# FINAL
# URBAN WATER MANAGEMENT PLAN AND AGRICULTURAL WATER MANAGEMENT PLAN 2016 UPDATE

## JUNE 2016

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## FREQUENTLY USED ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| AB | Assembly Bill |
| AF | acre-foot |
| AFY | acre-foot per year |
| AWWA | American Water Works Association |
| AWMP | Agricultural Water Management Plan |
| 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 |
| EWMP | Efficient Water Management Practices |
| 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 |
| 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 combined Urban Water Management Plan/Agricultural Water Management Plan (UWMP/AWMP). The Casitas MWD is required to prepare the UWMP as per requirements by the California Department of Water Resources. The Casitas MWD does not meet the requirements of an agricultural water supplier, but is voluntarily including elements of the AWMP in this document. The UWMP elements comply with the requirements of California Water Code (Section 10610-10656). The AWMP elements comply with the requirements of the SB X7-7 Water Conservation Act (California Water Code, Section I, Part 2.55, Division 6, Section 10608.48-10608.64), Agricultural Water Management Planning Act of 1986 (California Water Code, Section I, Part 2.8, Division 6, Section 10800-10853), Agriculture Water Measurement Regulation (California Code of Regulations, Title 23, Section 597), and Governor Brown's Executive Order B-29-15. Casitas MWD chose to prepare a combined UWMP/AWMP since there are many similar requirements for each document.

This combined UWMP/AWMP 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 combined UWMP/AWMP include the following:

- Summarize description of the Casitas MWD water system
- 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 and water efficient uses for urban and agricultural water supplies. The combined UWMP/AWMP is Casitas MWD's commitment to a long-term plan to ensure water reliability into the future.

The California Agricultural Water Management Planning Act (Act) requires agricultural water suppliers to develop and adopt an AWMP (California Water Code, Section 10800-10853). The Casitas MWD does not meet the requirements of an agricultural water supplier, but is voluntarily including elements of the AWMP in this document. The AWMP is regarded as a guideline subject to revision, with each update incorporating new strategies and requirements in response to new legislation and other changing conditions. Similar to the UWMP requirements, the AWMP includes
quantification of water supplies and demands, reliability, drought management, and summary of efficient water management practices (similar to demand management measures and best management practices).

The Casitas MWD notified applicable local agencies and organizations regarding preparation of the UWMP/AWMP and planned public meeting dates and times. Casitas MWD encourages representatives from those organizations and the public to attend Casitas MWD's public meetings. Casitas MWD provided notification via newsletter to customers, direct letter, Casitas MWD Facebook page, and via Casitas MWD website:

**http://www.casitaswater.org/calendar.php?id=11337943**.

Casitas MWD invited comments from organizations and the public as well. Casitas MWD held a community workshop on May 18, 2016 to provide a summary of the UWMP/AWMP and receive public comments and questions. Casitas MWD held a public hearing on June 22, 2016 in Casitas MWD's Board Room. The Board of Directors adopted the UWMP/AWMP following the public hearing. A copy of the Board Resolution is provided in **Appendix D**. The Casitas MWD will submit the adopted UWMP/AWMP to the California Department of Water Resources. A copy of the UWMP checklist is provided in **Appendix O**.

## 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, local groundwater 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).

The western portion of Ventura County, California, which includes unincorporated portions of Ventura County, the City of Ojai, and the City of 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 groundwater 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 later was renamed Casitas Municipal Water District, in 1971) 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.

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. Construction of the Ventura River Project (Project) was completed in 1959 and Lake Casitas filled for the first time in 1978. 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. The Project serves as a primary supply for many direct customers and as a supplemental, or backup supply, for groundwater users during times of drought.

The main source of water supply for Casitas MWD is Lake Casitas, which has a full capacity of 254,000 acre-feet of water. Casitas MWD also maintains and operates one (1) well with a capacity of approximately 300 acre-feet per year. Casitas MWD's distribution 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 meters all of its direct service customers, including meters on all connections to other water agencies. In 1995, Casitas MWD added a sixty-five million (65,000,000) gallon per day pressure filtration treatment plant. Casitas MWD further treats filtered water with chloramination for disinfection and additives for corrosion control.

Population growth in the district paralleled population growth in southern California until approximately 1960. Population within the Casitas MWD's service area in 1960 was approximately

45,000. In 2010, the Casitas MWD served directly and indirectly a population of approximately 68,557. (CMWD, 2011) See **Table ES-1** for details. 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 groundwater wells. Casitas MWD has nearly 3,200 retail customers in total with 2,925 direct urban customers, 249 agricultural meters, and 23 resale meters.

The current population forecast for the Casitas MWD's 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). 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 (see **Table ES-1**). 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 groundwater sources to supplement the increased demand.

**TABLE ES-1**
**CASITAS MWD SERVICE AREA POPULATION**

| Population | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|---|
| CMWD Service Area (1,2,3) | 68,557 | 70,288 | 72,063 | 73,883 | 75,748 | 77,661 | 79,622 |

Notes:
(1) CMWD, 2016.
(2) Casitas MWD 2010 service area population from CMWD UWMP, 2011.
(3) Casitas MWD service area population for 2015-2040 based on growth rate 0.5 percent per year (SCAG, 2016).

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 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 in 2014 include avocados, hay, lemons, oranges, strawberries, tangerines, and walnuts.

## ES.3 SYSTEM 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 phrase "water demand" and "water use" will be used interchangeably throughout this document. Casitas MWD 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 groundwater 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 groundwater 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 groundwater 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 a 21-year safe yield of 20,840 acre-feet (current safe-yield) based on the historical 1944-1965 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' Water Efficiency and Allocation Program was adopted by the Casitas MWD's Board of Directors. The Program was adopted to encourage efficient use of water, to reduce overall water demand, and, to ensure the safe annual yield of supply would not exceed the critical 21,920 acre-feet per year average (as it was determined at that time).

**Table ES-2** summarizes the Casitas MWD water demands for recent Fiscal Years 2000, 2005, 2010, and 2015. **Table ES-2** indicates the 2000 demands were 19,389 AF (average water-year), including sales to other agencies of 7,186 AF (37%), agricultural sales of 9,115 AF (47%), and non-agricultural retail sales of 3,088 AF (16%). In comparison, **Table ES-2** indicates that Casitas MWD water demands for 2015 (dry water-year) were 16,747 AF, including sales to other agencies of 6,192 AF (37%), agricultural sales of 8,048 AF (48%), and non-agricultural retail sales of 2,507 AF (15%). By comparison of 2000 demands and 2015 demands, **Table ES-2** indicates that total demands decreased by nearly 14 percent, sales to other agencies decreased by 994 AF (14%), agricultural sales decreased by 1,067 AF (12%), and retail sales decreased by 581 AF (19%). Much of this decrease in water demand is the direct result of demand management measures implemented by the Casitas MWD and regional water agencies. In 2015, Casitas MWD total retail water demands were 10,554 AF, including agriculture sales (historically the category with highest water demand) of 8,048 AF (76%), and residential sales (including single-family and multiple-family accounts) of 1,512 AF (14%).

As previously noted, local agricultural water demand is historically the highest water demand for Casitas MWD. In addition, agricultural water demand within the Casitas MWD service area 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 groundwater sources become depleted quickly and they then must rely on Casitas MWD's surface water supplies. Annual average agricultural water use within the service area was 7,425 AF for the period 2011-2015, including a low of 5,206 AF in 2011 to a high of 9,427 AF in 2014.

**TABLE ES-2**
**PAST AND CURRENT POTABLE WATER USES 2000-2015**

| **Category** (1) | **2000** | **2005** | **2010** | **2015** |
|---|---|---|---|---|
| Sales to other agencies | 7,186 | 7,118 | 6,482 | 6,192 |
| Agricultural sales (2) | 9,115 | 8,939 | 6,398 | 8,048 |
| Retail sales (2) | 3,088 | 2,821 | 2,427 | 2,507 |
| **Total** | **19,389** | **18,877** | **15,307** | **16,747** |

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded. Data does not include water losses.
(2) Direct sales to CMWD customers.

**Table ES-3** summarizes the Casitas MWD projected water uses for the period 2020-2040. **Table ES-3** indicates the total water demands for the period 2020 to 2030 are projected to be approximately 17,200 AF (average water-year). For the period 2020 to 2030 (during average water-years), sales to other agencies are projected to be 6,200 AF, agricultural sales 8,000 AF, and non-agricultural retail sales of 3,000 AF. For the period 2030 to 2040, total water demands are projected to be approximately 17,500 AF. For the period 2030 to 2040, **Table ES-3** indicates that sales to other agencies are projected to be 6,500 AF, agricultural sales 8,000 AF, and non-agricultural retail sales of 3,000 AF. Casitas MWD estimates that agricultural sales and retail sales will remain fairly consistent for the period 2015 to 2040 due to current and future demand management measures implemented within the service area.

Average water demand is not anticipated to increase above the current safe-yield of 20,840 acre feet 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 annually.

## ES.4 SYSTEM SUPPLIES

Casitas MWD relies on surface water and groundwater sources to meet the water demands of the area. **Table ES-4** summarizes the quantities of water supplies in the Casitas MWD water portfolio for Fiscal Years 2011-2015. **Table ES-4** indicates that for the period 2011-2015, the Casitas MWD average water supply is 17,293 AF with a range from 14,745 AF (2011) to 20,457 AF (2014).

**TABLE ES-3**
**PROJECTED POTABLE WATER USES 2020-2040**

| **Category** (1) | **2020** | **2025** | **2030** | **2035** | **2040** |
|---|---|---|---|---|---|
| Sales to other agencies | 6,200 | 6,200 | 6,500 | 6,500 | 6,500 |
| Agricultural sales (2) | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Retail sales (2) | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| **Total** | **17,200** | **17,200** | **17,500** | **17,500** | **17,500** |

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded. Data does not include water losses.
(2) Direct sales to CMWD customers.

**TABLE ES-4**
**PAST AND CURRENT WATER SUPPLIES 2011-2015**

| **Water Supply Sources** (1) | **2011** | **2012** | **2013** | **2014** | **2015** |
|---|---|---|---|---|---|
| Local surface water (Lake Casitas) | 14,678 | 15,233 | 18,233 | 20,415 | 17,339 |
| Local groundwater (Mira Monte Well) | 67 | 232 | 173 | 42 | 54 |
| 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** | **14,745** | **15,465** | **18,406** | **20,457** | **17,393** |

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded. Fiscal Years.
(2) Transfer to Carpinteria Valley Water District.

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 (Ventura River Project or "Project"). 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. 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.

The Ventura River watershed 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. Recently, Casitas MWD has considered additional influences on 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 does provide 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.

**Table ES-4** indicates that for the period 2011-2015 average surface water supplies is 17,180 AF with a range from 14,678 AF (2011) to 20,415 AF (2014). The quantity of Project water is dependent on local rainfall and runoff from the local watershed. As previously noted, the Ventura River watershed is prone to frequent periods of drought which significantly reduces local precipitation and runoff thereby decreasing inflow to Lake Casitas. 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 acquired the Mira Monte Mutual Water Company (MMMWC) in November 1982 along with its Mira Monte Well. **Table ES-4** summarizes the volume of groundwater extracted by Casitas MWD for Fiscal Years 2011-2015. **Table ES-4** indicates that for the period 2011-2015 average annual groundwater extracted is 114 AF with a range from 42 AF (2014) to 232 AF (2012).

The Casitas MWD has both surface water and groundwater sources, which present very different water quality issues. Surface water comes from Lake Casitas (from the Ventura River watershed) and the groundwater is locally produced via Mira Monte Well. The Casitas MWD potable water meets all water quality requirements of the California Division of Drinking Water.

Currently, Casitas MWD relies on local surface water and local groundwater for 100 percent of water supplies to meet water demands. Casitas MWD currently does not produce nor receive desalinated water, recycled water, transfers, or exchanges.

Casitas MWD will continue to rely on surface water and groundwater sources to meet the anticipated water demands of the service area. **Table ES-5** summarizes the quantities of projected water supplies in the Casitas MWD water portfolio for the period 2020 to 2040. **Table ES-5** indicates that for the period 2020-2040 projected water supplies will be 20,840 AFY. **Table ES-5** indicates that local surface water will be approximately 20,540 AFY (98.5%) for the period 2020 to 2040. **Table ES-5** indicates that for the period 2020 to 2040 average annual groundwater extracted will be approximately 300 AF (1.5%).

**TABLE ES-5**
**PROJECTED 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 |
| Local groundwater (Mira Monte Well) | 300 | 300 | 300 | 300 | 300 |
| 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** | **20,840** | **20,840** | **20,840** | **20,840** | **20,840** |

Notes:
(1) Source, CMWD, 2016. 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, understanding also that water demands placed on CMWD 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. Casitas MWD will continue to support the water use allocation program with customer specific allocations. 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/AWMP. 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.

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 groundwater 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 assessment includes an average water-year, single dry water-year, multiple dry water-years, and minimum three-year 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.

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, the terms “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 actual water use in Fiscal Year 2011 is 13,549 acre-feet.

**Table ES-6** summarizes the Casitas MWD projected normal water-year supply and 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 and 300 AF of Mira Monte Well groundwater. 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. Casitas MWD chose to use a conservative (high) projection of water demand at 17,200 AFY (more than the recent average 16,000 AFY for years 2010-2015) for the period 2020-2025, and 17,500 AFY for the period 2030-2040. **Table ES-6** indicates that, for a normal water-

year during the period 2020-2025, Casitas MWD's water supply will exceed water demand by 3,640 AFY. For a normal water-year during the period 2030-2040, **Table ES-6** indicates that Casitas MWD's water supply will exceed water demand by 3,340 AFY.

Lake Casitas is sized, constructed, and operated as both a primary water source and a backup water supply for the groundwater 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 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 actual water use in Fiscal Year 2014 is 19,093 acre-feet.

**TABLE ES-6**
**PROJECTED SUPPLY AND DEMAND COMPARISON FOR NORMAL WATER-YEAR FOR 2020-2040**

| | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| Demand totals (AFY) | 17,200 | 17,200 | 17,500 | 17,500 | 17,500 |
| **Difference (supply minus demand) (AFY)** | **3,640** | **3,640** | **3,340** | **3,340** | **3,340** |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

**Table ES-7** 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 acre-feet and 300 AF of Mira Monte Well groundwater. 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. Casitas MWD chose to use a conservative (high) projection of water demand at 20,840 AFY for the period 2020-2040 (exceeding than the maximum demand during the period 2010-2015 of 19,093 AF in 2014). **Table ES-7** indicates that, for a single dry water-year during the period 2020-2040, Casitas MWD's water supply will be equivalent to water demand.

**TABLE ES-7**
**PROJECTED SUPPLY AND DEMAND COMPARISON FOR SINGLE DRY WATER-YEAR FOR 2020-2040**

| | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| Demand totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| **Difference (supply minus demand) (AFY)** | **0** | **0** | **0** | **0** | **0** |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

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 groundwater 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 groundwater 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.

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. 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-8** 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 acre-feet and 300 AF of Mira Monte Well groundwater. 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. Casitas MWD chose to use a conservative (high) projection of water demand at 20,840 AFY for the period 2020-2040 (exceeding the maximum demand during the period 2010-2015 of 19,093 AF in 2014). **Table ES-8** indicates that, for the multiple dry water-years during the period 2020-2040, Casitas MWD's water supply will be equivalent to water demand.

**TABLE ES-8**
**PROJECTED SUPPLY AND DEMAND COMPARISON FOR MULTIPLE DRY WATER-YEARS FOR 2020-2040**

| | | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| First Year | Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | **Difference (supply minus demand) (AFY)** | **0** | **0** | **0** | **0** | **0** |
| Second Year | Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | **Difference (supply minus demand) (AFY)** | **0** | **0** | **0** | **0** | **0** |
| Third Year | Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | **Difference (supply minus demand) (AFY)** | **0** | **0** | **0** | **0** | **0** |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

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 acre-feet and 300 AF of Mira Monte Well groundwater. Therefore, the three-year minimum water supply is 20,840 AF for the period 2016 to 2018 as summarized in **Table ES-9**. 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 to meet local demands.

## 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.

**TABLE ES-9**
**PROJECTED MINIMUM WATER SUPPLY FOR 2016-2018**

| | 2016 | 2017 | 2018 |
|---|---|---|---|
| **Available Water Supply (AFY)** | **20,840** | **20,840** | **20,840** |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

Casitas MWD Resolution 15-02 includes permanently prohibited uses (15 categories) of water that are in effect year round. 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.

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.

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.

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 groundwater 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**
**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, 2016.

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.

## 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.

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.

The UWMP Act currently requires wholesale agencies to provide narrative descriptions of metering, public education and outreach, conservation program coordination and staffing, 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 wholesale agency. The Casitas MWD will comply with the UWMP requirements as a wholesale agency.

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. All of the Casitas MWD direct customers are metered. Casitas MWD has meters for all of the Resale customers.

