual customer's assigned monthly water allocation to each Casitas MWD Residential and Multi-Residential account. This Conservation Penalty will be billed monthly for Residential and



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Multi-Residential accounts. A conservation penalty, imposed as a regulatory charge, of \$0.25 be applied to each unit of water use that is in excess of the assigned annual allocation to individual customers of the Agricultural, Agricultural-domestic, Industrial, Business, Interdepartmental, Other, and Resale accounts. This Conservation Penalty will be billed at the end of the fiscal year to each individual customer that has accrued an excess water use. A copy of Resolution 15-30 is provided in **Appendix K**.

6.4.8 Appeals for Exception to Staged Adjustments of Allocation

A Casitas MWD customer may request consideration of an exception to the staged adjustments of allocation based on the following findings being present:

- The Staged adjustment would cause a condition affecting the health, sanitation, fire protection, or safety of the applicant or the public.
- Strict application of the allotment provisions imposes a severe or undue hardship on a particular business, or renders it infeasible for a business or class of business to remain in operation.
- Hospitals and health care facilities using industry best management practices are eligible for an exception.
- The business has already implemented environmental sustainability measures reducing water consumption to the maximum extent possible.

An exception must be presented to the Casitas MWD in writing with supporting documentation or substantial evidence demonstrating the need for an exemption. The exemption application will be reviewed, approved or denied, by the Casitas Water Resources Manager. Customers that are denied an exemption may request a review of the request by submitting a written appeal to the Casitas MWD Water Resources Manager stating the nature of the appeal. The appeal shall be reviewed by the Casitas MWD Water Resources Manager and a recommendation shall be reported to the General Manager. The decision of the General Manager shall be reported to the customer in written form. If the customer is not satisfied with the General Manager's decision, the customer must request within 10 days that the appeal be placed on the agenda of the Casitas MWD Board of Directors. The determination by the Casitas MWD Board of Directors shall be final.

6.4.9 Current Stage

The Casitas MWD Board of Directors approved Resolution 16-XX on April 27, 2016, which authorized staff to implement Stage 3 measures. A copy of Resolution 16-XX is provided in **Appendix K**. Casitas MWD will select from a menu of options to achieve the Stage 3 demand reduction goal as provided in **Table 6-5**.

6.5 PREPARATION FOR INTERRUPTION IN WATER SUPPLY

This section of the UWMP provides the actions to be taken by the urban water supplier to prepare for, and implement during a catastrophic interruption of water supplies, including but not limited to a regional power outage, an earthquake, or other disaster.



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6.5.1 Casitas MWD Actions

The Casitas MWD has prepared a Water Shortage Contingency Plan (Resolution 92-11), that addresses emergencies under short-term catastrophic events, and long-term water shortages that may occur as a result of a prolonged drought. A water shortage emergency may be determined to exist in the event of a short-term interruption of water supply or as a result of long-term diminishment of the Lake Casitas water supply. A short-term interruption of water supply can be the result of earthquakes, regional power outages, landslides, or other major and minor events that impact Casitas MWD water facilities or supply. These events are more often a short term interruption of water supplies until the water system can be restored to the customers. A long-term or service area-wide condition may be the result of drought conditions or a reduction in local water supplies that will require long-term water supply-demand management. The Casitas MWD response to a short-term interruption of water supply may cause the implementation of the Casitas MWD Emergency Action Plan that is structured under the State's Standardized Emergency Management System (SEMS), in coordination with federal, state and county emergency response planning that provides the framework for an organized response to catastrophic events.

Catastrophic events include non-drought related events. In the occurrence of a catastrophic event involving facilities and/or water service area sources, Casitas MWD personnel must respond to the emergency in an organized and methodical manner. Casitas MWD has as its resource tool for emergency response the Casitas Dam Emergency Action Plan and the Casitas MWD Emergency Response Plan (2004a). Each plan has been prepared and practiced with federal, state, and county emergency response agencies to provide a coordinated response to emergency conditions. Casitas MWD has also performed vulnerability assessments for each facility and have improved facilities to lessen the potential impacts of catastrophic events. The Casitas Dam is of special interest and coordination with the United States Bureau of Reclamation due to its importance and risk. Each emergency plan provides specific levels of response for various conditions, making the response fit appropriately to the degree of the emergency, and providing for an escalation or de-escalation of the response to match conditions found in the event area. The emergency plan will be implemented at the local level, damage assessments conducted and reported, and if warranted, actions will be taken by Casitas MWD during and following the emergency event, and Casitas MWD may request additional assistance through the Ventura County Office of Emergency Services.

A key element to the Casitas MWD Emergency Response Plan (2004a) is the Communications section, which provides the public communications strategy, water quality notification plan, and directions for public and agency notifications in the event of a water emergency. In the event of a catastrophic interruption of water supply, the respective emergency plan will be implemented and the affected areas notified of water supply outages and/or water quality actions. Casitas MWD notification plan considers the use of, the Casitas MWD website and Facebook page, direct telephone notification, media outlets (radio and television), posting individual service hang tags, and notification over the emergency broadcast network. Casitas MWD keeps and updates the contact information on an annual basis, or as the customer of record changes.



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The Casitas MWD water system relies on Lake Casitas as the main source of water supply and the ground water basin agencies as the backup water sources to Lake Casitas. It should be noted that the ground water supplies are generally limited in storage capacity and ability to instantaneously deliver water to the Casitas MWD system, and interagency agreement is sought for specific and limited emergency conditions. Casitas MWD does have interconnection with most ground water agencies in the Casitas MWD service area. Beyond the Lake Casitas source, Casitas MWD has approximately 22 million gallon of water storage in the distribution system to provide approximately three days of reserve water supply. Casitas MWD also has four portable water tanks (water buffalos), 500 gallons each, for placing in residential areas during isolated water outages. Casitas MWD may also employ contract water trucks to provide water to residential areas during major water outages. Casitas MWD will respond to water outages with a pipeline repair crew, contract pipeline crews, engineers, water quality and customer service personnel, and may request assistance from local, state, and federal agencies, as warranted.

6.5.2 Examples of Events That May Cause Interruption of Water Supply

Examples of short-term and long-term events that may result in a local water supply interruption include, but are not limited to, the following:

- Earthquake
- Power outage
- Chemical/toxic spill in Lake Casitas
- California Department of Drinking Water determination ground water basin is contaminated
- Sudden deterioration of water quality in Lake Casitas
- Interruption of service due to pipeline break, loss of pumping plant, chlorination station, etc.
- Immediate hazard to public health
- Extensive local drought reducing levels in Lake Casitas
- Uncontrolled watershed burn resulting in flooding, thereby impacting water served from lake Casitas MWD due to one or more of the following:
 - * High turbidity
 - * Bacteriological quality
 - * High organic content
 - * Damage to distribution system.

6.5.3 Prohibitions, Penalties and Consumption Reduction Methods

In the event of a short-term emergency for which Casitas MWD has a definite plan and schedule to restore its system to pre-disaster condition, Casitas MWD may implement water use restrictions in accordance with the adopted Water Efficiency and Allocation Program (copy provided in **Appendix K**). Casitas MWD may further make requests of agricultural and resale accounts to move to alternate water sources and curtail water demands. If the emergency conditions persist, Casitas MWD may consider a shift to a more restrictive Stage of the Water Allocation and Efficiency Program, applying limits to water use



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allocations and incentive rates to meet water use goals during the emergency. Additional restrictions may be considered and implemented upon direction from the Casitas MWD Board to include, but not limited to, prohibiting the use of potable water for street cleaning. Additional action may include, but not limited to, the installation of flow restrictors or the shutoff of service in order to maintain enough water supply in the system for health and safety purposes.

6.5.4 Analysis of Revenue Impacts from Reduced Sales During Shortages

An analysis is required of the impact of reduced sales resulting from a catastrophic water shortage, on the revenues and expenditures of the urban water supplier. In addition, the analysis must include the proposed measures to respond to such impact, such as development of reserves and rate adjustments.

In order to estimate a financial budget in the event of a local disaster, Casitas MWD evaluated the hypothetical scenario of the loss of 50 percent of the available water supply. As noted in Section 5, the Casitas MWD available water supply is 23,440 AF for a normal water-year. Annual commodity income from Casitas MWD sales of 23,440 acre-feet of water is approximately \$6,060,000 (Casitas MWD FY 2013 rates), and the fixed water service charge income of \$1,600,000. Total revenue from water sales and service charges is approximately \$7,660,000 (see **Table 6-6**). In the event of a catastrophic interruption of 50 percent of the water supply, Casitas MWD water sales could potentially be reduced by 50 percent. This scenario may result in a reduced revenue total of approximately \$3,830,000, and expenses of approximately \$5,203,000. In this hypothetical scenario, Casitas MWD could see a budget deficit of approximately \$1,373,000 per year, as indicated in **Table 6-6**. For Casitas MWD, the key reduction in costs are directly associated with the reduction in chemical purchase due to less water to treat and provide as potable water, and less energy to pump water to the various zones of service. In each case, the reduction in water sales is in direct relation to the reduction in chemical and electrical power purchases.

Casitas MWD has unrestricted reserves of \$14,710,000 (2016) in designated funds for cash flow, storm damage, variation in water sales, and capital improvements. The Casitas MWD Board of Directors could direct a portion of these funds be used to balance the budget. Casitas MWD could also consider an increase in water rates, after assessing the resultant benefit that may or may not be generated by such an action. Such an increase in rates may result in less water demand and generate no more additional revenue to offset the budget deficit.