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. **Section 7** summarizes many of the diverse public education and outreach activities implemented by Casitas MWD.

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, 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. In addition, Casitas MWD also utilizes consulting firms to assist with the implementation of demand management measures.

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 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.

Additional DMMs are summarized in **Section 7** including residential plumbing retrofit, system water audits, large landscape program, high efficiency toilet and washing machine program, commercial programs, wholesale agency programs, conservation pricing, and school education program.

The AWMP Act requires agricultural water suppliers to address Efficient Water Management Practices (EWMP) including two categories of measures: 1) critical activities, and 2) conditional activities. Critical activities are required to be implemented by agricultural water suppliers. Casitas MWD has implemented the critical EWMPs as required: 1) accurate measurement of water deliveries to individual farming operations, and 2) adopting a pricing structure for agricultural water customers based at least in part on quantity of water delivered. Conditional activities must be implemented by agricultural water suppliers if they are locally cost-effective and technically feasible. Each of these EWMPs are summarized in **Section 7**.

# SECTION 1 – INTRODUCTION

## 1.1 PURPOSE

The Casitas Municipal Water District (Casitas MWD) is pleased to release this combined Urban Water Management Plan/Agricultural Water Management Plan (UWMP/AWMP). The Casitas MWD is required to prepare the UWMP as per requirements by the California Department of Water Resources. The Casitas MWD does not meet the requirements of an agricultural water supplier, but is voluntarily including elements of the AWMP in this document. The UWMP elements comply with requirements in California Water Code (Section 10610-10656). The AWMP elements comply with requirements of SB X7-7 Water Conservation Act (California Water Code, Section I, Part 2.55, Division 6, Section 10608.48-10608.64), Agricultural Water Management Planning Act of 1986 (California Water Code, Section I, Part 2.8, Division 6, Section 10800-10853), Agriculture Water Measurement Regulation (California Code of Regulations, Title 23, Section 597), and Governor Brown's Executive Order B-29-15. Casitas MWD chose to prepare a combined UWMP/AWMP since there are many similar requirements for each document.

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

## 1.2 URBAN WATER MANAGEMENT PLANNING ACT

### 1.2.1 Summary

This combined UWMP/AWMP 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 and water efficient uses for urban and agricultural water supplies. The combined UWMP/AWMP 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 A copy of the Agricultural Water Management Planning Act is provided in **Appendix B**.

### 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 A copy of the Agricultural 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 give greater consideration to 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.
- 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 groundwater. 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.

There were many new requirements adopted by the State over the period 2005 to 2010, that must be included in this UWMP/AWMP 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.
- 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 **Appendix E**.

## 1.3 AGRICULTURAL WATER MANAGEMENT PLANNING ACT

### 1.3.1 Summary

The California Agricultural Water Management Planning Act (Act) requires agricultural water suppliers to develop and adopt an AWMP (California Water Code, Section 10800-10853). The Casitas MWD does not meet the requirements of an agricultural water supplier, but is voluntarily including elements of the AWMP in this document. In addition, the AWMP must achieve the requirements of additional state regulations including but not limited to the following: California Water Code, Section 10608.48-10608.64; California Code of Regulations, Title 23, Section 597; and Executive Orders by the Governor of California. The AWMP must be updated every five years in the years ending in zero and five. As such, the AWMP is regarded as a guideline subject to revision, with each update incorporating new strategies and requirements in response to new legislation and other changing conditions. The AWMP will be submitted to the State of California Department of Water Resources (DWR) and Water Resources Control Board (SWRCB) for approval. A copy of the Agricultural Water Management Planning Act is provided in **Appendix C**.

### 1.3.2 History

In 2012, 2013, 2014, and 2015 exceptionally dry conditions were experienced statewide. Annual precipitation in some of areas of the state dropped to their lowest point since record keeping began in the 1800s. Statewide reservoir storage is down significantly and the impact of four dry years in a row is felt everywhere.

On January 17, 2014, with California facing water shortfalls following the driest year in recorded state history, Governor Edmund G. Brown Jr. proclaimed a State of Emergency and directed state officials to take all necessary actions to prepare for these drought conditions. In the State of Emergency declaration, Governor Brown directed state officials to assist farmers and communities that are economically impacted by dry conditions and to ensure the state can respond if Californians face drinking water shortages. The Governor also directed state agencies to use less water and hire more firefighters and initiated a greatly expanded water conservation public awareness campaign (**http://www.saveourh2o.org/** ).

Calendar year 2013 was California's driest year statewide based on records dating to the 1800s, and water conditions three months into a new year suggest the state's drought is pushing into its fourth consecutive year. The 2013-15 drought has resulted in increased public interest in Agricultural Water Management Plans (AWMPs) and water use efficiency. Due to the continuation of severe drought conditions, on April 1, 2015, through Executive Order B-29-151, Governor Brown directed agricultural water suppliers that supply water to more than 25,000 acres to include in their required 2015 agricultural water management plans a detailed drought management plan and quantification of water supplies and demands for the 2013, 2014, and 2015 to the extent data is available.

Governor Brown further directed agricultural water suppliers, including U.S. Bureau of Reclamation (USBR) contractors, which supply 10,000 to 25,000 acres of irrigated lands, to each develop an AWMP and submit it to DWR by July 1, 2016. The Executive Order requires that these plans also include a detailed drought management plan along with quantification of water supplies and demands for the 2013, 2014, and 2015 years to the extent data is available. The Governor directed DWR to give priority in grant funding to this class of water suppliers for the development and implementation of the AWMPs.

In addition, the SWRCB allows urban water agencies to subtract their agricultural customers water use from monthly reporting requirements if they prepare an AWMP.

A copy of the Agricultural Water Management Planning Act is provided in **Appendix C**.

### 1.3.3 Recent Changes to AWMP Act

Recent changes to the AWMP include the following:

- Removal of Agricultural Water Management Council (Council) MOU process as an Agricultural Water Management Plan (AWMP) submittal option, as the Council dissolved in the spring of 2013 and therefore no longer endorses plans.

- Addition of Governor Brown's Executive Order B-29-15 (April 1, 2015), directing all agricultural water suppliers to include a detailed drought management plan in their AWMP, and to include quantification of water supplies and demands for 2013, 2014, and 2015. The Executive Order also directed all agricultural water suppliers that provide water to 10,000 to 25,000 irrigated acres to develop an AWMP and submit it by July 1, 2016. The Executive Order applies to all agricultural suppliers over the irrigated acreage threshold, including USBR contractors.

A copy of the Agricultural Water Management Planning Act is provided in **Appendix C**. Copies of the required data worksheets are provided in **Appendix F**.

## 1.4 PLAN COORDINATION

The Casitas MWD's UWMP/AWMP 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))
- 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 has coordinated its UWMP/AWMP planning efforts with a number of 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/AWMP. 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

The Casitas MWD notified all the local agencies and organizations listed in **Table 1-1** regarding preparation of the UWMP/AWMP and planned public meeting dates and times (see **Appendix F Worksheet 1** for additional details). Casitas MWD encourages representatives from those organizations and the public to attend Casitas MWD's public meetings (**Table 1-2**). The Casitas MWD mailed a letter on April 15, 2016 to all of the agencies listed in **Table 1-1** below in accordance with the requirement to provide notice to all cities and counties at least 60 days prior to the public hearing (see Appendix E Table 10-1 for additional details). The letter also indicated that the Draft UWMP/AWMP would be available for public review prior to a community workshop on May 18, 2016, available at Casitas MWD's website (www.casitaswater.org), and available at the Casitas MWD office located at 1055 Ventura Avenue, Oak View, California, 93022. Casitas MWD invited comments from organizations and the public as well. Copies of public comments received are provided in **Appendix N**.

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. Casitas MWD's Winter 2016 newsletter was sent out in January 2016 to all 30,000 households within the Casitas MWD. This newsletter included the intention of Casitas MWD to hold a public hearing in June 2016 regarding the adoption of the 2016 UWMP/AWMP. Casitas MWD included an announcement in the customer billing statement for April 2016 for the community workshop and public hearing. Casitas MWD also posted an announcement to Casitas MWD's website at www.casitaswater.org for the workshop and public hearing. Casitas MWD noticed and advertised the public hearing in accordance with all of the

requirements of the UWMP/AWMP. In addition, Casitas MWD provided an announcement on all customer's water bills regarding the meetings.

**TABLE 1-1**
**LOCAL ORGANIZATIONS NOTIFIED**

- Carpinteria Valley Water District
- Faria Beach Homeowner's Association
- Golden State Water Company
- Hermitage Mutual Water Company
- Meiners Oaks County Water District
- City of Ojai – City Manager
- Ojai Basin Groundwater Agency
- Ojai Pixie Growers Association
- Ojai Valley Land Conservancy
- Ojai Valley Sanitary District
- Ojai Valley News
- Oak View Library
- Rancho Del Cielo Mutual Water Company
- Rincon Water & Road Works
- Senior Canyon Mutual Water Company
- Siete Robles Mutual Water Company
- Sisar Mutual Water Company
- Sulphur Mountain Road Water Association
- Tico Mutual Water Company
- Ventura County Supervisor, Steve Bennett
- Ventura County Agricultural Commissioner
- Ventura County Resource Conservation District
- Ventura County Watershed Protection District
- Ventura County Farm Bureau
- City of Ventura –City Manager
- Ventura Water
- Ventura Local Agencies Formation Commission
- Ventura River Water District
- Ventura River Watershed Coordinator

**TABLE 1-2**
**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 | NA | NA | NA | NA | | ✓ |
| California State Water Resources Control Board | NA | NA | NA | NA | | |
| California State Library | NA | NA | NA | NA | | ✓ |
| Carpinteria Valley Water District | ✓ | | | ✓ | | ✓ |
| Faria Beach Homeowner's Association | ✓ | | | ✓ | | |
| Golden State Water Company | ✓ | | | ✓ | | ✓ |
| Hermitage Mutual Water Company | ✓ | | | ✓ | ✓ | |
| Meiners Oaks County Water District | ✓ | ✓ | | ✓ | | |
| City of Ojai | ✓ | | | ✓ | | ✓ |
| Ojai Basin Groundwater Agency | ✓ | | | ✓ | | ✓ |
| Ojai Pixie Growers Association | ✓ | | | ✓ | | |
| Ojai Land Conservancy | ✓ | | | ✓ | | |
| Ojai Valley News | | | | | | |
| Ojai Valley Sanitary District | ✓ | | | ✓ | ✓ | |
| Oak View Library | ✓ | NA | NA | ✓ | NA | ✓ |
| Rancho Del Cielo Mutual Water Company | ✓ | | | ✓ | | |

| 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 |
|---|---|---|---|---|---|---|
| Rincon Water & Road Works | ✓ | | | ✓ | | |
| Senior Canyon Mutual Water Company | ✓ | | | ✓ | | |
| Siete Robles Mutual Water Company | ✓ | | | ✓ | | |
| Sisar Mutual Water Company | ✓ | | | ✓ | | |
| Sulphur Mountain Road Water Assoc. | ✓ | | | ✓ | | |
| Tico Mutual Water Company | ✓ | | | ✓ | | |
| County of Ventura, Supervisor Bennett | ✓ | | | ✓ | | |
| Ventura County Agricultural Comm. | ✓ | | | ✓ | | |
| Ventura County Resource Conservation District | ✓ | | | ✓ | | |
| Ventura County Watershed Protection District | ✓ | | | ✓ | | ✓ |
| City of Ventura | ✓ | | | ✓ | ✓ | ✓ |
| Ventura Water | ✓ | | | ✓ | ✓ | |
| Ventura County Farm Bureau | ✓ | | | ✓ | | |
| Ventura Local Agency Formation Commission | ✓ | ✓ | | ✓ | | ✓ |
| Ventura River Water District | ✓ | | | ✓ | | |
| Ventura River Watershed Coordinator | ✓ | | | ✓ | | ✓ |

Notes:
See **Appendix F Worksheet 1** for additional details.

## 1.6 PLAN ADOPTION AND SUBMITTAL

In accordance with the UWMP and AWMP requirements, Casitas MWD also encourages involvement of public and community groups in document review and public comments. Casitas MWD notified applicable local, County, and State agencies and organizations of the intent to prepare this UWMP/AWMP and hold a public workshop. Casitas MWD provided notification via newsletter to customers, direct letter, Casitas MWD Facebook page, and via Casitas MWD website

**http://www.casitaswater.org/calendar.php?id=11337943**.

See **Appendix D** for a copy of the notification newsletter, general letter, and newspaper announcement. Casitas MWD held a community workshop on May 18, 2016 to provide a summary of the UWMP/AWMP and receive public comments and questions. Casitas MWD held a public hearing on June 22, 2016 in Casitas MWD's Board Room. The Board of Directors adopted the UWMP/AWMP following the public hearing. Proof of this public hearing is provided in **Appendix D**, which contains a copy of the resolution adopting the 2016 Urban Water Management Plan/Agricultural Water Management Plan. The Casitas MWD will submit the adopted UWMP/AWMP, in electronic format, to the California Department of Water Resources within the 30-day requirement.

## 1.7 PLAN IMPLEMENTATION

Following adoption of the UWMP/AWMP, Casitas MWD will utilize the UWMP/AWMP as a summary and resource for discussions regarding water demands, water supplies, and demand management. This UWMP/AWMP 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/AWMP 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/AWMP is divided into seven primary sections. Section 1 provides an introduction to the UWMP/AWMP. 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 summarizes the Casitas MWD's water shortage contingency planning. Section 7 describes Casitas MWD's demand management measures (i.e., water conservation and efficient water management practices). A copy of the UWMP checklist is provided in **Appendix O**.

This combined UWMP/AWMP is based upon the information required by the Urban Water Management Planning Act and California Agricultural Water Management Planning Act, as coordinated by the California Department of Water Resources (CADWR). Format of this

UWMP/AWMP follows the DWR's Guidance Manuals for UWMP (2016) and AWMP (2015) to ensure and easily verify that the information presented here meets all of the DWR requirements. The Casitas MWD is a wholesale agency. Casitas MWD prepared this UWMP/AWMP in compliance with the UWMP requirements for a wholesale agency.

## 1.9 AUTHORIZATION

The Casitas MWD authorized Milner-Villa Consulting (MVC) to provide consulting services related to preparation of this UWMP under an Agreement dated September 23, 2015 and Change Order No. 1 for preparation of the AWMP elements in accordance with California requirements.

## 1.10 CONTACT INFORMATION

A copy of the UWMP/AWMP will be available at Casitas MWD's website at **http://www.casitaswater.org** and available at the Casitas MWD office located at 1055 Ventura Avenue, Oak View, California, 93022. Please direct any questions regarding this UWMP/AWMP to Ron Merckling, Water Conservation/Public Affairs Manager for Casitas MWD, (805) 649-2251 extension 118, or rmerckling@CMWDwater.com.

# SECTION 2: SYSTEM DESCRIPTION

## 2.1 DOCUMENT REQUIREMENTS

### 2.1.1 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))

### 2.1.2 AWMP Requirements

Water Code §10826 (a) requires a description of the agricultural water supplier and the service area:

"(a) Describe the agricultural water supplier and the service area, including all of the following:

(1) Size of the service area.

(2) Location of the service area and its water management facilities.

(3) Terrain and soils.

(4) Climate.

(5) Operating rules and regulations.

(6) Water delivery measurements or calculations.

(7) Water rate schedules and billing.

(8) Water shortage allocation policies." (Water Code §10826(a))

The Water Code requires a description of these elements in the AWMP, but details are not specified. In this section, the Guidebook suggests a reasonable level of detail to assist the agricultural water supplier in preparing an AWMP that can be used for water management planning and providing information to address Water Code §10826 (b) requirements for a description of the quantity and quality of water resources of the agricultural water supplier. The Guidebook organizational outline groups

descriptions into Physical Characteristics – elements (a)(1) to (a)(4), and Operational Characteristics – elements (a)(5) to (a)(8). See Section II of the AWMP Template.

This section also provides a basis for evaluating structural or operational improvements as well as an area to provide the basic information about physical and operational aspects that may affect water management.

This section is also an opportunity to provide some background information, such as the agricultural water supplier date of formation, source(s) of water supply (such as Central Valley Project (CVP), State Water Project (SWP), local surface or groundwater), or any other pertinent information.

"Describe previous water management activities." (Water Code §10826(d)).

The Water Code does not specify which management activities need to be included. Useful information would include previous water management plans and program(s) under which the previous plan was developed, adoption date by the water supplier, approval or acceptance date (by the AWMC or USBR, respectively), management agency and representative, and other pertinent information, including any amendments and/or revision dates.