6.5.5 CMWD Operating Rules and Regulations

Casitas MWD is responsible for operation of the Lake Casitas, treatment plant, and the distribution system (see **Section 2.5** for details). A copy of the Casitas MWD's Rates and Regulations for Water Service (2013) is available at the website:

<http://www.drivecms.com/uploads/casitaswater.org/Rates%20&%20Regs%20Board%20Adopted%2012%2016%202009.pdf>



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**TABLE 6-6
ESTIMATED BUDGET IMPACT OF CATASTROPHIC EVENT**

	AVAILABLE WATER SUPPLY	SUPPLY DEFICIT OF 50 PERCENT
Available Water Supply (normal water year) (AFY)	23,440	11,720
Percentage of Available Water Supply (normal water year)	100	50
Revenue:		
Commodity Charges	\$6,060,000	\$3,030,000
Service Charges	\$1,600,000	\$800,000
Subtotal	\$7,660,000	\$3,830,000
Expenses:		
Salaries/ benefits	\$2,938,000	\$2,938,000
Fixed Services/Supplies	\$1,348,000	\$1,348,000
Variable Services/Supplies	\$1,834,000	\$917,000
Subtotal	\$6,120,000	\$5,203,000
Total Budget Surplus (Deficit)	\$1,540,000	(\$1,373,000)

Notes:

Source, CMWD, 2018. All values estimated.

Copies of the Casitas MWD’s Rules and Regulations are also available upon request. In addition, water shortage allocation policies for the Casitas MWD are provided in Section 6. Copies of these documents are also available from Casitas MWD upon written request.

The Casitas MWD prepared and maintains an Emergency Response Plan (2004a). The Emergency Response Plan includes extensive details for responding to numerous events such as catastrophic earthquakes, hydrological failure, sabotage, vandalism, bomb threat, water quality contamination, and a terrorist threat. Casitas MWD staff train regularly in order to properly respond to events and minimize the interruption of water supply.



SECTION 7: DEMAND MANAGEMENT MEASURES

7.1 UWMP REQUIREMENTS

This section will include the following:

- Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in Code, including water waste prevention ordinances, metering, conservation pricing, public education and outreach, water loss control, conservation program coordination and staffing, and other demand management measures that significantly impact water use (CWC, 10631(f)(1)).
- CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU (CWC, 10631(i)).

7.2 INTRODUCTION

Casitas MWD has a long history and strong commitment to water use efficiency. In 1992 the Casitas MWD Board of Directors adopted a series of ordinances, resolutions, and a Water Efficiency and Allocation Program (WEAP) in response to the increasing water demands and declining water storage in Lake Casitas experienced during the 1987-1991 drought period. The collective work in 1992 set the starting point for a system of water allocation assignments and demand response criteria that are based on the level of water storage in Lake Casitas. Casitas MWD Board of Directors adopted a Water Shortage Contingency Plan in 1992, by Resolution No. 92-11, that set water use reduction goals for the various stages of Lake Casitas storage. Casitas MWD Board adopted Resolution 2014-0038 drought emergency regulations, that supplemented the Water Shortage Contingency Plan, limited the outdoor irrigation of ornamental landscapes or turf with potable water. Casitas MWD Resolution 15-02 includes permanently prohibited uses of water that are in effect year round. Provisions of this Ordinance applies to all persons, corporations, public or private entities, governmental agencies or institutions, or any other direct water customers of the Casitas MWD (copy of Resolution 15-02 provided in **Appendix K**). The Casitas MWD Board approved Resolution 15-30 which authorized implementation of a Conservation Penalty (copy provided in **Appendix K**).

Casitas MWD recently updated the WEAP (2015, copy provided in **Appendix K**). The purpose of the WEAP is to provide guidance on water supply and demand strategies that implement the following:

- Conserve the water supply of the Ventura River Project, Lake Casitas and other water resources that are in the direct control of Casitas MWD, for the greatest public benefit.
- Mitigate the effects of a water shortage on public health and safety and economic activity.
- Allocate water use so that a reliable and sustainable supply of water will be available for the most essential purposes under all water storage conditions of Lake Casitas.



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- Adapt to changing conditions of water supply demand and constraints.

The WEAP describes the water demand reduction strategies and measures to address future water shortage conditions, promote water conservation and the efficient use of water, and the application of a conservation penalty to customers who waste water.

In addition, Casitas MWD is a signatory to the Memorandum of Understanding (MOU) with the California Urban Water Conservation Council (CUWCC). This essentially declares Casitas MWD's intent to implement all cost effective water conservation Best Management Practices (BMPs) as noted by the CUWCC. A copy of the most recent approved CUWCC BMP Coverage Report is provided in **Appendix L**.

The next section summarizes the conservation measures implemented over the past five years as required by the UWMP.

7.3 UWMP DEMAND MANAGEMENT MEASURES

The UWMP Act currently requires water agencies to provide narrative descriptions of metering, public education and outreach, conservation program coordination and staffing, distribution system asset management program, supplier assistance program, and other demand management measures that significantly impact water use. Casitas MWD is a retail water agency, wholesale water agency, and an agricultural water agency. However, for the purposes of this UWMP, the Casitas MWD is considered a retail agency. The Casitas MWD will comply with the UWMP requirements as a retail agency.

7.3.1 Metering

All the Casitas MWD direct retail customers are metered. All of the Casitas MWD surface water supplies and ground water supplies are metered. Accuracy of the District's meters is generally 98 percent to 102 percent. Casitas MWD has meters for all turnouts for resale customers.

7.3.2 Public Education and Outreach

The extensive Casitas MWD public education and outreach program promotes the water conservation ethic and informs the public of the benefits derived from conserving a valuable resource. Implementing water conservation and demand management strategies will allow Casitas MWD to manage local water supplies throughout a long-term drought and avoid supply depletion. Many of the diverse public education and outreach activities are summarized below.

Casitas MWD distributed bi-annual newsletters that include information on water conservation to all 30,000 residents within the Casitas MWD. The newsletters include information on water conservation, workshops, and other water-related news. Two additional bill stuffers are sent out each year as well to ensure that there is a quarterly contact with customers. Every bill statement has a water conservation message on it. Examples of public outreach information are provided in **Appendix M**.

The Casitas MWD website (<http://www.casitaswater.org/>) is updated regularly with water conservation videos, articles, and program updates. Press releases or media contacts are made each quarter. Casitas



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MWD also posts conservation messages and announcements to Facebook (<https://www.facebook.com/fbsitecasitasmunicipalwaterdistrict/>).

Customer water bills include information on previous usage. Casitas MWD recently removed all of the landscape turf from the main office and replaced it with drought tolerant plants. The office is located on a main road within the Casitas MWD service area. The high visibility for the drought tolerant plantings sets a significant example for customers.

The Casitas MWD prepares an annual Consumer Confidence Report (CCR) that is designed to inform customers about the quality of water and services provided. The Casitas MWD CCR also includes water conservation elements. A copy of the current CCR is provided in **Appendix J**.

Casitas MWD has a speaker's bureau program that is advertised in the newsletters. Casitas MWD staff members attend multiple community meetings throughout the year and discuss water conservation issues as part of their presentations. The Casitas MWD staff offers give-a-ways at community events such as free toilet flappers, low flow showerheads, and faucet aerators.

Some additional public education and outreach activities include the following:

- Provided water conservation information to all new customers within the Casitas MWD
- Coordinated active public information program including: news media outreach to radio, television, newspapers, social media; and advertising on radio, television, newspapers, and social media
- Provided free water audits to residential, commercial, industrial, institutional, and agricultural customers within the service area
- Conducted water use efficiency workshops (approximately three per year)
- Provided free leak detection kits, low flow showerheads, low flow faucet aerators, and toilet flappers
- Provided rebates to residential and commercial customers for High Efficiency Washing Machines, High Efficiency Toilets, and Smart Irrigation Controllers
- Actively enforce Casitas MWD water waste enforcement program
- Implemented updated water allocation program that provides penalties to individual customers that exceed their assigned allocations
- Posted banners throughout the service area
- Water Conservation – Landscape Sign program that recognizes individuals and businesses with aesthetically pleasing landscapes that are drought tolerant.

Casitas MWD has been an active participant in the Ventura County Watershed Coalition's preparation of the Integrated Regional Water Management Plan. This effort included developing a list of all potential projects among regional water agencies and organizations that could benefit from seeking regional cooperation. Casitas MWD, in conjunction with Senior Canyon Mutual Water Company, received a grant



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through the Ventura County Watershed Coalition for Proposition 50 regional grant funds. The grant will be used to improve the reliability of Senior Canyon Mutual Water Company's ground water resources so they would rely less on Casitas MWD's surface water supply. This project will improve conjunctive use of local ground water and surface water supplies. Casitas MWD received additional grants including, but not limited to, the following:

- Proposition 1 Drought grant funding for Aeration Project
- Proposition 1 Drought grant funding for Turf Removal grant led by City of Ventura
- Proposition 84 grant funding for VC-RULE (Ventura County Regional Landscape Survey and Retrofit program led by City of Oxnard).

Casitas MWD also participated in the development of the Ventura County-wide landscape water efficiency website <http://www.venturacountygardening.com/>. This website promotes native and drought tolerant plants on a regional basis and makes it easier for residents to plan water efficient landscapes. The website offers visitors the ability to maintain a plant database, browse numerous garden plans, and provides information on a large number of native and drought tolerant plants to include plant requirements for sun, soil, and water.

7.3.3 Water Conservation Program Coordination and Staffing

Casitas MWD has a full-time Water Conservation Manager, full-time Water Conservation Specialist, full-time Water Conservation Analyst, and part-time Water Conservation Coordinator. Casitas MWD staff provide many water conservation services including report preparation, respond to customer questions, perform water use surveys, administer rebate programs, coordinate public information and outreach programs, plan and participate in special events and education programs, and conduct public speaking. In addition, Casitas MWD also utilizes consulting firms to assist with the implementation of demand management measures.

7.3.4 Distribution Asset Management Program

Casitas MWD's distribution asset management program is a multifaceted program including system water audit, leak detection, and leak repair. The program includes the utilization of sound testing to check for mainline leaks on a routine basis; annual testing of customer meters and master meter testing to include repairs and replacements as needed; recording of flushing and leak repair losses; metering of all water uses; and measurement of master meters at each pump zone to determine if leaks occur in any geographic area. Pressure management for water loss minimization is limited to service needs in hilly areas.