## 2.2 DESCRIPTION OF CASITAS MWD

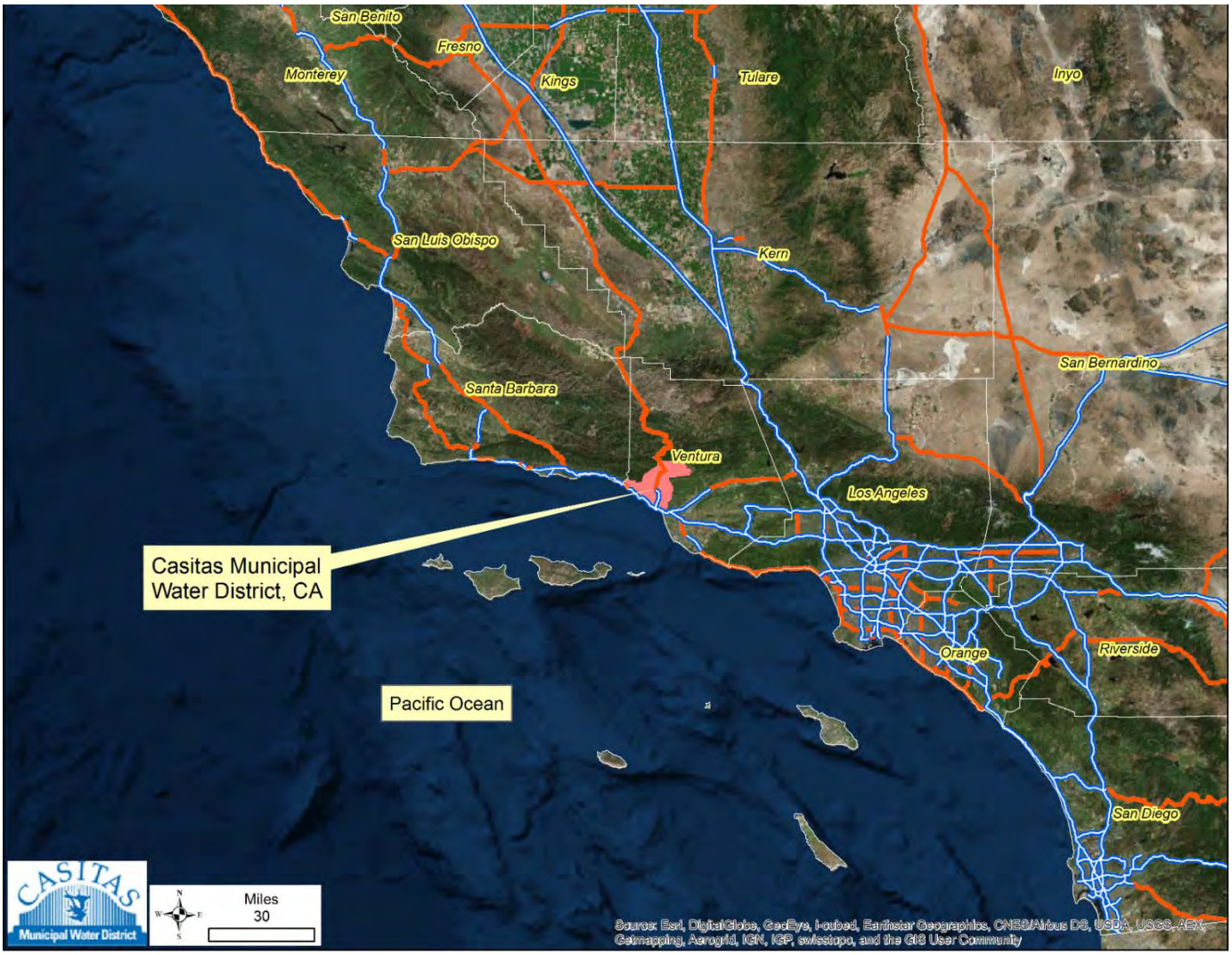
### 2.2.1 Location

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 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, local groundwater sources, and the Ventura River. **Figure 2-2** indicates the service area for Casitas MWD. See **Appendix F Worksheets No. 2-3** for additional details related to the Casitas MWD service area.

### 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.

**FIGURE 2-1**
**VICINITY MAP**




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


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 (as the crow flies), 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 2-3**
**SOILS WITHIN VENTURA RIVER WATERSHED**

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 fairly well consolidated and have low permeability relative to the unconsolidated alluvial deposits of the valley floors. They are, however, highly erosive.

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%). (Walter, 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, 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. See **Appendix F Worksheets No. 8-9** for a summary of the climate characteristics. 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. See **Appendix F Worksheets No. 8-9** for a summary of the climate characteristics. 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). See **Appendix F Worksheet No. 42** for a summary of the estimated effective precipitation.

**TABLE 2-1**
**CLIMATE DATA**

| Month | Average Maximum Temperature (ºF) (1) | Average Minimum Temperature (ºF) (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.

### 2.3.4 Evapotranspiration

Evapotranspiration (ET or ETo) is defined as the water lost from an area through the combined 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 District 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.

The 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. See **Appendix F Worksheets No. 8-9** for a summary of the climate characteristics.

## 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 groundwater 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 later was renamed Casitas Municipal Water District, in 1971) 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. 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 groundwater 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**.

## 2.5 CMWD 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. See **Appendix F Worksheets 2-6** for additional details regarding the Casitas MWD infrastructure. Additional details provided in **Section 4**.

Casitas MWD also maintains and operates one (1) well with a capacity of approximately 300 acre-feet per year. Water from the well exceeds the State's maximum contaminate level for nitrate and is blended with Lake Casitas water to meet health and safety regulatory standards for nitrate before delivery to the Casitas MWD customers. Additional details provided in **Section 4**.

Casitas MWD's distribution system includes approximately ninety-seven (97) miles of main and distribution pipelines, nine (9) pumping plants, and thirty million (30,000,000) gallons of treated water stored in fourteen (14) steel reservoirs located throughout the Casitas MWD service area. 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. Balancing reservoirs placed throughout the system at various elevations presently regulate water system pressures within Casitas MWD's distribution system. These elevations are determined from the requirements of various zones of service ranging from sea level to 1,500 feet above sea level. Because of the variations in terrain and microclimates in the Casitas MWD service area, the water requirements of individual customers vary widely within the various zones. Some areas of the Casitas MWD that have excessive pressures require pressure-reducing stations. The vast majority of customers are furnished between 50 to 80 pounds per square inch pressure at their meters. See **Appendix F Worksheets 2-6** for additional details regarding the Casitas MWD infrastructure.

In 1995, Casitas MWD added a sixty-five million (65,000,000) gallon per day pressure filtration treatment plant that enables Casitas MWD to meet the regulations set forth in the State of California Surface Water Treatment Rules. The plant continues to meet its original water quality objectives. Casitas MWD further treats filtered water with chloramination for disinfection and additives for corrosion control, as directed by the State Department of Drinking Water.

## 2.6 CMWD RESALE CUSTOMERS

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

### 2.6.1 Golden State Water Company

The Golden State Water Company (GSWC) provides service to an area approximately equal to the limits of the City of Ojai. GSWC relies on groundwater extractions from the Ojai Groundwater Basin and supplements the groundwater supply with additional water from Casitas MWD service connections. Groundwater is the preferred and least expensive of the two water sources. GSWC has the highest water rates of any agency in the Casitas MWD service area, which has led to a reduction in water demand use by its customers.

### 2.6.2 Hermitage Mutual Water Company

The Hermitage Mutual Water Company (HMWC) provides service to a limited area in the foothills north of the Ojai Valley. The HMWC customer base is primarily agriculture with several large residential estates. The primary source of water is from wells in the Ojai Groundwater Basin and a 6-inch supplemental connection to Casitas MWD. Water use is driven by agricultural water demands,

attributed to local annual rainfall conditions and conditions in the Ojai Groundwater Basin. The HMWC water demands have remained fairly consistent from year to year, and can be expected to remain consistent in the future without any foreseen changes to land use.

### 2.6.3 Meiners Oaks Water District

The Meiners Oaks Water District (MOWD) provides water service to a limited area which is not expected to have an appreciable growth in water demands over the next twenty years. MOWD relies primarily on two wells in the Ventura River and has only relied on Casitas MWD during infrequent system emergencies (i.e., 1985 Wheeler Fire). Future demand increases on the Casitas MWD water supply would be dependent upon increased severe drought frequency.

### 2.6.4 Senior Canyon Mutual Water Company

The Senior Canyon Mutual Water Company (SCMWC) provides service to a limited area located in the east end of the Ojai Valley. The SCMWC customer base is a mix of residential, large residential, and agricultural land use. The primary source of water supply are three wells in the Ojai Groundwater Basin and diversions from a tunnel and creek source. SCMWC uses Casitas MWD water as a secondary source of water to buffer peak demands and as a drought contingency supply. The SCMWC water demands have remained fairly consistent from year to year, and can be expected to remain consistent in the future without any other foreseen changes to land use. System improvements could decrease reliance on the Casitas MWD water supply.

### 2.6.5 Siete Robles Mutual Water Company

The Siete Robles Mutual Water Company (SRMWC) provides service to a limited housing tract that is located southeast of the City of Ojai. The source of water for SRMWC is a well in the Ojai Groundwater Basin, and one service connection to Casitas MWD. SRMWC has been self-reliant on its well water except during high nitrate events or emergency well repair periods. Water demands within SRMWC are expected to remain consistent in the future without any foreseen changes to land use.

### 2.6.6 Sisar Mutual Water Company

The Sisar Mutual Water Company (SMWC) provides service to a limited area that is partially in the Casitas MWD boundary, located in the northeast area of the Upper Ojai Valley. SMWC has been self-reliant on its water wells and on a one 4-inch connection to Casitas MWD as an emergency water source. Water use in SMWC has remained consistent over the past ten years and is expected to remain relatively constant in the future.

### 2.6.7 Tico Mutual Water Company

The Tico Mutual Water Company (TMWC) provides service to a limited area in Mira Monte. The TMWC customer base is small residential with limited prospects of water use expansion. The TMWC water source is one small water well in the Mira Monte area and one 2-inch service connection to Casitas MWD as a backup supply. Water use in TMWC has remained consistent over the past ten years and is expected to remain so in the future.

### 2.6.8 City of Ventura

The City of Ventura (City) service area is partially within the Casitas MWD boundary and partially outside of the Casitas MWD boundary. This Plan only considers the part of the City service area that is within the Casitas MWD boundary. The City has a portfolio of water resources that includes water well extractions in the Ventura River near Foster Park, rights to recycled water from the Ojai Valley Sanitary District treatment plant, several connections to a Casitas MWD pipeline, and groundwater sources from the east end of Ventura. The City and Casitas MWD have a 1995 water service agreement to secure a minimum of 6,000 acre-feet annual purchase of water from Casitas to the City. The City has indicated that there is a potential for specific projects and land use changes that will cause water purchases from Casitas MWD to increase from approximately 5,260 AF in 2015 to potentially 8,000 AF by 2025. (City of Ventura, 2015)

### 2.6.9 Ventura River Water District

The Ventura River Water District (VRWD) provides service to a limited area which is not expected to have an appreciable growth in water demands over the next twenty years. VRWD relies primarily on two wells in the Ventura River and only relies on Casitas MWD when groundwater sources become depleted. VRWD is proactive with its customers in requesting timely water use reductions to lessen the demand for Casitas MWD water. Future demand increases on the Casitas MWD water supply would be dependent upon increased drought frequency.

## 2.7 SERVICE AREA POPULATION

Population growth in the district paralleled population growth in southern California until approximately 1960. Population within the Casitas MWD's service area in 1960 was approximately 45,000. In 2010, the Casitas MWD served directly and indirectly a population of approximately 68,557. (CMWD, 2011) See **Table 2-2**, and **Appendix E Table 3-1** for details. 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 groundwater wells. Casitas MWD has nearly 3,200 customers in total with 2,925 direct urban customers, 249 agricultural meters, and 23 resale meters.

The current population forecast for the Casitas MWD's 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 (see **Table 2-2** and **Appendix E Table 3-1**). These population increases are dependent on availability of Casitas MWD's surface water supply and local groundwater.

**TABLE 2-2**
**CASITAS MWD SERVICE AREA POPULATION**

| Population | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|---|
| CMWD Service Area (1,2,3) | 68,557 | 70,288 | 72,063 | 73,883 | 75,748 | 77,661 | 79,622 |

Notes:
(1) CMWD, 2016.
(2) Casitas MWD 2010 service area population from CMWD UWMP, 2011.
(3) Casitas MWD service area population for 2015-2040 based on growth rate 0.5 percent per year (SCAG, 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 groundwater sources to supplement the increased demand.

## 2.8 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 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 in 2014 include avocados, hay, lemons, oranges, strawberries, tangerines, and walnuts (see **Table 2-3** below for details). **Table 2-4** indicates the number of irrigated acres within the Casitas MWD service area for the period 2011-2015 increased from 4,837 acres to 5,354 (nearly 10 percent). This increase may have been due to agricultural customer's greater reliance on Casitas MWD water during consecutive dry years. **Table 2-4** also indicates the number of irrigated acres that received 100 percent Casitas MWD water as compared to the irrigated acres that receive 1 to 99 percent Casitas MWD water for the period 2011-2015. During the period 2011-2015, the number of acres that received 100 percent Casitas MWD increased by 11 percent. Mini-sprinklers and drip irrigation are the most common methods of crop irrigation. See **Appendix F**, **Worksheets 21-23** for additional details related to irrigated agriculture within the Casitas MWD service area.

**TABLE 2-3**
**ACRES OF IRRIGATED AGRICULTURE WITHIN SERVICE AREA BY CROP TYPE**

| Crop Type | Acres (1) |
|---|---|
| Avocados | 2,409 |
| Hay | 340 |
| Lemons | 453 |
| Miscellaneous fruit | 357 |
| Oranges (Navel) | 307 |
| Oranges (Valencia) | 1,039 |
| Pasture | 94 |
| Strawberries | 40 |
| Tangerines | 276 |
| Walnuts | 57 |
| **Total** | **5,372** |

Notes:
(1) Total irrigated acres for calendar year 2014. Source: CMWD, 2016.

**TABLE 2-4**
**ACRES OF AGRICULTURE WITHIN SERVICE AREA BY SOURCE OF WATER**

| Irrigated Acres (1) | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Irrigated acres using 100% CMWD water | 2,996 | 2,960 | 2,931 | 3,174 | 3,361 |
| Irrigated acres using 1-99% CMWD water | 1,841 | 1,905 | 1,897 | 1,980 | 1,993 |
| **Total** | **4,837** | **4,865** | **4,828** | **5,154** | **5,354** |

Notes:
(1) Total irrigated acres for calendar year 2014. Source: CMWD, 2016.

## 2.9 CMWD OPERATIONS

### 2.9.1 Operating Rules and Regulations

Casitas MWD is responsible for operation of the 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. See **Appendix F, Worksheets 10-18** for additional details related to Casitas MWD policies. 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).

### 2.9.2 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 See **Appendix F, Worksheets 10-13** for additional details related to water allocation and delivery measurements. All of the Casitas MWD direct customers are metered. Casitas MWD has meters for all of the Resale customers.

### 2.9.3 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** (and available on the Casitas MWD website: **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). See **Appendix F**, **Worksheets 14-16** for additional details related to the CMWD rate structure and billing.

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.

## 2.10 PREVIOUS WATER MANAGEMENT ACTIVITIES

The Casitas MWD has prepared several applicable documents related to local water resources. One of the most notable documents is the Casitas MWD Urban Water Management Plan (adopted 2011). The UWMP includes similar elements as the AWMP including descriptions of the service area, water demands, water resources, water resources reliability, and demand management measures (also known as conservation measures or efficient water management practices).

In addition to the UWMP, Casitas MWD has prepared additional documents related to local water resources management including, but not limited to, the following:

CMWD. 2015. Water Efficiency and Allocation Program. Copy provided in **Appendix K**.

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.

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

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.

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

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

City of Ventura. 2011. 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. 2015. Ventura River Watershed Management Plan.

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

# SECTION 3 – SYSTEM WATER USES

## 3.1 DOCUMENT REQUIREMENTS

### 3.1.1 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))
- Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions. (CWC, 10608.36)
- 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)

### 3.1.2 AWMP Requirements

This section describes the water uses for agricultural, environmental, recreational, municipal and industrial, groundwater recharge, transfers and exchanges, and other water uses within the agricultural water supplier's service area.

Water Code §10826 (b) requires a description of the quantity of all underlying items, including the water uses identified under §10826 (b)(5). Section 10826 (b)(5) requires that the AWMP include a description of the following:

"Water uses within the agricultural water supplier's service area, including all of the following:

(A) Agricultural.

(B) Environmental.

(C) Recreational.

(D) Municipal and industrial.

(E) Groundwater recharge.

(F) Transfers and exchanges.

(G) Other water uses".

The legislation also does not require a specific method, timescale, or other parameters for quantifying water uses under this element in this section. Additionally, Executive Order B-29-15 directs that AWMP include quantification of water supplies and demands for 2013, 2014, and 2015 to the extent data are available.

If available, it is suggested (but not required) that quantities of water used from each water source within the service area, for each water use type, be reported along with additional information that can be used in determining the overall water budget. This would allow for greater flexibility in water management planning.