7.3.5 Other Demand Management Measures

7.3.5.1 Water Survey Programs

Casitas MWD provides water survey programs for single-family and multi-family residential customers for direct retail customers and for whole agency customers. The Casitas MWD's direct survey program includes evaluating all indoor and outdoor water use. All water appliances are inspected. All toilets and faucets are inspected for leaks. A meter test is provided to check for leaks, landscape is thoroughly inspected for irrigation efficiency and plant type. These survey programs include distribution of low flow



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showerheads, toilet leak detection tablets, kitchen and faucet aerators, and rulers to measure toilet tank size. The customer is provided with a summary report on the improvements that can be completed both inside and outside the home to improve water use efficiency. The report also includes water and dollar savings, and a summary of rebate opportunities provided by Casitas MWD for appliances and smart irrigation controllers.

7.3.5.2 Residential Plumbing and Retrofit

Casitas MWD provides free low flow showerheads, faucet aerators, toilet flappers, leak detection kits, and shower timers to all residents within the service area. Casitas MWD advertises these fixtures in the newsletter, on the website, and at the customer service counter.

7.3.5.3 Large Landscape Conservation Programs and Incentives

Casitas MWD has six dedicated irrigation meters. Casitas MWD only has a few dozen customers with large landscape accounts. Casitas MWD has joined several other agencies in Ventura County in an implementation grant through the Proposition 84 bond that provides for county-wide landscape program. Each survey included an evaluation of the irrigation efficiency, area of landscape, area of turf, and distribution uniformity, observed leaks, timer settings, irrigation time settings, and the development of a water budget. A copy of the landscape report is provided to each customer.

7.3.5.4 High-Efficiency Washing Machine Rebate Program

Casitas MWD joined the Smart Rebate program operated by the CUWCC. Casitas MWD provides advertising but leaves the processing of rebates to the CUWCC.

7.3.5.5 Conservation Programs for Commercial, Industrial and Institutional

Casitas MWD has contacted all of the highest usage commercial/industrial/institutional (CII) customers and offered and provided surveys to those customers. The CII surveys include an inspection and an in-depth analysis of water usage at each facility evaluating all water use devices and processes. Final reports with recommendations and calculated benefits are provided to each customer. All CII customers are offered high efficiency washing machine rebates and high efficiency toilet rebates. Smart irrigation controller rebates are also offered to CII customers. Free showerheads, faucet aerators and toilet flappers are also provided.

7.3.5.6 Supplier Assistance Programs

Casitas MWD provides its retail water agencies with water conservation assistance. Casitas MWD participates with the SMART rebates program through the CUWCC. Casitas MWD also offers its smart irrigation controller rebates to the nine retail agencies. Casitas MWD's Water Conservation Manager has contacted retail agencies about water conservation programs available. There are only a few retail agencies of the nine that have CII customers but Casitas MWD has offered surveys to some of the larger CII customers in those agencies.

7.3.5.7 Conservation Pricing

The Casitas MWD currently has volume-based pricing for all accounts. Customers are billed monthly for 100 percent of the volume of water used. The Casitas MWD has the legal authority to evaluate and set rates for its customers. A copy of the Casitas MWD current rate schedule is provided in **Appendix G** and available on the Casitas MWD website:

<http://www.drivecms.com/uploads/casitaswater.org/2013-4.pdf> .



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The commodity rate for Agricultural accounts is \$0.624 to \$0.904 per 100 cubic feet (HCF) depending on elevation of the property. The commodity rate for Agriculture-Residential accounts is \$0.602 to \$1.770 per HCF depending on usage and elevation of the property. The commodity rate for all Residential accounts is \$0.602 to \$2.614 per HCF depending on usage and elevation of property. The commodity rate for Commercial, Industrial, Resale, Other, Temporary, and Recreational accounts is \$0.827 to \$1.785 per HCF depending on customer category, usage, and elevation of the property. In addition, the Casitas MWD has an additional meter fee per customer meter size (see copy of rate schedule in **Appendix G**). The monthly meter fee ranges from \$23.34 per month (5/8 to 3/4 inch) to \$812.42 (6-inch).

The Casitas MWD currently has inclining block water rates for many of customer accounts. Inclining block rates are also known as conservation rate, where the cost per unit of water increases with the quantity of water used. Currently, Residential accounts and Residential-Agricultural accounts (up to 50 units) are charged based on an inclining block rate.

Conservation rate structure for water service is similar to utility rate structures in place for electricity and natural gas. In a conservation block rate structure, the unit price increases with each successive block, resulting in an increase in the incremental and the average cost of water with increased customer usage or conservation 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. Conservation block rate tends to decrease water usage, (i.e., promote water conservation), due to the economic disincentive to waste water. Conservation pricing may also include seasonal rates and/or excess-use surcharges to reduce demands during summer periods.

7.3.5.8 Water Waste Prohibition

Casitas MWD has an adopted Water Waste Prohibition, see **Appendix K**, Resolution 15-02.

7.3.5.9 Residential High Efficiency Toilet Replacement Programs

Casitas MWD has a high efficiency toilet (HET) program targeting residential and CII customers. Casitas MWD's program provides rebate incentives for retrofitting non-efficient devices with HET using 1.28 gallons per flush or less.

7.3.5.10 School Education Programs

Casitas MWD has a school education program that provides state approved curriculum on water conservation for local classrooms. Casitas MWD also provides educational materials to kindergarten through high school teachers upon request. Casitas MWD coordinates with the Ojai Rotary Club to provide water conservation classrooms on a boat in Lake Casitas.

7.3.5.11 On-Farm Irrigation Capital Improvements

The Casitas MWD has an agricultural irrigation efficiency program which offers financial incentives to local farmers for improving the efficiency of on-farm irrigation systems. Casitas MWD has a low-interest loan program for farmers to improve irrigation systems. The program assists 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.



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7.3.5.12 Incentive-Pricing Structure

The Casitas MWD currently has inclining block water rates for many of customer accounts. Inclining block rates are also known as conservation rate, where the cost per unit of water increases with the quantity of water used. Currently, Residential accounts and Residential-Agricultural accounts (up to 50 units) are charged based on an inclining block rate. The conservation rate for Agriculture-Residential accounts is \$0.602 to \$1.770 per HCF depending on usage and elevation of the property. The conservation rate for all Residential accounts is \$0.602 to \$2.614 per HCF depending on usage and elevation of property. All other customers are charged a volume-based rate depending on customer category and elevation of the property. The Casitas MWD has the legal authority to evaluate and set rates for its customers. See **Appendix G** for a copy of current water fees and charges.

7.3.5.13 Customer Pump Test/Evaluation

The Casitas MWD 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: <https://www.sce.com/business/ems/waste>.

7.3.5.14 Wholesale Agency Assistance Programs

The Casitas MWD is a wholesaler and retailer and participates in regional programs. The Casitas MWD has participated in planning and programs concerning water demand management issues and urban water management in Ventura 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. Selected examples of regional participation include the following organizations:

- Ventura River Watershed Council
- Association of Water Agencies of Ventura County
- Ventura County Watershed Coalition, IRWMP (2014).

It is recommended that the Casitas MWD 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.

7.3.5.15 Real-Time Crop Irrigation Information

Local weather information is available from the weather station at Soule Park Golf Course. The weather page includes local and current air temperature, humidity, wind, evapotranspiration, precipitation, estimated irrigation requirement, and historical data. The web page is located at the following:

<http://data.weatherreach.com/StationDetail?StationID=68&TableTimeInt=60> .

Additional irrigation information is made available to local farmers upon request. Casitas MWD regularly maintains the weather station instrumentation to ensure accuracy of information.

7.3.5.16 Provide Water Delivery Information to the Water Users

The Casitas MWD provides water usage reports to water users upon request and are encouraged to request data as needed.

7.3.5.17 On-Farm Evaluations

The Casitas MWD supports the availability of on-farm irrigation and drainage system evaluations. The Casitas MWD contract with the Ventura County Resource Conservation District's mobile laboratory for irrigation evaluation. As part of program participation, farmers are provided with free irrigation system



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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.

7.3.5.18 Identify Institutional Changes

The Casitas MWD is responsible for production of all local surface water. Therefore, the Casitas MWD has not had to contend with issues pertaining to water delivery and storage flexibility related to surface water. The Casitas MWD actively attempts to identify programs that allow for voluntary transfers of water within and outside of its sphere of influence that facilitate greater water supply flexibility and storage. This includes evaluation and implementation of programs involving imported surface water and local surface water.

The Casitas MWD is engaged in a wide range of activities to ensure that customers continue to have a reliable supply of water in future years. These activities include, but not limited to, the following: Water Efficiency and Allocation Program, Water Supply and Demand Study (2004), Integrated Regional Water Management Planning, Urban Water Management Planning, Water Shortage Contingency Planning, and Demand Management Measures are all strategies employed by the Casitas MWD for sustaining adequate water supplies and managing local water demands.

7.3.5.19 Supplier Pump Improved Efficiency

The District's water loss control program includes main replacement, system water audits, system leak detection and repair, meter testing and replacement, valve exercising, and main flushing.

The Casitas MWD's efforts include the following actions:

- The Casitas MWD continues to meet current standards for apparent water losses of below 5 percent, as determined by an in-house water audit protocol.
- Estimated economic values of water loss will be generated using recent expense data and an avoided cost model (AWWA).
- 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 Casitas MWD will begin a program to implement such actions.
- All reported leaks, including the Casitas MWD side or customer's side, are currently addressed immediately. If a customer's use increases by 50 percent, after reading the meter, then the District flags the account and the customer is contacted to let them know they may have leak.

7.3.5.20 Turf Replacement Program

The County of Ventura received a Proposition 84 Integrated Regional Water Management Implementation (IRWM) grant from the CADWR for a Water Wise Incentive Program. The Water Wise Incentive Program will be a regional water conservation program that provides outdoor water use efficiency incentives to customers of Casitas MWD, Ventura Water, and City of Santa Paula. The Program will offer rebates for turf removal for CMWD customers. Ventura Water will be the lead agency administering the Program and project coordination activities at the regional level.



REFERENCES

R. Barnett. 1989. Water Supply and Demand Study: Status Report.

State of California. California Water Code. "Water Conservation". Division 6, Part 2.55, Sections 10608.00 to 10608.64.