In order to provide a meaningful and consistent basis for water accounting in accordance with Water Code §10826 (b)(7), it is suggested that:

- Information be reported using the same year(s) and timeframe for all water use types as listed under Water Code §10826 (b)(5).
- Monthly or bi-monthly water usage data is provided for each water use type.
- Data for each water use type can be presented in a similar format as shown in the Worksheets 20 through 29. Depending upon the number of locations or complexity regarding each type of water use in the service area, this table can be expanded or summarized as necessary. For instance, for a particular water use type, if the same amount of water is required each year and/or each month, it would not provide more information to report monthly use for the past five years; reporting the consistent demand quantity and a notation to that effect would be essentially the same.

If special management or usage areas have been identified in Section II of the AWMP, it would further assist in water management planning to provide a table of water use estimates, delineating the water use in each applicable area for each water use type (e.g., agriculture, environmental, and others).

It is suggested that the AWMP also include a detailed description of their basis for reporting water quantities:

1. What year(s) are used to describe the water quantities, and if there were any special conditions relevant to the determination of quantities (e.g., excessively wet year, water measurement system only partially implemented, couldn't measure a particular source or use, or others).

2. A Representative Year and/or the Plan Cycle year can be used as a basis for determining water quantities.

CADWR encourages water supplier to use the same basis (year(s)) and timeframe (e.g., Water Year months, calendar year, or other) to report water quantities in all tables/descriptions in Sections III through IV of the AWMP (detailed in Sections 3.3 through 3.5 of this Guidebook). For example, the agricultural water supplier could use the first Plan Cycle year 1 (2012/2013) data and identify that data is based on the Water Year from October 2012 to September 2013.

CADWR encourages agricultural water suppliers to report water quantities based on a Plan Cycle yearly-basis and include information for the past five years. In accordance with Executive Order B-29-15, quantification of water demands is to be reported for 2013, 2014, and 2015 to the extent data is available.

If a Representative Year is used to describe and tabulate water uses and supplies, it should be defined and the year(s) it is based on identified. The Representative Year can be an average or a range of hydrological variation: Drought, normal, and wet years. The rationale/description of what constitutes a Representative Year(s) should be included in this section, if applicable (refer to Worksheet 19).

If water uses are estimated instead of measured, CADWR encourages the agricultural water supplier to provide justification and documentation of calculations and data used for the estimation. This information can be summarized in the discussion pertaining to quantification of the specific supplies and/or uses with details included as an attachment in Section VIII. This information can also provide the basis for the Aggregated Farm Gate Delivery Report.

For water management planning, it is often advantageous to estimate future water use demands. While not required, the agricultural water supplier can also include a description of any anticipated changes or trends in water demand within their service area in order to facilitate the AWMP's use as a planning document. This could include changes in water use related to the following:

- Changes in crop types resulting in different crop water use requirements than current conditions.
- Expected market fluctuations that would affect the type and amount of crops grown.
- Increased water use efficiency that would reduce water uses through reduced non-recoverable water.
- Increased energy costs that would potentially reduce the amount of water used from higher energy sources (e.g., pumped groundwater); and/or,
- Anticipated changes in land use (e.g., conversion of agricultural land to developed land).

## 3.2 CUSTOMER CLASSIFICATIONS

### 3.2.1 Residential

Residential customers are typically single-family residences. The residential classification also includes a limited amount of multi-residential accounts. Casitas MWD is providing additional residential water allocations only if additional water supply is identified. Casitas MWD is also implementing water

conservation best management practices that are likely to reduce water usage as well. Limited growth in new housing due to economic and land planning factors are also likely contributing factors to this decrease. The number of new customers over the last five years averaged five per year, most being residential customers and some agricultural-residential customers. Casitas MWD does not anticipate any growth in this category.

### 3.2.2 Multiple-Family Residential

The Casitas MWD recently added the customer category for multiple family. Data regarding annual use and trends are very limited at this time.

### 3.2.3 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 irrigated lands (see **Section 2 Table 2-4, and Appendix F Worksheets 20-23** for details). Some agricultural lands are served by a private well or receive water from other water agencies. Based on Casitas MWD's 2014 crop report data, Casitas MWD provides water directly to 3,361 acres and supplements groundwater use on approximately 1,993 acres of irrigated crop lands. Casitas MWD water is provided for primarily avocado and citrus orchards, and a limited amount of flowers, strawberries, apples and walnuts (see **Section 2**, **Table 2-3** for details). Agricultural water demand will fluctuate depending on weather conditions, but generally demands an annual average of two and a half acre-feet per acre for inland areas and two acre-feet per acre on the coast. Agricultural water demand is not expected to increase over the next twenty years. Agricultural expansion requires approval and purchase of additional allocation, which is cost prohibitive for most agricultural interests. Casitas MWD recently had 5 acre-feet of agricultural water allocations purchased.

### 3.2.4 Agricultural-Residential

Agricultural properties with minor residential water use. Total water use must be less than 50 units per month.

### 3.2.5 Business

Businesses 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. Casitas MWD does not anticipate any growth in this category.

### 3.2.6 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 groundwater source and

lessened the demand for Casitas MWD water. The industrial classification includes approximately 24 acre-feet per year (0.3 percent) with 11 meters.

### 3.2.7 Interdepartmental

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 usage represents a small portion of Casitas MWD's overall usage.

### 3.2.8 Institutional/Government

This classification includes government and non-profit organizations. Water demand in this category is not expected to change much since the number of customers is unlikely to change.

### 3.2.9 Resale

Within Casitas MWD's boundaries there are nine other public and private water agencies known as resale customers (see **Section 2.6** for details). Resale customers represent approximately 45 percent of Casitas MWD annual water demands. The majority of the resale agencies are primarily dependent upon available local groundwater 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.

The City of Ventura generally relies on Casitas MWD water to provide 100 percent of the water supply for the portion of the City within the CMWD service area. The City of Ventura forecasts purchases from Casitas MWD for the years 2015-2025 at 5,409 acre-feet per year. (City of Ventura, 2015)

### 3.2.10 Classifications Unavailable

Casitas MWD does not currently separate customer accounts with the category of "landscape".

## 3.3 CURRENT WATER USES

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 water demand can vary dramatically from year to year. Casitas MWD water demand can range 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. 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 groundwater 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 groundwater 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 groundwater supply and may rely on Casitas MWD for the balance of essential water supply needs.

Water consumption within the Casitas MWD service area has decreased slightly in recent years. **Table 3-1** includes a summary of total water demands for 2000-2015. Upon comparison of 2000 demands and 2015 demands, **Table 3-1** indicates that total demands decreased by nearly 14 percent, The Casitas MWD has promoted and coordinated extensive demand management programs including water allocations and public outreach (see **Sections 6 and 7**) which are likely drivers for the decrease in water demand. Other factors that may contribute to the decreased water demand include, but not limited to, minimal population growth and limited new water demands.

The historical record of annual water deliveries from Lake Casitas is significantly impacted by drought conditions, especially during the multiple years of drought conditions that occurred from 1988 to 1991. By the early 1990's, the number of new accounts added annually diminished considerably as the area became nearly built out. 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 show very little response to weather conditions. Residential water demand represents a small portion of the overall demand 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 groundwater 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 groundwater resources that quickly diminish during drought conditions. Casitas MWD's Lake Casitas reservoir is managed as a long term water supply with a 21-year safe yield of 20,840 acre-feet based on the historical 1944-1965 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 out-stripping supplies. A continued water supply deficit could lead to future supply shortages during long-term drought conditions. In 1992, Casitas MWD' Water Efficiency and Allocation Program was adopted by the Casitas MWD's Board of Directors to encourage efficient use of water to reduce overall water demand and to ensure the safe annual yield of supply would not exceed the critical 21,920 acre-feet per year average (as it was determined at that time). Average demand is not anticipated to increase above the current safe-yield of 20,840 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 annually through 2010. Census data reported in 2011 indicated that the City of Ojai had a 5 percent decrease in population (for the 2000-2010 period).

**Table 3-1** summarizes the Casitas MWD water demands for recent Fiscal Years 2000, 2005, 2010, and 2015. **Table 3-1** indicates the 2000 demands were 19,389 AF (average water-year), including sales to other agencies of 7,186 AF (37%), agricultural sales of 9,115 AF (47%), and non-agricultural retail sales of 3,088 AF (16%). In comparison, **Table 3-1** indicates that Casitas MWD water demands for

2015 (dry water-year) were 16,747 AF; including sales to other agencies of 6,192 AF (37%), agricultural sales of 8,048 AF (48%), and non-agricultural retail sales of 2,507 AF (15%). See **Appendix E Table 4-1** for additional details. By comparison of 2000 demands and 2015 demands, **Table 3-1** indicates that total demands decreased by nearly 14 percent, sales to other agencies decreased by 994 AF (14%), agricultural sales decreased by 1,067 AF (12%), and retail sales decreased by 581 AF (19%). Much of this decrease in water demand is the direct result of demand management measures implemented by the Casitas MWD and regional water agencies (as discussed in **Section 7**).

**TABLE 3-1**
**PAST AND CURRENT POTABLE WATER USES 2000-2015**

| **Category** (1) | **2000** | **2005** | **2010** | **2015** |
|---|---|---|---|---|
| Sales to other agencies | 7,186 | 7,118 | 6,482 | 6,192 |
| Agricultural sales (2) | 9,115 | 8,939 | 6,398 | 8,048 |
| Retail sales (2) | 3,088 | 2,821 | 2,427 | 2,507 |
| **Total** | **19,389** | **18,877** | **15,307** | **16,747** |

Notes:
(3) Source, CMWD, 2016. All values in AF, rounded. Data does not include water losses.
(4) Direct sales to CMWD customers.

**Table 3-2** summarizes the Casitas MWD retail water uses for 2015. In 2015, Casitas MWD total retail water demands were 10,554 AF, including agriculture sales (historically the category with highest water demand) of 8,048 AF (76%), and residential sales (including single-family and multiple-family accounts) of 1,512 AF (14%). **Table 3-2** excludes sales to other agencies.

**Table 3-3** summarizes the agricultural water use for the period 2011-2015. As previously noted, local agricultural water demand is historically the highest water demand for Casitas MWD. In addition, agricultural water demand within the Casitas MWD service area 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 groundwater sources become depleted quickly and they then must rely on Casitas MWD's surface water supplies. **Table 3-3** indicates that annual average agricultural water use within the service area was 7,425 AF for the period 2011-2015, including a low of 5,206 AF in 2011 to a high of 9,427 AF in 2014. For additional details related to agricultural water demands see **Appendix F**, **Worksheets 20-22**.

**TABLE 3-2**
**RETAIL WATER USES FOR 2015**

| **Category** (1,2) | **2015 Retail Water Use** | **Percent of Retail Water Use** |
|---|---|---|
| Residential (3) | 1,512 | 14 |
| Commercial | 587 | 6 |
| Industrial | 29 | 0.3 |
| Interdepartmental/Governmental | 159 | 1.5 |
| Agriculture (4) | 8,048 | 76 |
| Recreation | 0 | 0 |
| Environmental | 0 | 0 |
| Other (5) | 219 | 2.1 |
| **Total** | **10,554** | **100** |

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded.
(2) Excludes sales to other agencies.
(3) Includes accounts for single-family and multi-family residential.
(4) Includes all agriculture accounts including accounts with domestic use on site.
(5) 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 Fiscal Year 2015, Casitas MWD estimated water losses at approximately 670 acre-feet. This annual water loss amount represents approximately 4 percent of sales. See **Appendix E Table 4-4** for additional details.

**TABLE 3-3**
**AGRICULTURAL WATER USE 2011-2015**

| Category | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Agricultural Sales (1) | **5,206** | **6,295** | **8,151** | **9,427** | **8,048** |

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded.

## 3.5 PROJECTED WATER USES

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 groundwater 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 groundwater sources, recycled water, and or implement additional water demand management programs.

**Table 3-4** summarizes the Casitas MWD projected water uses for the period 2020-2040 (see **Appendix E Tables 4-2** and **4-3** for additional details). **Table 3-4** indicates the period 2020 to 2030 total water demands are projected to be approximately 17,200 AF (average water-year). For the period 2020 to 2030 (during average water-years), sales to other agencies are projected to be 6,200 AF, agricultural sales 8,000 AF, and non-agricultural retail sales of 3,000 AF. For the period 2030 to 2040, total water demands are projected to be approximately 17,500 AF. For the period 2030 to 2040, **Table 3-4** indicates that sales to other agencies are projected to be 6,500 AF, agricultural sales 8,000 AF, and non-agricultural retail sales of 3,000 AF. Casitas MWD estimates that agricultural sales and retail sales will remain fairly consistent for the period 2015 to 2040 due to current and future demand management measures implemented within the service area (as discussed in **Section 7**).

## 3.6 WATER USE FOR LOWER INCOME HOUSEHOLDS

As a wholesale agency, Casitas MWD is not required to include the projected water use for lower income households.

**TABLE 3-4**
**PROJECTED POTABLE WATER USES 2020-2040**

| **Category** (1) | **2020** | **2025** | **2030** | **2035** | **2040** |
|---|---|---|---|---|---|
| Sales to other agencies | 6,200 | 6,200 | 6,500 | 6,500 | 6,500 |
| Agricultural sales (2) | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Retail sales (2) | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| **Total** | **17,200** | **17,200** | **17,500** | **17,500** | **17,500** |

Notes:
(3) Source, CMWD, 2016. All values in AF, rounded. Data does not include water losses.
(4) Direct sales to CMWD customers.

## 3.7 WATER CONSERVATION ACT OF 2009

In February 2008, former 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). As a wholesale agency, Casitas MWD is not required to establish and meet targets for daily per capita water use in compliance with the 20x2020 target. In addition, wholesale agencies are not required to complete the SB X7-7 verification form. Details are provided in **Section 7** regarding the present and proposed Casitas MWD measures, programs, and policies that may assist retail agencies within the Casitas MWD service area achieve 20x2020 water use reduction targets.

However, Casitas MWD has been working diligently to comply with water conservation regulations imposed by State Water Resources Control Board and Governor Jerry Brown in 2015. Casitas MWD is required to meet a reduction in cumulative water demand of 32 percent upon comparison of current monthly demands with demands in 2013. This requirement took effect in June 2015. To date, the Casitas MWD has reduced water demands by over 777,000,000 gallons in 9 months (over 86,000,000 gallons per months) for a cumulative reduction of 21.9 percent. The Casitas MWD anticipates implementing additional demand management measures in the near future in order to achieve compliance with the 32 percent water demand reduction requirement. Details regarding demand management measures are provided in **Section 7**.

# SECTION 4 – SYSTEM SUPPLIES

## 4.1 DOCUMENT REQUIREMENTS

### 4.1.1 UWMP Requirements

- 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 groundwater is an existing or planned source of water available to the supplier. (CWC, 10631(b))
- Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization. (CWC, 10631(b)(1))
- Describe the groundwater 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 or not 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 groundwater 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 groundwater 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))
- Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types. (CWC, 10631(j))
- For wastewater and recycled water, coordinate with local water, wastewater, groundwater, 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))
- 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))

### 4.1.2 AWMP Requirements

Water Code §10826 requires that the AWMP:

> "(b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
>
> (1) Surface water supply
> (2) Groundwater supply
> (3) Other water supplies
> (4) Source water quality monitoring practices
> (5) Drainage from the water supplier's service area"

The legislation does not specify the mechanisms or level of detail that would satisfy requirements for describing the quantity of water supplies. For each water source type, CADWR encourages agricultural water suppliers to include discussions on origin (there may be multiple origins for a particular water source—for example, groundwater supplies can be obtained from different groundwater basins), customers, and use limitations of each water supply source in either the AWMP Template or the Worksheets provided.

Discuss the potential if possible for the district to obtain or utilize additional water supplies. These supplies could include transfers from another water agency or district, the use of recycled water and desalination of brackish groundwater or drainage water.

If wholesale water supplies are received from another supplier or you provide water to another water user, the AWMP should make note of this. For water obtained from wholesale sources, the agricultural

water supplier can include a reference to the wholesalers UWMP/AWMP and a brief summary of the water supply's origin.

The Water Code requires a description of the estimated or calculated quantities of water supplies for each of the three major categories of water supply sources used within the service area (surface water, groundwater, and 'other' water), as well as a description of the estimated or calculated quantities of drainage water leaving the service area. In order to provide a meaningful and consistent basis for water accounting, in accordance with Water Code §10826 (b)(7), the following is suggested:

1. Information be reported using the same year(s) for all descriptions of water resources and uses, including: quantity and quality of water supplies from sources listed under Water Code§10826 (b); quantity and quality of the service area drainage; and, amounts of water used from each source.

2. Provide monthly or bi-monthly water usage data for each water supply source and for the service area drainage.

3. Data for each water supply source and the service area drainage be presented as shown in the Worksheets 20 through 29 or similar format(s). Depending upon the number of locations or complexity of each water supply source or service area drainage outlets, these tables can be expanded or summarized as necessary. For instance, for a particular water supply source, if the same amount of water is available each year and/or each month, it is not necessary to report monthly water supplies for the past five years; although a notation to that effect would be helpful. Conversely, if supplies are more complex (e.g., the service area drainage discharges to two different watersheds), multiple tables are advised.

4. The average year water supply quantities and projects to increase water supplies are described for each water supply.

5. The descriptions note any restrictions or operational constraints associated with the supplier's water supplies, if applicable, for each water supply type.

6. Information on water transfers and exchanges, both short- and long- term agreements and opportunities is provided.

If quantities are estimated, the agricultural water supplier is encouraged to provide justification and documentation of calculations and data used for the estimation(s) in the AWMP.

If special management or usage areas have been identified in Section II of the AWMP, a table or tables with water supply estimates for each water supply source available to each applicable area would further assist in water management planning.

The Water Code requires that the AWMP: *"Include an analysis, based upon available information, of the effect of climate change on future water supplies"* [Water Code §10826 (c)]

## 4.2 CURRENT WATER SUPPLIES

Casitas MWD relies on surface water and groundwater sources to meet the water demands of the area. The following is a description of each water source, source limitations (physical or political), and water quality for each source. **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 for the period 2011-2015, the Casitas MWD average water supply is 17,293 AF with a range from 14,745 AF (2011) to 20,457 AF (2014). In addition, see **Appendix E Worksheets 30** and **34**, and **Appendix F Tables 6-1, 6-4, and 6-8** for additional details. Each of the current water supply sources are summarized in the following sections.

**TABLE 4-1**
**PAST AND CURRENT WATER SUPPLIES 2011-2015**

| **Water Supply Sources** (1) | **2011** | **2012** | **2013** | **2014** | **2015** |
|---|---|---|---|---|---|
| Local surface water (Lake Casitas) | 14,678 | 15,233 | 18,233 | 20,415 | 17,339 |
| Local groundwater (Mira Monte Well) | 67 | 232 | 173 | 42 | 54 |
| 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** | **14,745** | **15,465** | **18,406** | **20,457** | **17,393** |

Notes:
(3) Source, CMWD, 2016. All values in AF, rounded. Fiscal Years.
(4) Transfer to Carpinteria Valley Water District.

### 4.2.1 Local Surface Water

#### 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. The watershed encompasses 226 square miles (144,833 acres) and is 33.5 miles long from upper Matilija Canyon to the Pacific Ocean (see **Figure 4-1**). (Walter, 2015) 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.

**FIGURE 4-1**
**VENTURA RIVER WATERSHED**

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 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)

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**. Groundwater 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 groundwater 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 perennial (for a distance of 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 groundwater 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 groundwater. Between the confluence with San Antonio Creek and Foster Park flow is perennial with some disruption at Foster Park by the groundwater extraction.

The Lower Ventura River frequently has a perennial flow to the estuary due to rising groundwater 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 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 natural and undeveloped, with 57 percent of its land area in protected status. Most of the watershed's primary streams and drainages remain unchannelized.

#### 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 groundwater 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 groundwater 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)

In 1933, the State issued Bulletin No. 46, Ventura County Investigation, in response to the filing of applications to appropriate water from the extreme headwaters of Sespe Creek. 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 groundwater 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 groundwater 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 groundwater 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 12 states the following:

> "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 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 groundwater 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 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 does provide 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 actually beneficially used for the stated purposes. The total amount of water to be placed to beneficial use (direct diversion plus withdrawal from storage) shall not exceed 28,500 AFY.

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

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.

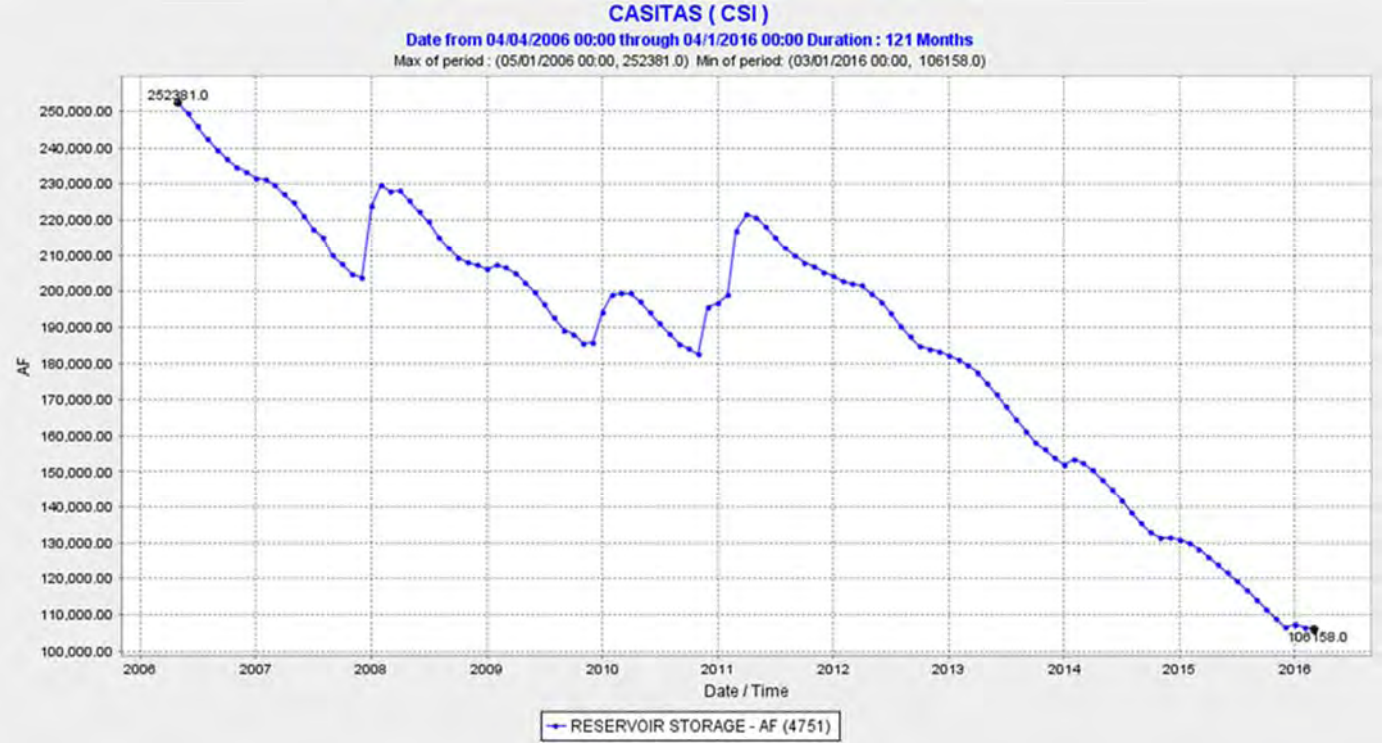
**Table 4-1** summarizes the quantities of water supplies in the Casitas MWD water portfolio for Fiscal Years 2011-2015. **Table 4-1** indicates that for the period 2011-2015 average surface water supplies is 17,180 AF with a range from 14,678 AF (2011) to 20,415 AF (2014). In addition, see **Appendix E Worksheet 30**, and **Appendix F Table 6-8** for additional details.

**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 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.

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.

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




### 4.2.2 Local Groundwater

In the Casitas MWD service area, the Ventura River watershed includes three primary alluvial groundwater 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 groundwater basins. Additional details regarding the Ventura River watershed are provided in **Section 2.3** (climate) and **Section 4.3.1** (topography and hydrology). The Casitas MWD does not have jurisdiction over extractions within the basins within the Ventura River watershed.

Casitas MWD is the backup water supply to several groundwater purveyors of the Ventura River and Ojai groundwater basins. The groundwater 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 groundwater basins to the surface water supply of Lake Casitas.

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

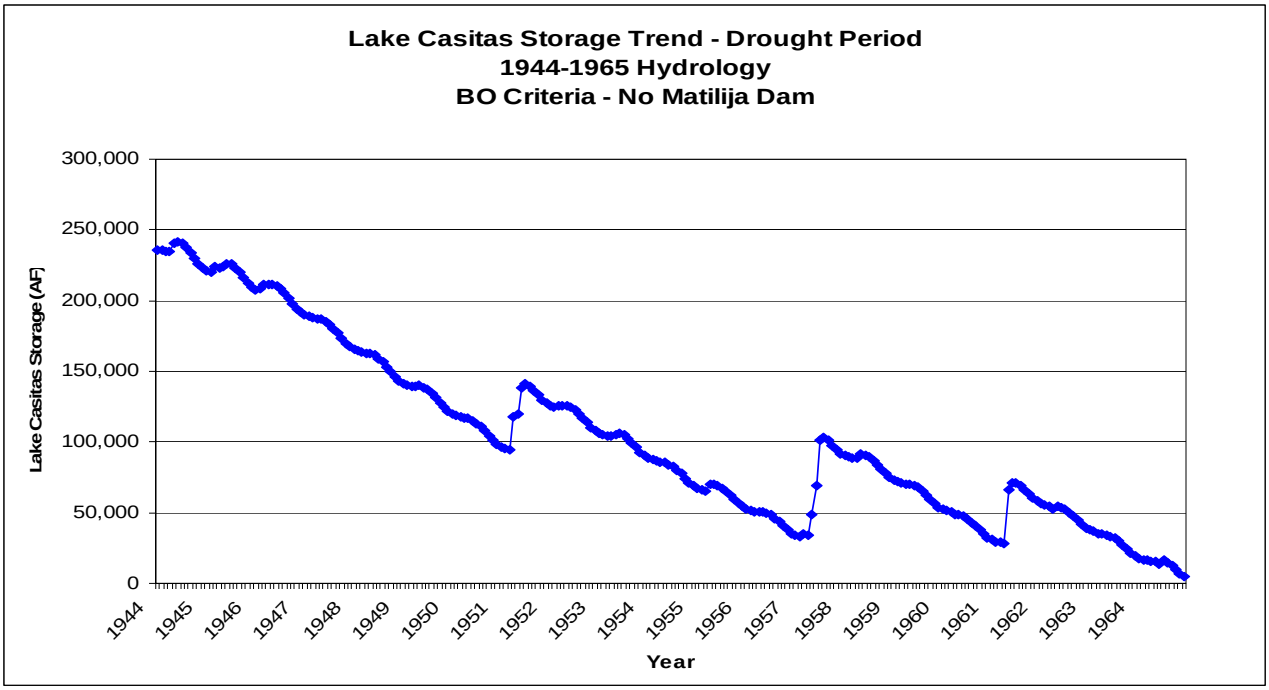
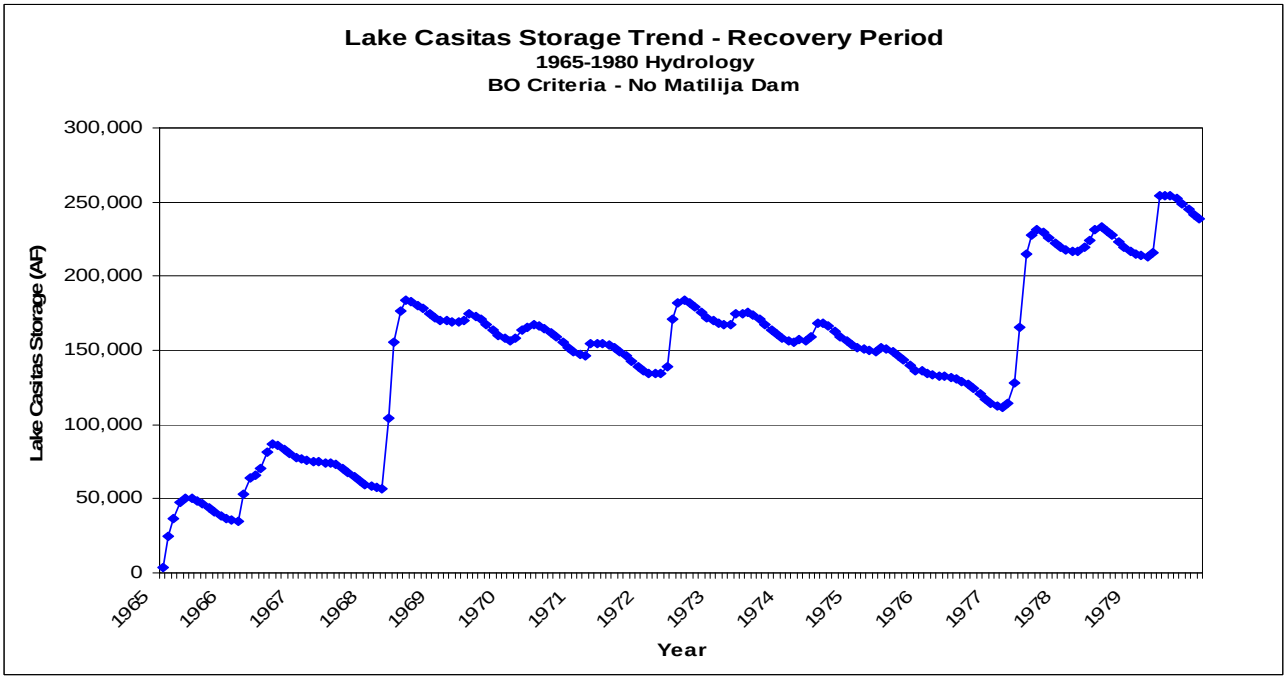



**FIGURE 4-5**
**LAKE CASITAS STORAGE MODEL BASED ON THE 1965-1980 RECOVERY PERIOD**



#### 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 groundwater 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 groundwater 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)

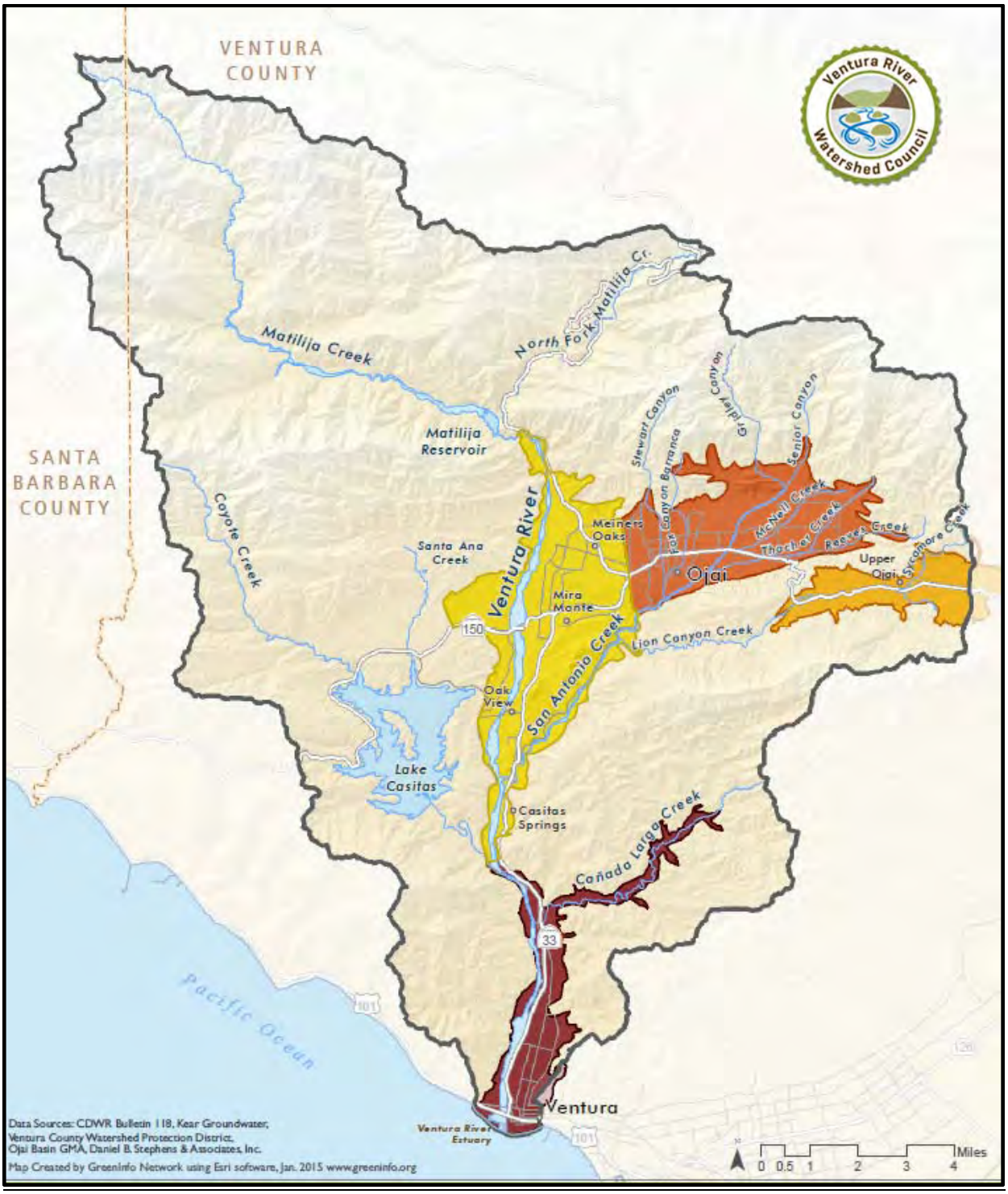
The Basin depth is extremely limited in some areas, making most wells in this reach of the river under the influence of surface water. Water levels fluctuate seasonally by 5 to 20 feet, but usually recover each year during the winter months. There are approximately 291 water supply wells in the Basin; 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 and a Groundwater Management Plan is not available.