State of California. California Water Code. "Urban Water Management Planning". Division 6, Part 2.6, Sections 10610 to 10650.

State of California. California Water Code. Section 10800-10853.

State of California. 2004. California's Groundwater - Bulletin No. 118.

State of California. 1950. Bulletin No. 12.

State of California. 1933. Bulletin No. 46.

State of California Department of Finance. 2014. State and County Population Projections – July 1, 2010-2060. Website: <http://www.dof.ca.gov/research/demographic/reports/projections/view.php>.

State of California Department of Water Resources (CADWR). 2019. Sustainable Groundwater Management Act 2018 Basin Prioritization.

CADWR. 2016. Guidebook for Urban Water Suppliers – 2015.

CADWR. 2013a. California Water Plan Update 2013.

CADWR. 2013b. The State Water Project Delivery Reliability Report 2012.

State of California Natural Resources Agency (CANRA). 2009. California Climate Adaptation Strategy.

California State Water Resources Control Board. 2017. Sanitary Survey Report for Casitas Municipal Water District, Ventura County.

California State Water Resources Control Board. 2017a. Engineering Report for the Consideration of the Full Permit Issued to Casitas Municipal Water District for the Ojai Water System, Ventura County.

California Regional Water Quality Control Board – Los Angeles Region. 2002. State of the Watershed – Report on Surface Water Quality - The Ventura River Watershed.

California Climate Change Center (CCCC). 2009. Using Future Climate Projections to Support Water Resources Decision Making in California.



PUBLIC REVIEW DRAFT - RETAIL UWMP 2016 UPDATE

Casitas Municipal Water District (CMWD). 2018. Data provided by CMWD staff.

CMWD. 2016. Urban Water Management Plan-Agricultural Water Management Plan-2016 Update. Prepared by Milner-Villa Consulting.

CMWD. 2016a. Preliminary Water Security Project Analysis. Prepared by Water Resource Engineering Associates and Kear Groundwater.

CMWD. 2013. Rates and Regulations for Water Service.

CMWD. 2010. Operations Plan – Marion R. Walker Pressure Filtration Plant.

CMWD. 2004. Water Supply and Use Status Report.

CMWD. 2004a. Emergency Response Plan.

CMWD. 1990. Technical Evaluation of Safe-Yields of Ventura River Project and Local Groundwater Basins. Prepared by R. Barnett and Don Kienlen.

CMWD. 1988. Ojai Groundwater Basin Study. Prepared by Murray, Burns, and Kienlen.

CMWD. 1988a. Evaluation of Alternatives Involving a Castaic Lake Delivery Point, Importation of State Project Water to Ventura County.

CMWD. 1987. Feasibility of Importing State Project Water into Ventura County. Prepared by James M. Montgomery Consulting Engineers.

CMWD. Undated. The Ventura River Project.

Climate Action Team (CAT). 2009. Draft Biennial Report.

Golden State Water Company. 2011. Urban Water Management Plan. Prepared by Kennedy/Jenks Consultants.

Ojai Basin Groundwater Management Agency. 2018. Ojai Basin Groundwater Management Plan.

Ojai Basin Groundwater Management Agency. 2014. 2011 and 2012 Annual Report.

Ojai Valley Sanitary District. 1992. Reclaimed Water Feasibility-Marketing Study. Prepared by Boyle Engineering.

Pacific Institute. 2016. Existing and Proposed Desalination Plants in California. Website-
<http://pacinst.org/publication/key-issues-in-seawater-desalination-proposed-facilities/>

Pacific Institute. 2009. The Impacts of Sea Level Rise on the California Coast.



PUBLIC REVIEW DRAFT - RETAIL UWMP 2016 UPDATE

Panaro, David. 2016. Telephone conversation regarding local ground water, June.

Public Policy Institute of California (PPIC). 2011. Managing California's Water - From Conflict to Reconciliation.

Southern California Association of Governments (SCAG). 2017. Profile of City of Ojai.

SCAG. 2016. 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy.

Stamm, Gilbert G. 1967. Problems and Procedures in Determining Water Supply Requirements for Irrigation Projects. Chapter 40 in, Irrigation of Agricultural Lands, Hagan et al. American Society Agronomy. Wisconsin, USA.

USBR. 1954. A Report on the Feasibility of Water Supply Development.

United States Geological Survey. 2016. Rain and Precipitation. Website –
<http://water.usgs.gov/edu/earthrain.html>

Ventura County, Watershed Protection District. 2015. 2014 Annual Report of Groundwater Conditions.

Ventura County, Watershed Protection District. 2014. County of Ventura 2013 Water Supply and Demand. Prepared by HydroMetrics.

City of Ventura. 2017. Comprehensive Water Resources Report (and updates). Prepared by Michael Baker International.

City of Ventura. 2016. Urban Water Management Plan. Prepared by Kennedy/Jenks Consultants.

City of Ventura. 2007. Feasibility Study on the Reuse of Ojai Valley Sanitary District Effluent- Final Facilities Planning Report. Prepared by Brown and Caldwell, et al.

Ventura River Watershed Council (VRWC). 2015. Ventura River Watershed Management Plan. Prepared by Lorraine Walter.

Watersheds Coalition of Ventura County. 2014. Integrated Regional Watershed Management Plan. (and addenda).

Western Regional Climate Center. 2016. Precipitation and temperature data. Website –
<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6399>. Ojai Station No. 046399.

**CASITAS MUNICIPAL WATER DISTRICT
MEMORANDUM**

TO: MICHAEL FLOOD, GENERAL MANAGER
FROM: JULIA ARANDA, ENGINEERING MANAGER
SUBJECT: TECHNICAL ADVISORY COMMITTEE FOR MATILIJA FORMATION DEEP
WELLS
DATE: 04/16/2019

RECOMMENDATION:

It is recommended the Water Resources Committee review the proposal from Pueblo Water Resources regarding a Technical Advisory Committee (TAC) for the Matilija Formation Deep Wells.

DISCUSSION:

The Board requested a 'second opinion' regarding the feasibility of the Matilija Formation Deep Wells project, including the Horizontal Bore (HOB) and Vertical Bore (VERBO) components. Pueblo Water Resources (Pueblo) discussed the concept of a TAC at the Water Resources Committee meeting of March 19, 2019 and subsequently prepared a proposal for review.

Based on comments received at the Water Resources Committee meeting, Pueblo will present a final proposal for consideration at the Board meeting of April 24, 2019.

Attachment: Draft Proposal from Pueblo Water Resources dated April 11, 2019



April 11, 2019
Project No. 18-0145

Casitas Municipal Water District
1055 N. Ventura Avenue
Oak View, California 93022

Attention: Julia Aranda, P.E.
Engineering Manager

Subject: Proposal for Professional Services, Matilija Formation Groundwater Supply Project
Technical Advisory Committee.

Dear Ms. Aranda:

The Casitas Municipal Water District (District) contracted with Kear Groundwater (KG) and Water Resource Engineering Associates (WREA) to investigate the feasibility of developing emergency groundwater supply from a deep vertical well drilled into the Matilija Sandstone Formation in the Santa Ynez Mountains near Ojai, California. The first step in the investigation would be the drilling of a test well, which would be constructed on District property located approximately 1,100-feet southwest of the Robles Diversion Dam on the west side of the Ventura River, near the intersection of Rice Canyon and Cooper Canyon Roads. It is intended that information acquired and knowledge gained through the drilling and testing of the test well would be used to evaluate the feasibility and provide information for a permanent, full-scale Matilija Formation Groundwater Supply Project (Matilija Project).

Because of the unconventionally deep drilling and proposed well completion depths (up to 7000 feet), likely difficult drilling and well construction conditions, uncertainties regarding instantaneous and sustainable yield of such a bedrock well, water quality concerns, and likely high pilot drilling/testing and full-scale project costs, the District has asked Pueblo Water Resources, Inc. (Pueblo) to assist in project evaluation by coordinating and facilitating an independent, third-party review of pilot project plans and full scale project feasibility. To accommodate the District's request, Pueblo has assembled a Technical Advisory Committee (TAC) for the Matilija Project consisting of a team of highly qualified experts with extensive experience with Santa Ynez Mountain hydrogeology and the planning and execution of high capacity groundwater supply projects. This proposal presents a scope and budget for the Matilija Project TAC. Based on the availability of existing materials for the TACs review and consideration, we envision that the TAC evaluation will be conducted in incremental phases, with the likely results of this first phase including a request for additional information from the District's consultants for further review and analysis. This proposal presents the scope and fees associated with the first phase of TAC review.

Technical Advisory Committee Members

The TAC will consist of three members: Martin Feeney, P.G., C.Hg., C.E.G.; Paul Sorensen, P.G., C.Hg., C.E.G.; and Joe Oliver, P.G., C.Hg. The careers of all three of the TAC

members have focused on groundwater supply projects within the Central Coast area. Mr. Feeney was one of the founding Principals of Staal, Gardner, and Dunne, Inc., and has worked as a consulting hydrogeologist, with significant well and water supply project experience, for the past thirty seven years. Mr. Sorensen, Principal Hydrogeologist with GSI Water Solutions in Santa Barbara, has also focused his career on groundwater supply projects in Santa Barbara, San Luis Obispo, and Monterey Counties for the past forty years. Mr. Sorensen's specific expertise is with groundwater supply, basin analysis, and water resource management, and he is an integral part of GSI's senior team of groundwater specialists addressing California's Sustainable Groundwater Management Act (SGMA) issues. Mr. Oliver has over 40 years' experience as a groundwater professional. He was formerly the Water Resources Manager for the Monterey Peninsula Water Management District where he was responsible for the development and oversight of numerous groundwater supply development projects, including those dealing with fractured bedrock systems. Since his retirement in 2017, Mr. Oliver has been working as an independent, consulting hydrogeologist. During much of their respective careers, the three members of the TAC have had professional relationships with each other and have worked together on numerous water supply projects. Bios of each of the TAC members are attached.

Scope of Work

Based on our understanding of the project and the District's needs, and our extensive experience with similar projects for other municipal clients, we have developed the following scope of work.

Task 1. Project Management and TAC Coordination

Pueblo will serve as the manager and the coordinator of the TAC throughout the project. This will include serving as the primary point of contact between the District and the TAC. Pueblo will coordinate TAC activities, facilitate meetings between the TAC members when required, and establish schedules for TAC deliverables. This will include serving as the primary point of contact between the District and the TAC.

Task 2. Project Definition and TAC Scope Development

Pueblo will schedule a kick-off meeting to initiate the TAC process. The purpose of the kick-off meeting is to discuss the project description, take inventory of the materials to be reviewed, and define the goals and objectives of the TAC. The goals and objectives of the TAC will be focused on providing the District with a sound, independent review regarding the preliminary feasibility of the Matilija Project. The unified TAC goals and objectives will be provided to the District for review to establish consensus moving forward with the TAC review.

Task 3. Review and Assessment of Available Information

Each of the TAC members will perform an independent review and assessment of available materials, and will prepare individual internal memoranda regarding their respective evaluation of materials. The memoranda will include questions and conclusions about the materials provided to that point, and recommendations for further action or requirements. Once the memoranda are provided to and reviewed by Pueblo, a meeting amongst the TAC members will be held to discuss results of the independent TAC reviews. The reviews will be discussed in terms of the goals and objectives previously established by the TAC.

Task 4. TAC Summary Memorandum

A unified, summary memorandum will be prepared following completion of Task 3 incorporating the questions, concerns, and conclusions resulting from the TAC review. The memorandum will first be issued as a draft, and Pueblo will meet with the District to discuss. Following consideration of District input, the memorandum will be finalized. Pueblo will be available to present and discuss the memorandum with District staff and/or Board members at a committee meeting.

Estimated Fees

The total cost for the first phase of the Matilija Project TAC is estimated to total \$22,916. The cost estimate is based on the established scope of work and the fee schedules of the various TAC members, and includes a 15% markup on fees for Pueblo's TAC subconsultants. A spreadsheet showing estimates of costs by task is attached, and a summary of the estimated costs is presented in the table below:

**Estimated Costs Summary
 Matilija Formation Water Supply Project TAC – Phase 1**

Task Description	Estimated Cost
1 – Project Management and TAC Coordination	\$2,460
2 – Project Definition and TAC Scope Development	\$2,130
3 – Review and Assessment of Available Information	\$12,120
4 – Consolidated TAC Summary Memorandum	\$6,206
Total Estimated Costs	\$22,916

Project Schedule

All members of the TAC are prepared to begin work immediately upon notice to proceed. An estimate of the time of completion of each task, from the notice to proceed date, is provided below:

Task Description	Completion from NTP
1 – Project Management and TAC Coordination	4 weeks
2 – Project Definition and TAC Scope Development	6 weeks
3 – Review and Assessment of Available Information	10 weeks
4 – Consolidated TAC Summary Memorandum	12 weeks
Total Project Completion Duration	3 months

We appreciate the opportunity to provide assistance to the District with the evaluation of the Matilija Project feasibility. Please contact me if you have any questions or require additional information regarding the TAC or this proposal.

Sincerely,

PUEBLO WATER RESOURCES, INC.



Michael S. Burke, P.G., C.Hg
Principal Hydrogeologist

Attachments: TAC Committee Member Bios
Cost Estimation Worksheet

DRAFT

TECHNICAL ADVISORY COMMITTEE BIOS
MATILJA FORMATION GROUNDWATER SUPPLY PROJECT

Martin Feeney, P.G., C.E.G., C.Hg.

Mr. Feeney is a California Professional Geologist with specialty certifications in engineering geology (CEG) and hydrogeology (CHg) in with more than 35 years' experience in groundwater consulting. Mr. Feeney is also holds the title of Certified Ground Water Professional from the National Ground Water Association. Mr. Feeney was a founding Principal of the Ventura Consulting Firm, Staal, Gardner and Dunne, Inc. Mr. Feeney has been an independent consultant for the last 20 years. Mr. Feeney's experience in groundwater supply issues includes basin analysis, well siting and design, groundwater modeling (both flow and solute-transport), perennial yield analysis, water quality assessments, and regulatory compliance.

During his career, Mr. Feeney has designed and managed the construction of over 130 municipal wells with depths to 2,500 feet, diameters to 24-inches and discharge rates of up to 6,000 gpm. Mr. Feeney has significant experience in drilling and well construction technology as well as the assessment and rehabilitation of existing wells. Mr. Feeney also has significant experience with hydrogeologic issues associated with desalination facilities, and has designed, permitted, and installed intake and brine disposal wells for projects in California and in the Caribbean.

In recent years, Mr. Feeney has served on various advisory panels and water commissions, including those for the Seaside Basin Watermaster, the City of Santa Barbara, and the City of Ventura.

Paul Sorensen, P.G., C.E.G., C.Hg., GSI Water Solutions, Inc.

Paul Sorensen has more than 30 years of experience managing and performing projects related to hydrogeology and geology with specific expertise in groundwater supply, basin analysis, and water resource management. His technical expertise includes water well and monitoring well design and construction of deep municipal wells in unconsolidated and consolidated aquifer regimes, regional groundwater basin analyses, perennial yield and basin-wide water balance calculations, groundwater quality studies, and aquifer test analyses. Paul is also an integral part of GSI's senior team of groundwater specialists that addresses the complex issues arising from California's Sustainable Groundwater Management Act (SGMA).

Joe Oliver, P.G., C.Hg.

Mr. Oliver has over 40 years' experience in the field of groundwater hydrology. He was formerly the Water Resources Manager for the Monterey Peninsula Water Management District (MPWMD) where he was the principal investigator for all groundwater-resources investigations conducted by MPWMD for more than two decades, including the construction of numerous monitoring and production wells. His work at MPWMD included the oversight of groundwater supply investigations from fractured rock aquifer systems in the Monterey Peninsula region, and

development of a database to better track and understand the opportunities and constraints associated with these resources.

His previous engagements have included the U.S. Geological Survey, the Colorado Department of Natural Resources, and several private consulting firms specializing in water resources management throughout the Western U.S. He holds a bachelor's and master's degree in geology, specializing in hydrogeology and is a California Registered Geologist and Certified Hydrogeologist. His expertise includes geochemistry, well technology, well rehabilitation, aquifer testing, aquifer storage and recovery, groundwater modeling, and water resources sustainability assessment.

Casitas Municipal Water District

Matilija Formation Groundwater Supply Project TAC - Phase 1



Estimated Fees for Professional Services

LABOR		Principal Professional Pueblo	M. Feeney	P. Sorensen GSIWS	J. Oliver	Hours by Task	Estimated Task Cost *
Hourly Fee		\$205	\$205	\$260	\$190		
Task	Task Description						
1	Project Management and TAC Coordination	12				12	\$ 2,460
2	Project Definition and TAC Scope Development	4	2	2	2	10	\$ 2,130
3	Review and Assessment of Available Information	8	16	16	16	56	\$ 12,120
4	Consolidated TAC Summary Memorandum	8	2	2	16	28	\$ 6,206
						Total Labor Hours:	106
						Total Labor Costs:	\$22,916

* Includes 15% Markup on TAC Subconsultants

**CASITAS MUNICIPAL WATER DISTRICT
MEMORANDUM**

TO: MICHAEL FLOOD, GENERAL MANAGER

FROM: JULIA ARANDA, ENGINEERING MANAGER

SUBJECT: ROBLES DIVERSION FISH SCREEN ALTERNATIVES FEASIBILITY STUDY

DATE: 04/16/2019

BACKGROUND AND DISCUSSION:

The District engaged the services of MKN and Associates (MKN), along with their subconsultants, Alden Labs and Rincon Consultants, to evaluate alternatives to replace the fish screens at the Robles Diversion Facility so the full diversion can be achieved across the greatest range of flows. District staff, MKN, Alden, and Rincon developed a preliminary screening list of alternatives, which were then rated and ranked to develop a short list of feasible alternatives. Four alternatives were then developed to preliminary design level, including conceptual drawings, engineer's estimate of probable construction costs, time line for implementation, permitting issues, and ability to prototype. The four alternatives are:

1. Alternative 1 – Improve Existing Fixed Screen System and Associated Brush Cleaner System
2. Alternative 2 – Install a Backspray System to Work in Tandem with Improved Brush System
3. Alternative 3 – Replace the Existing Fixed Screen System with Traveling Screens
4. Alternative 4 – Independent Auxiliary Water Supply for Fish Ladder to Work in Tandem with Improved Brush System

This information was presented in the Draft Robles Diversion Fish Screen Alternatives Feasibility Study. MKN will present the results of this work and the recommended next steps for implementation.

Attachments: Summary of Evaluation Matrix

**Table 4-1
Summary of Alternatives: Evaluation Matrix**

Relative Rank	Potential for Improved Performance	Operational Simplicity	Permitting Requirements	Implementation Complexity	Capital Cost	Operation and Maintenance Cost	Ability to Prototype
First	Improvement expected, but other alternatives would be more effective.	The components would be no more complex to operate and maintain than the existing system.	No anticipated permitting requirements.	6 - 8 months	\$15,000 - \$30,000	Power cost is not expected to increase significantly	Changes are readily implementable and could be tested on a single side of the fish screen channel.
Second	Improves upon Alternative 1, but would not reduce the hydraulic or debris load on the fish screen channel	The pumps, nozzles and filter system are new components that would require routine monitoring and maintenance.	No change to facility footprint. Permits may be required to discharge pump filter backwash into the channel. Informal consultation with NMFS should be anticipated.	21 - 29 months	\$2,480,000	Power cost and operator attention are expected to be significant. Additionally, the filtration system will require routine maintenance including replacement of sand or other media	A prototype consisting of a single gang of 6 backspray pipes installed behind two screen panels, a pump and a filter could be installed without substantial changes to the existing facility.
Third	Substantial increase in cleaning rate and removing debris from the fish screen channel offers best opportunity for improvement.	There would be new motors and controls to maintain, but expectation is that this would be relatively infrequent.	Change to facility footprint would trigger requirements for RWQCB, USACE and CDFW permits. Sensitive species permitting would be required. Informal consultation with NMFS should be anticipated.	32-41 months	\$11,900,000	Power cost will be higher under this alternative.	A prototype test would require the purchase of a single traveling water screen and the installation of the screen support structure. Modest changes to the existing system, but no major structural modifications would be required.
Fourth	Improves upon Alternative 1, and reduces the flow rate that must pass through the existing fish screen channel.	A second, independent screen system for the AWS supply would need to be monitored and maintained.	Change to facility footprint would trigger requirements for RWQCB, USACE and CDFW permits. Change to fish ladder AWS flow supply is a material difference from the original design. Consultation with NMFS should be anticipated.	26-35 months	\$4,000,000	Raising and lowering the screens into position will require additional power cost but impact will be relatively minor compared to the other alternatives.	This alternative could not be prototype tested. However, the effect on the existing fish screen system could be estimated by observing the performance with the flow rate reduced to 500 cfs from 621 cfs.