#### 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 groundwater basins. Area within the Basin is approximately 8.3 square miles (5,300 acres). (California, 2004) 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 groundwater 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 is approximately 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 groundwater 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 and a Groundwater Management Plan is not available.

**FIGURE 4-6**
**VENTURA RIVER GROUNDWATER BASINS**



#### 4.2.2.3 Ojai Ground Water 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 groundwater 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 groundwater 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 groundwater 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 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), 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, 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 Groundwater Management Plan for the Basin.

#### 4.2.2.4 CMWD Groundwater 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 groundwater 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. The well produced 54 acre-feet in 2015 and an average of 114 AFY over the period 2011-2015. Casitas MWD anticipates annual production of approximately 300 acre-feet annually for the period 2020-2040 if no unforeseeable conditions arise. See **Tables 4-2** and **4-3** for additional details.

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 4-2** summarizes the volume of groundwater extracted by Casitas MWD for Fiscal Years 2011-2015. **Table 4-2** indicates that for the period 2011-2015 average annual groundwater extracted is 114 AF with a range from 42 AF (2014) to 232 AF (2012). In addition, see **Appendix E Table 6-1 Appendix F Worksheet 34**, and for additional details.

**TABLE 4-2**
**GROUNDWATER PUMPED 2011-2015**

| Well (AFY) | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|
| Mira Monte Well (1) | 67 | 232 | 173 | 42 | 54 |
| Percent of Total Water Supply | 0.5 | 1.5 | 1.0 | 0.2 | 0.3 |

Notes:
(1) Source, CMWD, 2016. All values in AF, rounded.

### 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, 2013b)

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, 2013a) 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.

The CADWR Report (CADWR, 2013a) 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.

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


Source: CA DWR.

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, 2013a) The 2013 Reliability Report 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, 2013a) 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, 2013a) 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.

#### 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 groundwater 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 Groundwater Transfer

In 1985, Casitas MWD made arrangements for an emergency transfer of groundwater 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 groundwater 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. In addition, see **Appendix E Worksheet 28** for additional details. 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.

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. Additional details provided 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.

## 4.3 WATER QUALITY

The Casitas MWD has both surface water and groundwater sources which present very different water quality issues. Surface water comes from Lake Casitas (from the Ventura River watershed) and the groundwater is locally produced via Mira Monte Well. 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**. Additional details related to water quality are provided in **Appendix E Worksheets 36-39**.

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 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 testing 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 groundwater that would affect water quality.

## 4.4 PLANNED WATER SUPPLIES 2020-2040

Casitas MWD will continue to rely on surface water and groundwater sources to meet the anticipated water demands of the service area. **Table 4-3** summarizes the quantities of projected water supplies in the Casitas MWD water portfolio for the period 2020-2040. **Table 4-3** indicates that for the period 2020-2040 available water supplies will be 20,840 AFY. Each of the planned water supply sources are summarized in the following sections. See **Appendix E Table 6-9** for additional details.

**TABLE 4-3**
**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 |
| Local groundwater (Mira Monte Well) | 300 | 300 | 300 | 300 | 300 |
| 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** | **20,840** | **20,840** | **20,840** | **20,840** | **20,840** |

Notes:
(3) Source, CMWD, 2016. All values in AF, rounded.
(4) Transfer to Carpinteria Valley Water District.

### 4.4.1 Local Surface Water

**Table 4-3** 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.

### 4.4.2 Local Groundwater

Casitas MWD anticipates that local while groundwater will provide an average of 300 AFY for the period 2020-2040 (see **Tables 4-3** and **4-4**). Casitas MWD does not anticipate any changes or reductions to the local groundwater supply. **Table 4-4** summarizes the volume of groundwater projected to be extracted by Casitas MWD for the period 2020-2040. **Table 4-3** indicates that for the period 2020-2040 average annual groundwater extracted will be approximately 300 AF. In addition, see **Appendix E Table 6-9** for additional details.

**TABLE 4-4**
**GROUNDWATER PROJECTED TO BE PUMPED 2020-2040**

| Well (AFY) | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| Mira Monte Well (1) | 300 | 300 | 300 | 300 | 300 |
| Percent of Total Water Supply | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |

Notes:
(1) Source, CMWD, 2016. 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 of the customers within the service area. See **Section 7** for details related to existing and future BMPs.

### 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 Carpinteria Valley Water District for CMWD customers (see **Section 4.2.4.2** for details). The Casitas MWD considers this water part of the CMWD 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.

The preferred pipeline project estimated a total cost of $109 million dollars (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 groundwater banking, interagency coordination, water transfers, and exchanges.

### 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). 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 groundwater 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.

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.

Currently, 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 groundwater 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 groundwater 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, groundwater recharge, or other reuse
- Regulatory requirements associated with the end use and the public's contact with the recycled water
- Cost for additional treatment beyond what the wastewater treatment plant already required to provide
- Casitas MWD has no direct access to recycled water
- Existing environmental demands for recycled water within Ventura River.

The Ojai Valley Sanitary District (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. The City of Ventura and OVSD have evaluated the potential for recycled water production and sale. (Ventura, 2007; OVSD, 1992) 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.

Wastewater treated by the OVSD 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. Currently, the City of Ventura's WRF discharges to the Santa Clara River estruary. The City of Ventura plans to implement a recycled water program. 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 6-3 to 6-5** for additional details.

## 4.5 FUTURE WATER PROJECTS

Casitas MWD currently does not have any specific future infrastructure projects that will develop more water for the system. 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 groundwater 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.

## 4.6 CLIMATE CHANGE

### 4.6.1 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, 2013b; CANRA, 2009) These changes are anticipated to intensify over the 20-year planning horizon of this UWMP/AWMP. 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.

### 4.6.2 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 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.

### 4.6.3 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.

### 4.6.4 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, 2013b)

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 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, 2013b)

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, 2013b)

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.

### 4.6.5 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.

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 groundwater 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 DOCUMENT REQUIREMENTS

### 5.1.1 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. (CWC, 10635(a))
- Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency. (CWC, 10632(a)(2))

### 5.1.2 AWMP REQUIREMENTS

The Water Code **§10826** require that the AWMP:

- *"(b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:*
  *(7) Water accounting, including all of the following:*
  *(A) Quantifying the water supplier's water supplies.*
  *(B) Tabulating water uses.*
  *(C) Overall water budget."*

The Water Code does not specify the mechanisms or level of detail that would satisfy requirements for water accounting. This section provides a reasonable process and level of detail to assist the agricultural water supplier in preparing an AWMP that can be used for water management planning and for addressing Water Code **§10826 (b)(7)** requirements. Additionally, as noted above, in accordance with Executive Order B-29-15, quantification of water supplies and demands are to be reported for 2013, 2014, and 2015, to the extent data is available.

Information presented in this document can be used to help complete the Water Code requirements for water accounting. As an overview of water supply use within the service area, annual amounts are appropriate; however, to provide more meaningful information to calculate the water budget annual amounts, additional water supply and use information (e.g., monthly/seasonal values, effective precipitation amounts, water losses, and others) can be included in this section. The additional information would also provide the agricultural water supplier with some data useful for estimating water use efficiency, if desired.

## 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-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 4.6**. 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 20,840 AFY in all three base water-year types. See **Appendix E Worksheet 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-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 actual water use in Fiscal Year 2011 is 13,549 acre-feet.

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

| Water-Year Type | Base Year(s) | Volume Available (AFY) |
|---|---|---|
| Average Water-Year | 2011 | 20,840 |
| Single Dry Water-Year | 2014 | 20,840 |
| Multiple Dry Water-Years | 1987<br>1988<br>1989 | 20,840<br>20,840<br>20,840 |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

**Table 5-2** summarizes the Casitas MWD projected normal water-year supply and 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 300 AF of Mira Monte Well groundwater. 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. Casitas MWD chose to use a conservative (high) projection of water demand at 17,200 AFY (more than the recent average 16,000 AFY for years 2010-2015) for the period 2020-2025, and 17,500 AFY for the period 2030-2040. **Table 5-2** indicates that, for a normal water-year during the period 2020-2025, Casitas MWD's water supply will exceed water demand by 3,640 AFY. For a normal water-year during the period 2030-2040, **Table 5-2** indicates that Casitas MWD's water supply will exceed water demand by 3,340 AFY. See **Appendix E Worksheet 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 groundwater 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 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 actual water use in Fiscal Year 2014 is 19,093 acre-feet.

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

| | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| Demand totals (AFY) | 17,200 | 17,200 | 17,500 | 17,500 | 17,500 |
| **Difference (supply minus demand) (AFY)** | **3,640** | **3,640** | **3,340** | **3,340** | **3,340** |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

**Table 5-3** 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 acre-feet** (CMWD, 2004; copy provided in **Appendix H**) and 300 AF of Mira Monte Well groundwater. 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. Casitas MWD chose to use a conservative (high) projection of water demand at 20,840 AFY for the period 2020-2040 (exceeding than the maximum demand during the period 2010-2015 of 19,093 AF in 2014). **Table 5-3** indicates that, for a single dry water-year during the period 2020-2040, Casitas MWD's water supply will be equivalent to water demand. See **Appendix E Worksheet 7-3** for additional details.

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

| | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|
| Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| Demand totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| **Difference (supply minus demand) (AFY)** | **0** | **0** | **0** | **0** | **0** |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

### 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 groundwater 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 groundwater 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.

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 actual average water use in Fiscal Years 1987-1989 is 23,216 acre-feet.

**Table 5-4** 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 acre-feet** (CMWD, 2004; copy provided in **Appendix H**) and 300 AF of Mira Monte Well groundwater. 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. Casitas MWD chose to use a conservative (high) projection of water demand at 20,840 AFY for the period 2020-2040 (exceeding the maximum demand during the period 2010-2015 of 19,093 AF in 2014). **Table 5-4** indicates that, for the multiple dry water-years during the period 2020-2040, Casitas MWD's water supply will be equivalent to water demand. See **Appendix E Worksheet 7-3** for additional details.

### 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 300 AF of Mira Monte Well groundwater. Therefore, the three-year minimum water supply is 20,840 AF resulting from surface water and groundwater as summarized in **Table 5-5** (see **Appendix E Worksheet 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 to meet local demands.

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

| | | 2020 | 2025 | 2030 | 2035 | 2040 |
|---|---|---|---|---|---|---|
| First Year | Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | **Difference (supply minus demand) (AFY)** | **0** | **0** | **0** | **0** | **0** |
| Second Year | Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | **Difference (supply minus demand) (AFY)** | **0** | **0** | **0** | **0** | **0** |
| Third Year | Supply totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals (AFY) | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | **Difference (supply minus demand) (AFY)** | **0** | **0** | **0** | **0** | **0** |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

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

| | 2016 | 2017 | 2018 |
|---|---|---|---|
| **Available Water Supply (AFY)** | **20,840** | **20,840** | **20,840** |

Notes:
Source, CMWD, 2016. All values in AF, rounded.

## 5.4 WATER QUALITY IMPACTS ON RELIABILITY

The water quality of Lake Casitas may significantly vary 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 lake 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 (2015). The level of the lake management implementation may increase as the problem intensifies during low storage conditions.

Casitas MWD's groundwater source represents only 300 acre-feet of water per year (1.5 percent) compared to the nearly 20,500 acre-feet (98.5 percent) from Lake Casitas. The well water is blended with lake water at a high ratio with surface water to ensure the maximum contamination level for nitrate is met. 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 groundwater elevation. Over the past twenty years, the groundwater 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 Mira Monte Well.

# SECTION 6: WATER SHORTAGE CONTINGENCY PLANNING

## 6.1 DOCUMENT REQUIREMENTS

### 6.1.1 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))
- Indicated 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))

### 6.1.2 AWMP REQUIREMENTS

The Drought Management Plan should detail how the water supplier would prepare for droughts and manage water supplies and allocations during drought conditions. Some components or actions may require detailed review of conditions, policy changes, and long term capital improvements. Additionally, as conditions change and new technology and knowledge becomes available, opportunities and constraints will change.

A description of the water shortage allocation policies is required by the Water Code and will be a key component of the drought management plan. Water suppliers that have a Water Shortage Allocation Policy should attach a copy of the policy in Section VIII of the AWMP and describe the allocation plan in this section. If the supplier does not have such a policy, the agricultural water supplier can describe how reduced water supplies are allocated.

In addition to the water shortage allocation policy, the drought management plan should consider describing the following components:

- What hydraulic levels or conditions (reservoir levels, stream flows, groundwater, snowpack etc.) are monitored and measured to determine the water supply available and level of drought severity.
- The district's policy and process for declaring a water shortage and implementing the water shortage allocation and drought management plan.
- Operational Adjustments- changes in district water management and district operations to respond to drought, including canal and reservoir operations and groundwater management.
- Stages of Actions- include the stages of action and corresponding levels of drought severity that district will implement in response to the drought.
- Coordination and Collaboration- include a description on how coordination and collaboration with other local districts and water agencies or regional groups will be used in drought response.
- Revenues and Expenditures- describe how the drought and lower water allocations will affect the districts revenues and expenditures.

## 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.

### 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.
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.

### 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.
      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 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 groundwater and surface water supply to serve all of 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.
- 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.
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 he 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 he 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.
2) The Multiple-Family Residential water allocation for each account shall he 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 | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent of Total Annual Allocation | 0.17 | 0.17 | 0.13 | 0.05 | 0.05 | 0.05 | 0.02 | 0.02 | 0.02 | 0.10 | 0.10 | 0.12 |

Notes:
Source, CMWD, 2016.

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.

**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.
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 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 20I2-2013 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 Water Resources Manager stating the nature of the appeal. The appeal shall be reviewed by the Casitas 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 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.

## 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 groundwater 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**.

**TABLE 6-2**
**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, 2016.

**TABLE 6-3**
**STAGE ACTION SCHEDULE**

| Target Dates | |
|---|---|
| June – April | Monitor water demands, rainfall, reservoir level trend, groundwater 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, 2016.

### 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 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. 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.

**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:
(1) Source, CMWD, 2016.
(2) Initial Stage 1 Allocations include a 20% reduction from the 1989-1990 demands.

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 |
|---|---|---|---|
| **Stage 1**<br><br>Supply Range: **100%-50%**<br><br>Demand Reduction: **0%**<br><br>(80% of 1989 use) | • Initiate public information and advertising campaign.<br>• Publicize ways to reduce water consumption.<br>• Coordinate conservation actions with other water purveyors and cities.<br>• Perform water audits and promote water efficient use/conversions.<br>• Conduct water workshops.<br>• Temporary staffing for public inquiries, as needed. | • Water Conservation practices requested of all customer classifications.<br>• Adhere to Water Wise Prohibition Ordinance.<br>• Adhere to assigned water allocation or less. | • Consider and implement conservation penalty for water use in excess of allocation.<br>• Consider rates for revenue stabilization and cost of service. |
| **Stage 2**<br><br>Supply Range: **50%-40%**<br><br>Demand Reduction from Stage 1 Allocation: **20%** | • Declare Stage 2<br>• Implement demand reductions for each customer classification.<br>• Intensify public information campaign.<br>• Optimize existing water resources.<br>• Intensify leak detection.<br>• Develop appeals staffing.<br>• Consult with major customers to develop conservation plans and water use audits. | • Continue all Stage 1 measures.<br>• Landscape watering restricted to two (2) watering days per week.<br>• Require water audits for large water users; implement recommendations of the water audits.<br>• Businesses display “save water” signage.<br>• Increase public information. | • Consider and implement conservation penalty for water use in excess of allocation.<br>• Consider rates for revenue stabilization and cost of service. |
| **Stage 3**<br><br>Supply Range: **40%-30%**<br><br>Demand Reduction from Stage 1 Allocation: **30%** | • Declare Stage 3<br>• Implement demand reductions for each customer classification.<br>• Expand and intensify public information campaign.<br>• Provide regular briefing, publish monthly consumption report.<br>• Hire additional temporary staff in customer service, conservation, and water distribution. Water waste enforcement.<br>• Consider moratorium on new service connections. | • Continue with Stage 1 and 2 measures.<br>• Reduced water allocations.<br>• Landscape watering restricted to one (1) watering day per week.<br>• No landscape changes unless xeriscape. | • Consider and implement conservation penalty for water use in excess of allocation.<br>• Consider rates for revenue stabilization and cost of service. |

| Water Shortage Condition | Key CMWD Communications And Actions | Customer Demand Reduction Measures | Penalties and Rates |
|---|---|---|---|
| **Stage 4**<br><br>Supply Range: **30%-25%**<br><br>Demand Reduction from Stage 1 Allocation: **40%** | • Declare Stage 4<br>• Implement demand reductions for each customer classification.<br>• Continue to provide regular media briefings.<br>• Scale up appeals.<br>• Open drought information center. | • Continue with Stage 1 through 3 measures.<br>• Reduced water allocations.<br>• Landscape watering restricted to one (1) watering day per week.<br>• Implement restrictive irrigation delivery schedule.<br>• Minimal water for large landscapes.<br>• Consider prohibition of filling swimming pools and fountains.<br>• Implement restrictive irrigation delivery schedule and quantities greater than 60%. | • Consider and implement conservation penalty for water use in excess of allocation.<br>• Consider rates for revenue stabilization and cost of service. |
| **Stage 5**<br><br>Supply Range: **25%-0%**<br><br>Demand Reduction from Stage 1 Allocation: **50%** | • Declare Stage 5<br>• Implement demand reductions for each customer classification.<br>• Minimize outdoor water use and non-essential uses.<br>• Implement aggressive public outreach and education program.<br>• Implement crisis communications plan.<br>• Coordinate with State and local agencies to address enforcement challenges.<br>• Water Shortage Emergency declaration to be considered. | • Continue with Stage 1 through 4 measures.<br>• Reduced water allocations.<br>• Rescind temporary meters issued.<br>• No turf irrigation.<br>• Implement restrictive irrigation delivery schedule and quantities greater than 50%. | • Consider and implement conservation penalty for water use in excess of allocation.<br>• Consider rates for revenue stabilization and cost of service. |

Notes:
Source, CMWD, 2016.