MEMORANDUM

TO: Water Resources Committee
From: Michael L. Flood, General Manager
RE: 2019 Casitas Water Supply and Demand Assessment
Date: April 12, 2019

1. **BACKGROUND**

In accordance with the direction provided in the Water Efficiency and Allocation Program, adopted May 9, 2018, specifically Section 5.2 entitled “*Water Resource Conditions and Actions*,” the Board of Directors are to receive an assessment of local water supplies, water demands, and current effectiveness of water demand reduction measures. The information in the assessment may necessitate the consideration and direction from the Board of Directors for further actions to preserve water supply for the future.

2. **ANNUAL EVENT SUMMARY**

The annual event summary is to provide insight to unusual events that have occurred within the boundary of the Casitas Municipal Water District that would not otherwise be directly reported in the content of the assessment. The key events are as follows:

- a) The Casitas Municipal Water District has continued to cope with the demands of the acquisition of the Ojai Water System. The acquisition transferred to Casitas the operations and maintenance of the Ojai Water System including six groundwater wells in the Ojai Groundwater Basin which have an ongoing goal of maximizing the use of groundwater for that system through both maintenance and planning for future improvements.
- b) The Thomas Fire of December 2017 has had an continuing effect on District operations primarily centered on the control of turbidity in Lake Casitas for water quality purposes and negative impacts to the operation of the Robles Fish Passage facility.
- c) A groundwater adjudication commenced in the Ojai Valley area through an amended cross complaint filed with the California Superior Court on September 21, 2018. This action included not only Casitas but also many public and private water users in the Ojai Valley. This is of special significance to the District due to its operation of seven groundwater wells in addition to its right to divert water from the Ventura River. There would likely be no impact on water supply for the next twelve months but the District will need to divert funding from other needs in order to cope with increased legal costs.

3. ASSESSMENTS

The assessments are to be considered in the implementation of a Stage and the demand reduction measures for FY 2019-20.

WEATHER CONDITIONS.

During the period of 2012 through 2018, the Ventura River watershed has been in an extreme drought condition with less than average rainfall amounts (Table 1) that had been insufficient to cause the restoration of local water resources. Rainfall totals during the 2019 winter season were above the long-term average rainfall for Matilija and Casitas Dam locations and have had a positive impact to water supplies in the early months of the year.

Table 1 – Rainfall Totals for Matilija Dam and Casitas Dam (inches)

Water Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg.
Matilija Dam	16.56	36.54	40.28	14.21	11.85	14.76	17.57	13.35	31.98	16.75	37.54	28.23
Casitas Dam	14.82	31.13	35.99	15.11	10.99	9.90	11.65	11.07	30.75	9.89	23.04	23.31

The winter storms of 2019 can be described as above-average and significant. The annual rainfall total during the period of October 1 to April 1, 2019, at Matilija Dam and Casitas Dam are respectively 37.54 and 24.77 inches.

WATER RESOURCES.

The primary water resources within the Casitas district boundaries are collectively the groundwater basins of the Ventura River, Ojai and Upper Ojai, and the surface water storage at Lake Casitas.

Groundwater Basins. The winter of 2019 brought significant recovery to the local groundwater basins within Casitas' district boundaries. The rainfall events caused continued flashy peak flows with large amounts of debris and silt from the highly burned Ventura River watershed but this effect diminished toward the end of the season.

The Upper Ventura River groundwater levels have had significant recovery since April of 2018. The recent data presented by the Ventura River Water District illustrates that with this season's storm flows, groundwater levels increased to within a few feet of the normal April 1 average but still short of being completely full (see VRWD April 2019 Newsletter). Groundwater recovery has been assumed to be partially impacted due to the fine sediment and organic matter from the burned watershed finding its way into the permeable gravels of the river. The storage recovery in the Upper Ventura River Basin would likely allow groundwater pumpers to minimize their use of Casitas supply over the next twelve months.

The Ojai groundwater basin is a primary water source for the Ojai Valley's urban and agricultural water demands. The basin's groundwater storage recovered an approximate 63-foot rise in water elevation recorded at a key well in the basin since November of 2018. The Ojai basin Groundwater Management Agency has reported that the Ojai basin has risen to an estimated storage of 57,600

acre-feet (72% capacity) by April 2019 and continuing to rise as water continues to drain from the watershed.

Surface Water Storage. Lake Casitas is the primary source of water supply for the Casitas Municipal Water District. Its construction in the 1950's was as a supplemental supply to local groundwater and as a primary source for areas that do not have groundwater. Figure 1 presents the annual high-low water storage fluctuations that Lake Casitas has experience since 1970. Lake Casitas storage was last at full storage capacity (252,867 acre-feet) in May 2006 and has since been in a declining storage trend due to drought conditions, evaporation, and water use.

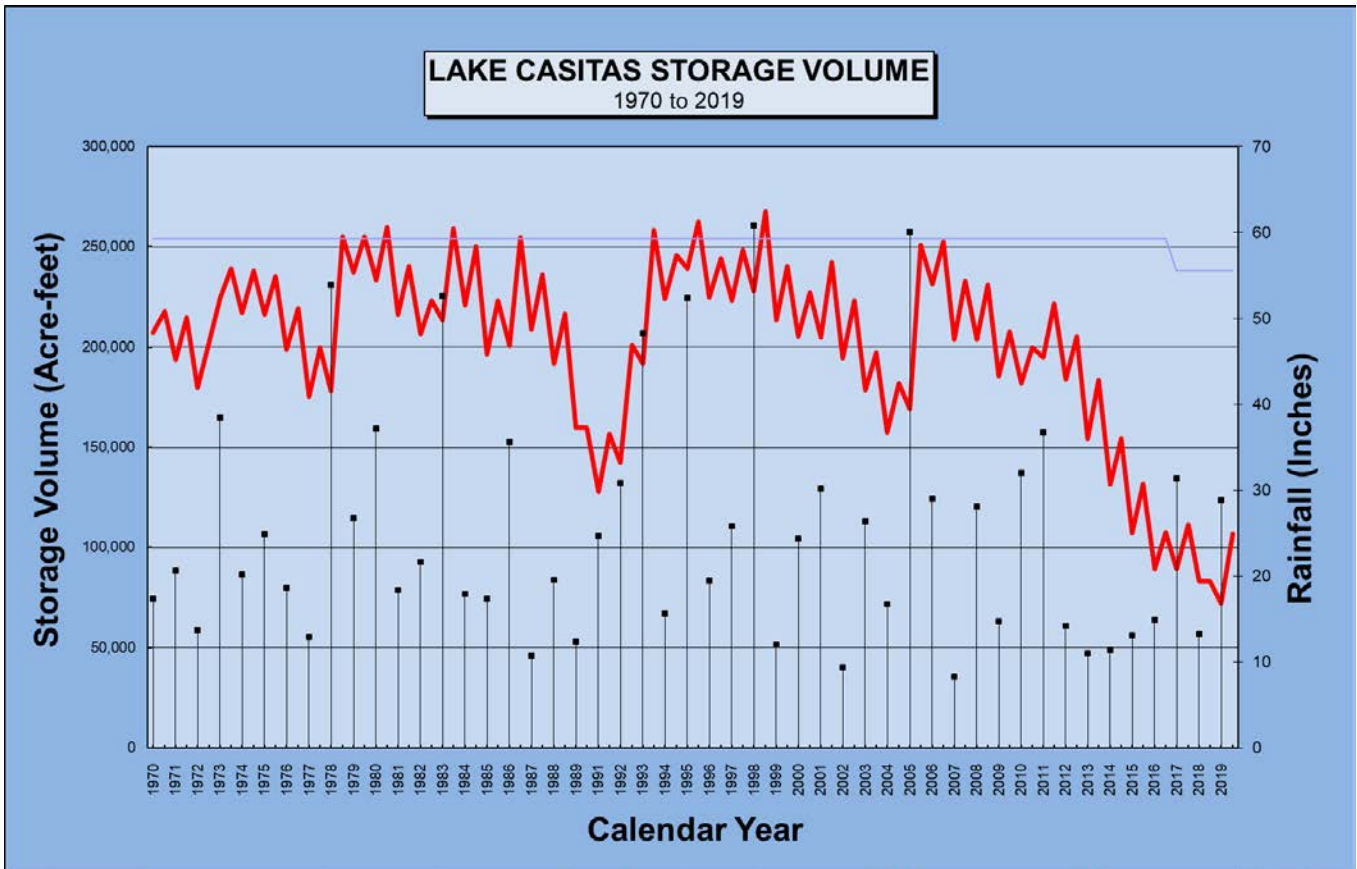


Figure 1 – Lake Casitas Storage Volume and Rainfall Trend (1970 to April 2019)

On January 1, 2018, Casitas officially changed the storage table based on the bathymetric survey conducted at Lake Casitas. The volume stored at each designated percentage specified in the Water Efficiency and Allocation Program (WEAP) is changed to reflect the data provided by the bathymetric survey as follows:

Table 2 – WEAP Stages and Lake Casitas Volumes

Stage	<u>Stage 1</u>	<u>Stage 2</u>	<u>Stage 3</u>	<u>Stage 4</u>	<u>Stage 5</u>
Percent Storage	100%	50%	40%	30%	25%
Volume (Acre-feet)	237,975	118,988	95,190	71,393	59,494

On January 9, 2018, Lake Casitas storage level declined to 72,478 acre-feet. The 2019 winter rain storms caused a significant rise in the Lake Casitas storage volume to 106,732 acre-feet on April 10, 2019.

In consideration of a April 2019 start point at 106,742 Acre-feet in storage at Lake Casitas, applying evaporation, no runoff additions to storage, and comparing three rates of water demands, Figure 2 illustrates the time for Lake Casitas to reach a particular level. This chart illustrates that with the given demand rates, no additional rainfall and runoff, the District could reach Stage 3 in five to nine months, Stage 4 in fifteen months to two years, and Stage 5 in twenty-one months to three years.

Looking forward to the changes of Lake Casitas storage during the remainder of 2019, based on 2018 water demands and estimated evaporation, Lake Casitas is projected to decline to approximately 95,000 acre-foot capacity by November 2019.

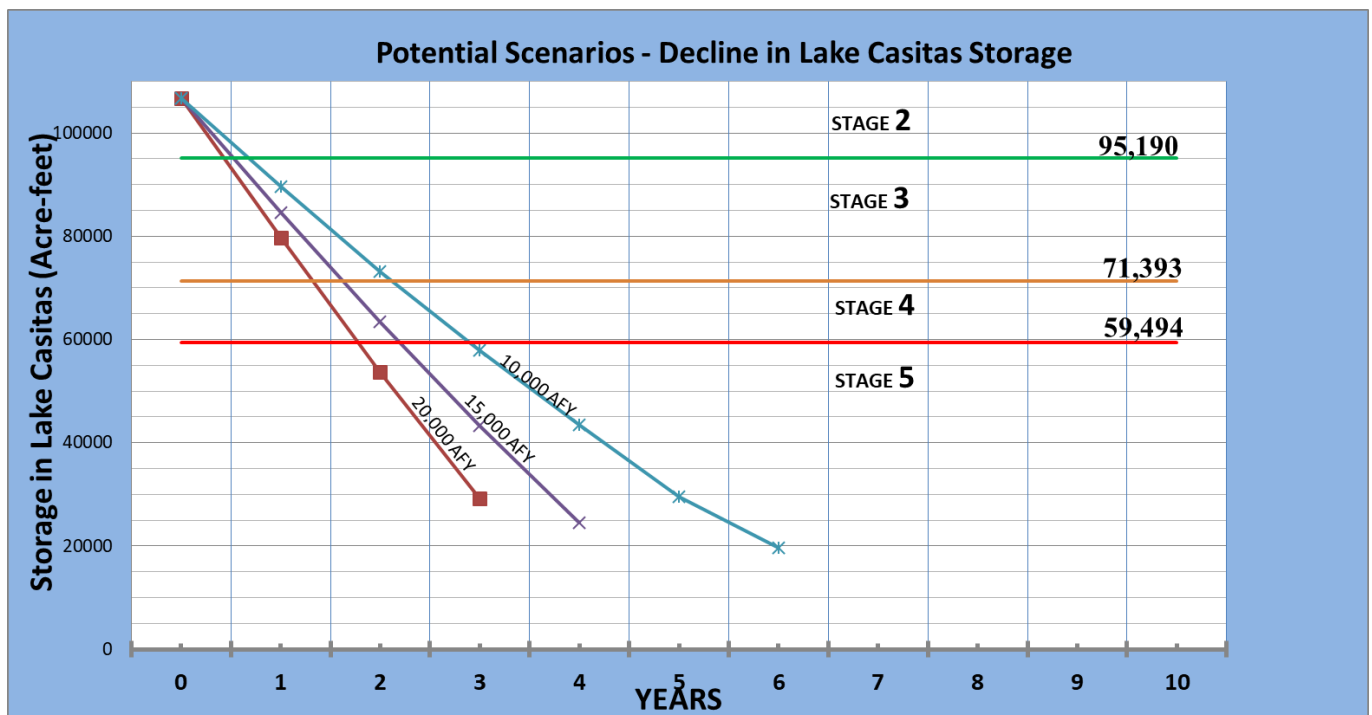


Figure 2 – Hypothetical Decline in Lake Casitas Storage with No Rainfall or Runoff.

WATER DEMAND.

In FY 2013-14, the Casitas water demands from Lake Casitas peaked to 20,417 acre-feet, while Lake Casitas was still in a Stage 1 condition. In April 2014, the State’s Drought Emergency Declaration raised the public awareness to the on-going drought throughout California, the severe conditions in the State Water Project and Central Valley Project, and the growing scarcity of water for agriculture and communities statewide.

In April 2015, Lake Casitas storage declined to fifty percent of its storage capacity and the Casitas Board of Directors declared that a Stage 2 condition existed for the Lake Casitas supply. In doing so, the Board of Directors initiated Stage 2 mandatory water demand reduction requirements with the further adoption of a revised Water Efficiency and Allocation Plan (WEAP). A key element of the WEAP was the assignment of individual water allocations for residential, commercial and agricultural beneficial water uses, and the assignment of a conservation penalty for water use that was in exceedance of the assigned water allocation.

In June 2016, the Casitas Board of Directors declared that a Stage 3 condition exists as Lake Casitas continued to decline to 100,000 acre-feet of water in storage. The Stage 3 declaration implemented a conservation surcharge of \$5.00 per unit and limited the available for new water use to 10 acre-feet per fiscal year. In April 2017, the Casitas Board of Directors continued the Stage 3 declaration, pending further decline of Lake Casitas storage to a Stage 4 level.

From December 2018 through February 2019, the Casitas Board of Directors considered the possibility of a Stage 4 declaration but decided to forego the declaration based on the strong conservation response from the community (near a Stage 5 level) combined with rainfall that had been adding significant supply volume to Lake Casitas.

Water Demand Response. A critical function of the WEAP is to manage water supplies in such a manner that prevents Lake Casitas from reaching a minimum pool condition through the implementation of water demand response measures – the assignment of individual water allocations and the implementation of a conservation surcharge for water use in excess of the allocation.

Since FY 2013-14, the demand on the Lake Casitas supply has continued to decline (Table 3) in response to the WEAP, water resource changes by large customers, and the heightened customer awareness of water resource conditions. The estimated water delivery in FY 2018-19 is an indication of the continuance of the decline in water delivery from Lake Casitas.

Table 3 – Water Deliveries from the Lake Casitas Supply

Fiscal Year	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19 (Estimated)
Lake Casitas Water Deliveries (AF)	20,417	17,339	15,662	13,200	12,322	10,650
% below 2013-14 Delivery	0	15	23	35	40	48
Declared Stage	1	1	2	3	3	3

Each of the listed periods since FY2015 exhibit the water demand reduction resulting from the public outreach, the conservation surcharge, and the effects of the State’s 2014 drought declaration. (Note that the amounts in Table 3 are registered at the Marion Walker Treatment Plant and don’t include system losses thus will differ from amounts reported on the District’s Monthly Consumption Reports).

Conservation Penalty. The District has implemented a conservation penalty for water use in excess of the individual customer’s Stage allocation. The funds resulting from the conservation penalty are to be applied toward new water supply projects and the water conservation efforts of the District.

In September 2015, and for the remainder of FY 2015-16, the residential water used in excess of the monthly allocation was billed as a conservation penalty at the rate of \$1.00 per unit. Effective July 1, 2016, and continued into FY 2018-19, the conservation penalty was increased to \$5.00 and the allocation reduced an additional 10 percent for the Stage 3 condition.

Allocation penalties collected through February 2019 for all residential accounts equates to roughly 240 Acre-Feet of overuse in this category. This is a significant increase from 2018 wherein penalties had been collected on approximately 125 Acre-Feet of overuse. It should be noted however that this

likely due to the fact that Ojai Water System residential accounts were not included in the amount collected in 2018.

Revenue. The Revenue and Expense Report for July 1, 2018 through February 28, 2019, indicates that water sales revenue is \$ 279,820 less than the same period in FY 2017-18. Reasons for this include increased conservation, imposition of conservation penalties on the Ojai Water System, and a wet period from December through the end of February that typically causes a decrease in outside uses.

Growth. The service area of the District is experiencing extremely slow growth. Most requests that Casitas receives are related to expansions of residential housing construction. The slow growth rate is indicative of the information illustrated in Table 5. During the past eight years, Casitas has installed twenty-three meters and issued 29.76 acre-feet of water allocation. On the average, less than three meters have been installed per year and new or additional allocation assignments have been less than four acre-feet per year.

In 2017, Casitas acquired the Ojai Water System in which Casitas has addressed residential and multi-dwelling projects that were in progress at the time of the system acquisition.

Table 4 – Water Service and Allocation Assignments by Casitas (CY 2012-2019)

Calendar Year	No. of Meters Issued	Allocation Issued (AF)
2012	3	2.22
2013	1	1.88
2014	6	9.85
2015	1	1.27
2016	3	2.08
2017	3	5.54
2018	0	0
2019	6	6.92

4. POLICY AND PROGRAMS IN PLACE.

Resolution Adopting Management Priorities of Casitas Municipal Water District, Resolution No. 93-12. On March 10th, 1993, the Casitas Board of Directors resolved by Resolution No. 93-12 (1) that Casitas shall manage Lake Casitas and its water supplies so that it can provide back up to other water systems and meet its direct customer demands during droughts without running the lake dry.

Water Waste Prohibition Ordinance. (Casitas Ordinance 15-02). This Ordinance established water waste prohibitions and identified actions against violations of the Ordinance. Casitas staff has been actively engaged with the public reports of water waste.

Water Conservation Program. Since 1992, Casitas has actively assisted water customers throughout the district with fixture retrofits, irrigation surveys, residential and institutional water use surveys, provision of water conservation materials to local schools, public workshops and

presentations on a wide variety of water conservation topics, public messaging, and financing assistance for water well improvements. The Water Conservation Program has partnered with other Ventura County agencies to obtain grants for additional water conservation measures. The Water Conservation Department is also expected to add two additional positions this next year to assist customers with meeting conservation targets.