### 6.4.5 Customer Notification

The customers of each and every 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.

### 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 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/AWMP 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.

### 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 pubic 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.

The Casitas MWD water system relies on Lake Casitas as the main source of water supply and the groundwater basin agencies as the backup water sources to Lake Casitas. It should be noted that the groundwater 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 groundwater 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 groundwater 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 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 water supply. As noted in **Section 5**, the Casitas MWD water supply for a normal water-year is 20,840 AF. Annual commodity income from Casitas MWD sales of 20,840 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 water supply, Casitas MWD water sales could potentially be reduced by 50 percent of a normal water-year. 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 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.

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

| | Normal Supply | Supply Deficit of 50 Percent |
|---|---|---|
| **Water Supply** | 20,840 AF | 10,420 AF |
| **Percentage of Normal** | 100 | 50 |
| **Revenue:** | | |
| Commodity Charges | $6,060,000 | $3,030,000 |
| Service Charges | $1,600,000 | $800,000 |
| **Total** | $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 |
| **Total** | $6,120,000 | $5,203,000 |
| | | |
| **Budget Surplus (Deficit)** | $1,540,000 | ($1,373,000) |

Notes:
Source, CMWD, 2016. All values estimated.

### 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 (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. See **Appendix F, Worksheets 10-18** for additional details related to Casitas MWD policies. 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 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 DOCUMENT REQUIREMENTS

### 7.1.1 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))
- Wholesale suppliers shall describe specific demand management measures listed in Code, including 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. (CWC, 10631(f)(2))
- 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))

### 7.1.2 AWMP Requirements

This section will include the following:

- AWMP must include demand management policies and incentives in addition to the water shortage allocation plan to lower on farm water use.
- Water Code §10826 (e) requires that certain water use efficiency information be included in the AWMP per §10608.48. Sections 10608.48 (a) through 10608.48(f) are related to the EWMPs of the AWMP. Sections 10608.48 (a) to 10608.48 (c) require implementation of EWMPs. Section 10608.48 (d) requires a report of which EWMPs have been implemented, an estimate of efficiency improvements, and documentation that non-implemented EWMPs were either not locally cost-effective or technically feasible. Section 10608.48 (e) specifies how to report the information.
- Implementation of critical EWMPs (Water Code §10608.48 (b)) are required of all agricultural water suppliers. Other EWMPs (Conditional), listed in Water Code §10608.48 (c), are required only if they are locally cost-effective and technically feasible. CADWR also encourages the agricultural water supplier to report on how implementation of EWMPs may have affected or is anticipated to affect operations.

## 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.
- 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 two sections (**Sections 7.3 and 7.4**) summarize the conservation measures as required by the UWMP and AWMP, respectively.

## 7.3 UWMP DEMAND MANAGEMENT MEASURES

The UWMP Act currently requires wholesale 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 wholesale agency. The Casitas MWD will comply with the UWMP requirements as a wholesale agency.

### 7.3.1 Metering

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. All of the Casitas MWD direct customers are metered. Casitas MWD has meters for all of the 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 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 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 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 groundwater resources so they would rely less on Casitas MWD' surface water supply. This project will improve conjunctive use of local groundwater 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 Other DMMs

#### 7.3.4.1 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 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.

#### 7.3.4.2 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.

#### 7.3.4.3 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.

#### 7.3.4.4 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 will provide 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.

#### 7.3.4.5 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.

#### 7.3.4.6 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.

#### 7.3.4.7 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.

#### 7.3.4.8 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** .

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.

#### 7.3.4.9 Water Waste Prohibition

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

#### 7.3.4.10 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.

#### 7.3.4.11 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.

## 7.4 AWMP EFFICIENT WATER MANAGEMENT PRACTICES

The AWMP Act requires agricultural water suppliers to address Efficient Water Management Practices (EWMP) including two categories of measures: 1) critical activities, and 2) conditional activities. Critical activities are required to be implemented by agricultural water suppliers. Critical activities include two requirements: 1) accurate measurement of water deliveries to individual farming operations, and 2) adopting a pricing structure for agricultural water customers based at least in part on quantity of water delivered. Conditional activities must be implemented by agricultural water suppliers if they are locally cost-effective and technically feasible. **Table 7-1** lists EWMPs as required by the AWMP Act.

Casitas MWD is not required to implement the EWMPs since the Casitas MWD is voluntarily addressing the AWMP requirements and the service area includes less than 10,000 acres of agriculture.

**TABLE 7-1**
**LIST OF EFFICIENT WATER MANAGEMENT PRACTICES**

| | |
|---|---|
| **Critical EWMP** | |
| 1 | Measure the volume of water delivered to customers with sufficient accuracy |
| 2 | Adopt a pricing structure for water customers based on at least in part on quantity delivered |
| **Conditional EWMP** | |
| 1 | Facilitate alternate land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage |
| 2 | Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soil |
| 3 | Facilitate the financing of capital improvements for on-farm irrigation systems |
| 4 | Implement an incentive pricing structure |
| 5 | Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage |
| 6 | Increase flexibility in water ordering by, and delivery to, water customers within operational limits |
| 7 | Construct and operate supplier spill and tailwater recovery systems |
| 8 | Increase planned conjunctive use of surface water and groundwater within the supplier service area |
| 9 | Automate canal control structures |
| 10 | Facilitate or promote customer pump testing and evaluation |
| 11 | Designate a water conservation coordinator |
| 12 | Provide for the availability of water management services to water users |
| 13 | Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow for more flexible water deliveries and storage. |
| 14 | Evaluate and improve the efficiencies of the supplier's pumps |

Notes:
Source, CMWD, 2016.

**Table 7-2** provides a summary of the implementation status of each of the EWMPs. **Table 7-2** is followed by a narrative providing details of the efforts by Casitas MWD related to the implementation of each of the EWMPs.

### 7.4.1 Critical EWMPs

#### 7.4.1.1 Water Measurement

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

### 7.4.2 Volume-Based 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. 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** .

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).

### 7.4.2 Conditional EWMPs

#### 7.4.2.1 Alternative Land Use

The Casitas MWD could encourage alternative land use by agricultural customers within the service area. Alternative land uses could include alternative crop types and or fallowing of land. However, there are limited known properties with exceptionally high irrigation factors or whose irrigation contributes to significant problems located within the Casitas MWD boundaries. The County of Ventura is the agency responsible for land use policies and changes.

#### 7.4.2.2 Recycled Water

Casitas MWD currently does not produce nor receive any recycled water. The Casitas MWD has considered recycled water to meet future water demands. The Ojai Valley Sanitary District (OVSD) and the City of Ventura provide wastewater collection and treatment within Casitas MWD's boundaries. **Section 4.4.5** provided additional details related to future use of recycled water within the Casitas MWD service area.

**TABLE 7-2**
**STATUS OF EFFICIENT WATER MANAGEMENT PRACTICES**

| | |
|---|---|
| **Critical EWMP** | |
| 1 – Water Measurement | Implemented |
| 2 – Volume-based pricing | Implemented |
| **Conditional EWMP** | |
| 1 – Alternate Land Use | Being Evaluated |
| 2 – Recycled Water Use | Not anticipated during current planning period |
| 3 – On-Farm Irrigation Capital Improvements | Implemented |
| 4 – Incentive Pricing Structure | Implemented for Residential and Residential-Agricultural accounts |
| 5 – Infrastructure Improvements | Implemented |
| 6 – Order/Delivery Flexibility | Implemented |
| 7 – Supplier Spill and Tailwater Systems | Not applicable |
| 8 – Conjunctive Use | Implemented |
| 9 – Automated Canal Controls | Implemented |
| 10 – Customer Pump Test/Evaluation | Implemented |
| 11 – Water Conservation Coordinator | Implemented |
| 12 – Water Management Services | Implemented |
| 13 – Identify Institutional Changes | Implemented |
| 14 – Supplier Pump Improved Efficiency | Implemented |

Notes:
Source, CMWD, 2016.

#### 7.4.2.3 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.

#### 7.4.2.4 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.

#### 7.4.2.5 Infrastructure Improvements

The Casitas MWD has a Capital Improvement Plan. This Plan identifies a schedule for new facilities and equipment, major maintenance of existing facilities and equipment, and replacement projects.

#### 7.4.2.6 Order/Delivery Flexibility

The Casitas MWD operates the entire distribution system, including agricultural and urban customer demands, based on instantaneous water demands. The Casitas MWD does not currently require customers to place orders for delivery of water. The Casitas MWD does not currently require lead times for delivery of water. The Casitas MWD currently does not have customer allocations in place. Therefore, the Casitas MWD currently provides flexibility for meeting all customer water demands.

#### 7.4.2.7 Supplier Spill and Tailwater Systems

The Casitas MWD delivers water to all of its customers through a distribution pipeline system that is not prone to the operational spills common to the canal delivery systems that serve many of the State's agricultural water users. Casitas MWD's agriculture customers generally produce minimal spill water and tailwater as the result of efficient irrigation practices. The Casitas MWD does not have any spill water or tailwater systems. Agricultural customers may implement spill water and tailwater capture practices on their private property.

#### 7.4.2.8 Conjunctive Use

Conjunctive use of groundwater and surface water is the planned balanced use of both types of water, so that the supplies and use of both these types of water can be maximized. The Casitas MWD currently practices conjunctive use of its groundwater and surface water. Casitas MWD utilizes groundwater when it is available to supplement local surface water from Lake Casitas. Casitas MWD encourages customers to use local groundwater when available. Casitas MWD received a grant to improve the reliability of Senior Canyon Mutual Water Company's groundwater resources so they would rely less

on Casitas MWD' surface water supply. This project will improve conjunctive use of local groundwater and surface water supplies.

#### 7.4.2.9 Automated Canal Controls

The Casitas MWD delivers water to all of its customers through a distribution pipeline system. The Casitas MWD operations utilize SCADA controls on the distribution system including pipelines, meters, valves, pump stations, and reservoirs.

#### 7.4.2.10 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: **on.sce.com/pumptest** .

#### 7.4.2.11 Water Conservation Coordinator

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 events. In addition, Casitas MWD also utilizes consulting firms to assist with the implementation of demand management measures.

#### 7.4.2.12 Water Management Services to Customers

##### 7.4.2.12.1 Wholesale Agency Assistance Programs

The Casitas MWD is a wholesaler 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.

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.

##### 7.4.2.12.2 Public Information Programs

The extensive Casitas MWD public information program promotes the water conservation ethic and informs the public of the benefits derived from conserving a valuable resource. See **Section 7.3.2** for details.

#### 7.4.2.12.3 Real-Time Crop Irrigation Information

The Casitas MWD included a link to the Soule Park Golf Course weather station on the web page, **http://data.weatherreach.com/StationDetail?StationID=68&TableTimeInt=60** . The weather page includes local and current air temperature, humidity, wind, evapotranspiration, precipitation, estimated irrigation requirement, and historical data. Additional irrigation information is made available to local farmers upon request. Casitas MWD regularly maintains the weather station instrumentation to ensure accuracy of information.

#### 7.4.2.12.4 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.

#### 7.4.2.12.5 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 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.

### 7.4.2.13 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.

### 7.4.2.14 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.

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# APPENDICES


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# Appendix A

## Definitions of Selected Terminology

# APPENDIX A

# DEFINITIONS FOR SELECTED TERMINOLOGY

Selected abbreviations were defined in the Table of Contents. Provided below are definitions of selected acronyms and terms used throughout this document.

acre-foot. The amount of water needed to cover an acre one-foot deep (approximately 325,900 gallons). An acre-foot can support the annual indoor and outdoor needs of between one and two households per year, and, on average, 3 acre-feet are needed to irrigate 1 acre of farmland; enough to cover a football field 1 foot deep.

appropriation. The right to withdraw water from its source.

aquifer. A geologic formation of sand, rock and gravel through which water can pass and which can store, transmit and yield significant quantities of water to wells and springs.

audit (end-use). A systematic accounting of water uses by end users (residential, commercial, industrial, or agricultural), often used to identify potential areas for water reduction, conservation, or efficiency improvement.

audit (system). A systematic accounting of water throughout the production, transmission, and distribution facilities of the system.

available supply. The maximum amount of reliable water supply, including surface water, groundwater, and purchases under secure contracts.

average-day demand. A water system's average daily use based on total annual water production (total annual gallons or cubic feet divided by 365); multiple years can be used to account for yearly variations.

avoided cost. The savings associated with undertaking a given activity (such as demand management) instead of an alternative means of achieving the same results (such as adding supply); can be used to establish the least-cost means of achieving a specified goal. Can be measured in terms of incremental cost.

baseline. An established value or trend used for comparison when conditions are altered, as in the introduction of water conservation measures. The average per capita water use for the following baseline periods and calculated in accordance with *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*, DWR 2011: (1) A 10 to 15-year continuous period used to calculate baseline daily per capita water use per CWC Section 10608.20; (2) A continuous 5-year period used to determine whether the 2020 urban water use target meets the legislation's minimum water use reduction requirement per CWC Section 10608.22.

beneficial use. A use of water resources that benefits people or nature. State law may define beneficial use.

benefit-cost analysis. A comparison of total benefits to total costs, usually expressed in monetary terms, used to measure efficiency and evaluate alternatives. See also cost-effectiveness and avoided-cost.

best management practices. A measure or activity that is beneficial, empirically proven, cost-effective, and widely accepted in the professional community. The BMPs were historically identical to the Demand Management Practices (DMMs) found in the Water Code, but revisions to both the BMPs and the DMMs have now made them different sets of practices.

block. A quantity of water for which a price per unit of water (or billing rate) is established.

budget (water-use). An accounting of total water use or projected water use for a given location or activity.

capital facilities. Physical facilities used in the production, transmission, and distribution of water.

CII. The combination of commercial, institutional, and industrial water use sectors.

CIMIS. A network of automated weather

stations that provide real time weather data to estimate reference evapotranspiration (ETo). The stations are owned and operated cooperatively between the California Department of Water Resources and local agencies.

commodity charge. See variable charge.

compliance daily per capita water use/compliance gpcd. The gross water use during the final year of the reporting period, reported in gallons per capita per day. 2015 and 2020 are both compliance years. This term is used in the context of SB X7-7, The Water Conservation Act of 2009.

conservation (water). Any beneficial reduction in water losses, waste, or use.

conservation pricing. Water rate structures that help achieve beneficial reductions in water usage. See nonpromotional rates.

consumptive use. Use that permanently withdraws water from its source.

cost-effectiveness. A comparison of costs required for achieving the same benefit by different means. Costs are usually expressed in dollars, but benefits can be expressed in another unit (such as a quantity of water). See net benefits.