Water Efficiency and Allocation Program (WEAP). The WEAP is the key water management tool for long-term drought response and water demand. The WEAP was originally adopted by the Board of Directors in January 1992 and recently revised in May 2018. The WEAP is the backbone to the Casitas Urban Water Management Plan. A critical element of the WEAP implementation is to cause water demands to be commensurate to the declared Stage of Lake Casitas.

State of California. On April 7, 2017, Governor Brown lifted the January 17, 2014 drought declaration, leaving in place water waste prohibitions and requirements for continuing development of urban and agricultural water use standards to promote continued water conservation (Executive Order B-40-17). The State is developing new regulations to continue the conservation measures as well as measures to hold all water users accountable for their water use.

Water Security Projects. The Casitas Municipal Water District is committed to investigating and implementing opportunities to expand water supply availability.

Matilija Formation - Continue to investigate the water availability and quality, field data gathering for environmental considerations is on-going. This project could possibly provide a local emergency water supply. The preliminary schedule for final completion is two years.

State Water Interties – The Casitas Municipal Water District is diligently pursuing the development of the infrastructure and agreements needed for the exchange of State water between Calleguas, the City of Ventura, Casitas, United, and other parties with the discretion of the Casitas Board of Directors and due consideration of the fiscal impacts and funding methods of the project. This is an opportunity for regional collaboration to address common water supply reliability needs of entirety of Ventura County. Additionally, Casitas and Carpinteria Valley Water District are pursuing grant funding to increase the size of a current intertie connection as well as build pump stations to move State Water Project water into Casitas' system. The preliminary schedule for final completion of these projects is five to six years.

Ojai Well Field Rehabilitation – This project is intended to restore the production of the Ojai Well Field wells and also drill one replacement well. This is expected to be completed within two years.

Comprehensive Water Resources Plan - While not specifically a water security project, Casitas has hired a consultant to analyze current water resources and develop a plan that will support the development of appropriately-sized projects. One primary component is a refreshed analysis of the safe yield of Lake Casitas, taking into account possible climate change aspects. Work on the plan began earlier this year and is expected to be complete in Fall 2019.

5. RECOMMENDED WEAP ACTIONS

The WEAP lists in Table 5 a series of actions to be considered by the Board of Directors for implementation when transitioning to any Stage condition of Lake Casitas. A revised copy of the Table 5 is attached to the end of this memorandum that has a few recommended updates included.

The following are the staff recommendations for WEAP actions to be considered for adoption by the Board of Directors at the April 24, 2019 Board Meeting:

Customer Demand Reduction Measures

1. **Continue with Stage 3 measures.** With the possibility of Lake Casitas returning to Stage 3 levels below 95,000 Acre-Feet later this year, a Stage 3 condition should remain in place. Water conservation is a way of life for the District's customers and the District should use the continued Stage 3 declaration as a means to reinforce that message. The enforcement of the Water Waste Prohibition Ordinance should continue during Stage 3 under the current system of public notification of waste. The system for allocation assignment and billing should continue as Stage 3, until such time that the Board makes a different determination. The Board should review the WEAP Stage declaration in February 2020.
2. **Continue current reduced water allocations.** Continue Stage 3 until water supply conditions warrant a change. If the water demand reduction measures are not being met during the course of FY 2019-20, the conservation penalty should be increased.
3. **Landscape watering restriction.** Continue with an advisory (not mandatory) one day per week. Casitas has heard from other local agencies that there is a difficulty in water systems meeting landscape irrigation water demands on one day a week basis. Casitas has also heard from landscape maintenance, parks, special facilities, and direct customers that this requirement is difficult to meet.

Penalties and Rates.

1. **Consider and implement Conservation Penalty for water use in excess of allocation.** Continue with the current conservation penalty of \$5.00 for each unit of water that is over the monthly allocation assignment for all classifications of service. It is recommended to keep the conservation penalty at the same value for FY 2019-20 and change only if it is determined that water demand reduction is not being attained. Direct staff to work with customers that are repetitively in excess of the allocation assignments.
2. **Continue planned rates for revenue stabilization and cost of service.** The Board has adopted water rates to achieve revenue stabilization and cost of service that became effective July 1, 2017 and continue over four years.
3. **Provide a revised Conservation Penalty appeals process**
Staff and the Board of Directors have been working on a revised appeals process to address customers with an appeal of their conservation penalty. The revised appeals process recommendation is expected to be complete within the next few months.

Issuance of Additional Allocations

1. **Continue to set an annual allocation limit for new or existing water service connections.** Adhere to the Board's prior direction to limit the volume of water to be allocated to new service connections or requests for additional allocation. Based on the Growth section above, a limit of 10 acre-feet per fiscal year appears to be a reasonable approach.

Communications

1. **Continue communicating the Stage 3 Condition.** Stage 3 is identified as a condition in which a water shortage is eminent. The current demand for Lake Casitas supply is fifty percent less than the 20,000 acre-foot safe yield of Lake Casitas (Table 3) which is compliant with the Stage 5 demand reduction target. The conservation message is working at this point in time. The Board of Directors may consider at any time however to move to a particular Stage based on a number of factors including conservation response, supply forecasts, current supply, etc.
2. **Continue the public information campaign.** Despite the Governor's action to declaring the ending of the California drought, local water users have continued to conserve. The local resale agencies also recognize that their water supplies are subject to sufficient rainfall and they may have to rely again on Lake Casitas under continuing drought conditions. Casitas needs to continue the messaging of local water supply reliability, water supply project status, and responsible water use. This can be done through newsletters, website and social media posts, and public workshops.
3. **Provide regular briefings, publish monthly consumption report.** A part of this task is being accomplished by staff as a requirement of the State Water Resources Control Board. The billing system provides each customer a monthly status on their water use and the application of conservation surcharges.

Modification of the WEAP.

1. Modification of Section 5.7 to include an appeal process for Conservation Penalties (to be determined by the Board of Directors upon recommendation of staff).
2. Incorporate Table 5 (herein) as revised.
- 3.

Table 5 – Stage Actions and Water Demand Reduction Measures

Water Shortage Condition	Key Casitas Communications and Actions	Customer Demand Reduction Measures	Penalties And Rates
<p>Stage 1</p> <p>Supply Range 100% - 50%</p> <p>Voluntary Demand Reduction To Stage 1 Allocation</p>	<ul style="list-style-type: none"> • Initiate public information and advertising campaign. • Publicize ways to reduce water consumption. • Coordinate conservation actions with other water purveyors and cities. • Perform water audits and promote water efficient use/conversions. • Conduct water workshops. • Temporary staffing for public inquiries, as needed. 	<ul style="list-style-type: none"> • Water conservation practices requested of all customer classifications. • Adhere to Water Waste Prohibition Ordinance and State of California laws and regulations regarding water waste • Adhere to assigned water allocation or less. 	<ul style="list-style-type: none"> • Consider and implement Conservation Penalty for water use in excess of allocation. • Consider rates for revenue stabilization and cost of service.
<p>Stage 2</p> <p>Supply Range 50% - 40%</p> <p>Mandatory Demand Reduction to Stage 1 Allocation</p>	<ul style="list-style-type: none"> • Declare Stage 2 • Implement demand reductions for each customer classification. • Intensify public information campaign. • Optimize existing water resources. • Intensify leak detection. • Develop appeals staffing. • Consult with major customers to develop conservation plans and water use audits. 	<ul style="list-style-type: none"> • Continue all Stage 1 measures. • Landscape watering advised to two (2) watering days per week. • Require water audits for large water users; implement recommendations of the water audits. • Businesses display “save water” signage. • Increase public information. 	<ul style="list-style-type: none"> • Consider and implement Conservation Penalty for water use in excess of allocation – response to reduced allocation. • Consider rates for revenue stabilization and cost of service.
<p>Stage 3</p> <p>Supply Range 40% - 30%</p> <p>Demand Reduction From Stage 1 Allocation 10%</p>	<ul style="list-style-type: none"> • Declare Stage 3 • Implement demand reductions for each customer classification. • Expand and intensify public information campaign. • Provide regular briefings, publish monthly consumption report. • Hire additional temporary staff in customer service and conservation. Water waste enforcement. 	<ul style="list-style-type: none"> • Continue with Stage 1 and 2 measures. • Reduced water allocations. • Landscape watering advised to one (1) watering day per week. 	<ul style="list-style-type: none"> • Consider and implement Conservation Penalty for water use in excess of allocation – response to reduced allocation. • Consider rates for revenue stabilization and cost of service.
<p>Stage 4</p> <p>Supply Range 30% - 25%</p> <p>Demand Reduction From Stage 1 Allocation 20%</p>	<ul style="list-style-type: none"> • Declare Stage 4 • Implement demand reductions for each customer classification. • Continue to provide regular media briefings. • Open drought information center. 	<ul style="list-style-type: none"> • Continue with Stage 1 through 3 measures. • Reduced water allocations. • Landscape watering advised to one (1) watering day per week. • Consider prohibition of filling swimming pools and fountains. 	<ul style="list-style-type: none"> • Consider and implement Conservation Penalty for water use in excess of allocation – response to reduced allocation. • Consider rates for revenue stabilization and cost of service.
<p>Stage 5</p> <p>Supply Range 25% - 0%</p> <p>Demand Reduction From Stage 1 Allocation 30%</p>	<ul style="list-style-type: none"> • Declare Stage 5 • Implement demand reductions for each customer classification. • Minimize outdoor water use and non-essential uses. • Implement aggressive public outreach and education program. • Implement crisis communications plan. • Coordinate with State and local agencies to address enforcement challenges. • Water Shortage Emergency declaration to be considered. • Consider further Staged reductions and other future Board actions 	<ul style="list-style-type: none"> • Continue with Stage 1 through 4 measures. • Reduced water allocations. • Rescind Temporary meters issued. 	<ul style="list-style-type: none"> • Consider and implement Conservation Penalty for water use in excess of allocation – response to reduced allocation. • Consider rates for revenue stabilization and cost of service.