CUWCC. Council. A membership organization dedicated to urban water conservation throughout California by supporting and integrating innovative technologies and practices; encouraging effective public policies; advancing research, training, and public education; and building on collaborative approaches and partnerships.

customer class. A group of customers (residential, commercial, industrial, wholesale, agricultural, and so on) defined by similar costs of service or patterns of water usage.

decreasing-block (or declining-block) rate. A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) decreases with the amount water usage.

demand forecast. A projection of future demand that can be made on a systemwide or customer-class basis.

demand management measures. Measures, practices, or incentives deployed by water utilities to permanently reduce the level or change the pattern of demand for a utility service.

demographic. Having to do with population or socioeconomic conditions.

disadvantaged community. A community with an annual median household income that is less

than 80 percent of the statewide annual median household income.

discount rate. A percentage that is used to adjust a forecast of expenditures to account for the time value of money or opportunity costs; it can be based on the utility's cost of capital.

distribution facilities. Pipes, treatment, storage and other facilities used to distribute drinking water to end-users. Transmission canals and pipelines not used for delivering water directly to retail customers should not be included as part of the distribution system.

drought. A sustained period of inadequate or subnormal precipitation that can lead to water supply shortages, as well as increased water usage.

efficient water management practices. See also “demand management measures” but required for AWMP. See also “best management practices”.

end use. Fixtures, appliances, and activities that use water.

end user. Residential, commercial, industrial, governmental, or institutional water consumer.

escalation rate. A percentage that is used to adjust a forecast of expenditures to account for the increasing value of a good or service over time (apart from the discount rate and inflationary effects).

evapotranspiration. Water losses from the surface of soils and plants.

exchanges. Water exchanges are typically water deliveries by one water user to another water user, with the receiving water user returning the water at a specified time, or when the conditions of the parties’ agreement are met. Water exchanges can be strictly a return of water on a basis agreed upon by the participants or can include payment and the return of water. For purposes of UWMP reporting, this is considered a “Wholesale Use,” even if the agency is not considered a wholesale water agency as per the definition in CWC 10608.12 (p) and (r). Agencies will make their own determination as to whether water sent to another agency is a sale, transfer, or exchange.

fixed charge. The portion of a water bill that does not vary with water usage.

fixed costs. Costs associated with water services that do not vary with the amount of water produced or sold.

gpcd. The unit of measure used for reporting baseline and target per capita water consumption. This term is used in the context of SB X7-7, The Water Conservation Act of 2009.

graywater. Reuse, generally without treatment, of domestic type wastewater for toilet flushing, garden irrigation and other nonpotable uses. Excludes water from toilets, kitchen sinks, dishwashers, or water used for washing diapers.

gross water use. The volume of water entering a supplier’s distribution system over a 12-month period. This volume may be adjusted based on changes in system storage, sales to other agencies, recycled water use, agricultural water use, and industrial process water use. This term is used in the context of SB X7-7, The Water Conservation Act of 2009.

groundwater. Water that occurs beneath the land surface and fills partially or wholly pore spaces of the alluvium, soil or rock formation in which it is situated. Does not include water produced with oil in the production of oil and gas or in a bona fide mining operation.

groundwater basin. A groundwater reservoir defined by all the overlying land surface and the underlying aquifers that contain water stored in the reservoir. Boundaries of successively deeper aquifers may differ and make it difficult to define the limits of the basin.

groundwater overdraft. The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average.

groundwater recharge. The action of increasing groundwater storage by natural conditions or by human activity.

groundwater table. The upper surface of the zone of saturation (all pores of subsoil filled with water), except where the surface if formed by an impermeable body.

hydrologic region. A geographical division of the state based on the local hydrologic basins. The California Department of Water Resources divides California into 10 hydrologic regions that correspond to the state’s major water drainage basins.

imported water. Water that has originated from one hydrologic region and is transferred to another hydrologic region.

increasing-block (or inclining-block) rate. A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) increases with the amount water usage.

incremental cost. The additional cost associated with adding an increment of capacity.

instream flow. River and stream waters that maintain stream quality, aquatic life, and recreational opportunities.

integrated resource planning. An open and participatory planning process emphasizing least-cost principles and a balanced consideration of supply and demand management options for meeting water needs.

interim urban water use target. The 2015 urban water use target that is the midpoint between the supplier's 10 to 15-year baseline GPCD and their 2020 target GPCD. 2015 UWMPs will compare the interim water use target to the actual water use of 2015. This term is used in the context of SB X7-7, The Water Conservation Act of 2009.

irrigation scheduling. An automated method for optimizing outdoor water use by matching the watering schedule to plant needs.

large-volume user. A water customer, usually industrial or wholesale, whose usage is substantial relative to other users; large-volume users may present unique peaking or other demand characteristics.

leak detection. Methods for identifying water leakage in pipes and fittings.

life span. The expected useful life of a supply-side or demand-side project, measure, or practice. (The life span may not be identical to useful life for tax purposes.)

load management. Methods for managing levels and patterns of usage in order to optimize system resources and facilities.

losses (water). Metered source water less revenue-producing water and authorized unmetered water uses.

low water-use landscaping. Use of plant materials that are appropriate to an area's climate and growing conditions (usually native and adaptive plants). See also xeriscape.

lower income. Persons and families whose income does not exceed the qualifying limits for lower income families as established and amended from time to time pursuant to Section 8 of the United States Housing Act of 1937. 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.

market penetration. The extent to which an activity or measure is actually implemented compared to all potential uses or markets.

marginal-cost pricing. A method of rate design where prices reflect the costs associated with producing the next increment of supply.

master metering. A large meter at a point of distribution to multiple uses or users that could be further submetered. Includes metered wholesale sales.

maximum-day demand. Total production for the water system on its highest day of production during a year.

meter. An instrument for measuring and recording water volume.

mixed-use meter. A meter measuring water use for more than one type of end use (such as indoor and outdoor use).

net benefits. The numerical difference between total benefits and total costs, both of which must be expressed in the same unit (usually dollars). See cost-effectiveness.

net present value. The present value of benefits less the present value of costs.

NOAA. A federal agency focused on the condition of the oceans and atmosphere. NOAA provides weather data that may be useful to urban water suppliers when describing the climate of their service area.

nominal dollars. Forecast dollars that are not adjusted for inflation.

nonaccount water. Metered source water less metered water sales.

nonconsumptive use. Water withdrawn and returned to the source.

nonpromotional rates. Rates that do not encourage additional consumption by water users.

nonresidential customer. A commercial, industrial, or agricultural utility customer.

normalization. Adjustment of a variable to a "normal" level based on averaging over an accepted period of time; used in forecasting.

opportunity cost. The value of a foregone opportunity that cannot be pursued because resources are taken up by a chosen activity.

peak demand. The highest point of total water usage experienced by a system, measured on an hourly and on a daily basis.

per-capita use. Total use divided by the total population served.

per-capita residential use. Residential use divided by the total population served.

Potable Water. Water intended for human consumption, delivered through a Public Water System, and regulated by a State or local health agency.

precipitation rate (sprinkling). The surface application rate for landscape watering, usually expressed in inches per hour.

present value. Future expenditures expressed in current dollars by adjusting for a discount rate that accounts for financing costs.

pressure regulator. A post-meter device used to limit water pressure.

price elasticity of demand. A measure of the responsiveness of water usage to changes in price; measured by the percentage change in usage divided by the percentage change in price.

primary treatment. Removing solids and floating matter from wastewater using screening, skimming and sedimentation (settling by gravity).

public water systems. A system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. Public water systems are regulated by the State Water Resources Control Board, Drinking Water Program.

rationing. Mandatory water-use restrictions sometimes used under drought or other emergency conditions.

raw water. Water that is untreated and used in its natural state. This may also be called “Source Water.” Some urban water agencies supply raw water to customers for non-potable uses.

real dollars. Forecast dollars that are adjusted for inflation.

recycled water. Municipal wastewater that has been treated to a specified quality, enabling it to be reused for a beneficial purpose.

retail water use/demand. The sale of water directly to customers for end use. These include, single family, multi-family, landscape, or CII. The following sectors may be reported as either a wholesale or retail demand, the determination is made by the supplier: Groundwater recharge, saline intrusion barrier, agricultural, wetlands or wildlife habitat.

rGPCD. Residential Gallons per Capita per Day. This is used in drought reporting to SWRCB for purposes of complying with the Governor's drought declarations and executive orders in 2014 and 2015 and is solely the estimated residential water use in a service area divided by population. This differs from the GPCD used in UWMPs, which is the total water use within a service area divided by the population.

retrofit. Replacement of parts in an existing plumbing fixture or water-using appliance in order to improve its operational efficiency.

revenue-producing water. Water metered and sold.

reuse (water). Beneficial use of treated wastewater. See also recycled water.

Safe Drinking Water Act. Federal drinking water quality legislation administered by the USEPA through state primacy agencies.

safe yield. The maximum reliable amount that can be withdrawn from a source without compromising quality or quantity, as defined by hydrological studies; can be based on acceptable withdrawals during a critical supply period or drought with a specific probability of occurrence.

SB X7-7. The Water Conservation Act of 2009 that provides for a 20% statewide reduction of urban per capita water use by the year 2020. The Act includes requirements for determining baselines and targets, among other things.

SB X7-7 Verification Form. A set of tables that present the calculations used by a retail supplier or Regional Alliance for developing baselines and targets. These tables are required for retail suppliers and Regional Alliances.

seasonal rate. A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) varies by season of use; higher rates usually are charged in the season of peak demand.

secondary treatment. The biological portion of wastewater treatment which uses the activated sludge process to further clean wastewater after primary treatment. Generally, a level of treatment that produces 85 percent removal efficiencies for biological oxygen demand and suspended solids. Usually carried out through the use of trickling filters or by the activated sludge process.

sectors. Classifications of water use that are clearly distinct from other water uses.

sensitivity analysis. An analysis of alternative results based on variations in assumptions; a "what if" analysis.

service territory. The geographic area served by a water utility.

SGMA. Sustainable Groundwater Management Act of 2014. Three California legislative bills that provide a framework for long-term sustainable groundwater management. Local and regional authorities will form Groundwater Sustainability Agencies (GSAs) that oversee the preparation and implementation of a local Groundwater Sustainability Plan. More information can be found at http://water.ca.gov/groundwater/sgm/index.cfm

source-of-supply. Facilities used to extract and/or store raw water prior to transmission and distribution.

source meter. A meter used to record water withdrawn from a surface water or groundwater source, or purchased from a wholesale supplier.

supply management. Measures deployed by the utility that improve the efficiency of production, transmission, and distribution facilities.

submetering. Metering for units comprising a larger service connection, such as apartments in a multifamily building.

surcharge. A special charge on a water bill used to send customers a specific pricing signal and recover costs associated with a particular activity.

surface water augmentation. The planned placement of recycled water into a surface water reservoir that is used as a source of domestic drinking water supply.

SWRCB. A state agency whose mission is to preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations. Some key programs that are managed by SWRCB that pertain to UWMPs include: Emergency Drought Regulations, Drinking Water Program, Wastewater, and Water Recycling.

system (water). A series of interconnected conveyance facilities owned and operated by a drinking water supplier; some utilities operate multiple water systems.

tables. DWR has specified the use of standardized tables for reporting UWMP data. Use of these tables is required in the 2015 UWMP, to the extent that the information is available. However, water agencies may include the standardized tables in an appendix and present adapted versions of the standardized tables in the body of the Plan, if that is better adapted to the agency's records and/or better reflects the information available to the agency.

target. The target per capita water use calculated for 2020 and 2015 as per *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*, DWR 2011. This term is used in the context of SB X7-7, The Water Conservation Act of 2009.

target method. The water supplier selects one of four different target methods when determining their 2020 Urban Water Use Target. See the *Methodologies* document (DWR 2011) and Appendix E, SB X7-7 Verification Form for details. This term is used in the context of SB X7-7, The Water Conservation Act of 2009.

take-or-pay. A contract provision obligating a purchaser to pay for a commodity whether or not delivery is taken.

tariff. The schedule of a utility's rates and charges.

tertiary treatment. The treatment of waste water beyond the secondary or biological stage. Normally implies the removal of nutrients, such as phosphorous and nitrogen, and a high percentage of suspended solids.

transfers. The CWC defines a water transfer as a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water or water rights. A water transfer can be a temporary or permanent sale of water or a water right by the water right holder, a lease of the right to use water from the water right holder, or a sale or lease of a contractual right to water supply. Water transfers can also take the form of long-term contracts for the purpose of improving long-term supply reliability. For purposes of UWMP reporting, this is considered a "Wholesale Use," even if the agency is not considered a wholesale water agency as per the definition in CWC 10608.12 (p) and (r). Agencies will make their own determination as to whether water sent to another agency is a sale, transfer, or exchange.

transmission facilities. Pipes used to transport raw or treated water to distribution facilities.

treated water. Water treated to meet drinking water standards.

unaccounted-for water. The amount of nonaccount water less known or estimated losses and leaks.

uniform rate. A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) does not vary with the amount of water usage.

universal metering. Metering of all water-service connections.

unmetered water. Water delivered but not measured for accounting and billing purposes.

urban retail water supplier. A water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes. The terms “Water Supplier” and “Water Agency” are used interchangeably in this document.

urban wholesale water supplier. A water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes. Water Agency – This term can refer to either an urban retail water supplier or an urban wholesale water supplier. The terms “Water Agency” and “Water Supplier” are used interchangeably in this document.

user class. See customer class.

variable charge. The portion of a water bill that varies with water usage; also known as a commodity charge.

variable cost. Costs associated with water service that vary with the amount of water produced or sold.

water demand/use. Water conveyed through a distribution system that is used by a water agency and its customers for any purpose, including non-potable water uses, water losses, and other non-revenue water. The terms “Water Demand” and “Water Use” will be used interchangeably in this document.

water right. A property right or legal claim to withdraw/divert a specified amount of water in a specified time frame for a beneficial use.

water supplier. This term can refer to either an urban retail water supplier or an urban wholesale water supplier. The terms “Water Agency” and “Water Supplier” are used interchangeably in this document.

water use sector. Classifications of water use that are clearly distinct from other water uses.

wastewater. Water that has been previously used by a municipality, industry, or agriculture and has suffered a loss of quality as a result.

wastewater treatment plant. A municipal or public service district which provides treatment of collected wastewater.

watershed. A regional land area, defined by topography, soil, and drainage characteristics, within which raw waters collect and replenish supplies.

weather-adjusted. Water demand, revenues, or other variables adjusted to a "normal" weather year; also known as weather normalization.

wholesale water wse/demand. Generally large quantities of water not for municipal end uses. Wholesale uses include: sales, transfers, or exchanges to other agencies. The following sectors may be reported as either a wholesale or retail demand, the determination is made by the supplier: Groundwater recharge, saline intrusion barrier, agricultural, wetlands or wildlife habitat.

worksheets. DWR has specified the use of standardized worksheets for reporting AWMP data.

WSCP. Water Shortage Contingency Plan. A strategic plan developed by and for a water supplier to prepare and respond to water shortages. The CWC provides specific requirements for a WSCP.

xeriscape. Landscaping that involves seven principles: proper planning and design; soil analysis and improvement; practical turf areas; appropriate plant selection; efficient irrigation; mulching; and appropriate maintenance.

# Appendix B

## UWMP Act and Related Regulations

**California Water Code Division 6, Part 2.6.**

**Chapter 1. General Declaration and Policy** §10610-10610.4
**Chapter 2. Definitions** §10611-10617
**Chapter 3. Urban Water Management Plans**
Article 1. General Provisions §10620-10621
Article 2. Contents of Plans §10630-10634
Article 2.5. Water Service Reliability §10635
Article 3. Adoption And Implementation of Plans §10640-10645
**Chapter 4. Miscellaneous Provisions** §10650-10656

# Chapter 1. General Declaration and Policy

SECTION 10610-10610.4

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

## Chapter 2. Definitions

SECTION 10611-10617

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. “Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses,

reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

## Chapter 3. Urban Water Management Plans

**Article 1. General Provisions**

SECTION 10620-10621

10620. (a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) 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.

(c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d) (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall 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.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621. (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in subdivision (d).

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.

**Article 2. Contents of Plan**

SECTION 10630-10634

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter that shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of

water available to the supplier, all of the following information shall be included in the plan:

(1) A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

(2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(c) (1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:

(A) An average water year.

(B) A single-dry water year.

(C) Multiple-dry water years.

(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

(e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(3) (A) For the 2015 urban water management plan update, the distribution system water loss shall be quantified for the most recent 12-month period available. For all subsequent updates, the distribution system water loss shall be quantified for each of the five years preceding the plan update.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

(4) (A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss.

(vi) Water conservation program coordination and staffing support.

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

(2) For an urban wholesale water supplier, as defined in Section 10608.12, a narrative description of the items in clauses (ii), (iv), (vi), and (vii) of subparagraph (B) of paragraph (1), and a narrative description of its distribution system asset management and wholesale supplier assistance programs.

(g) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water

use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

(h) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

(i) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivision (f) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

(j) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).

10631.1. (a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

(b) It is the intent of the Legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a supplier in complying with the requirement under Section 65589.7 of the Government Code to grant a priority for the provision of service to housing units affordable to lower income households.

10631.2. (a) In addition to the requirements of Section 10631, an urban water management plan may, but is not required to, include any of the following information:

(1) An estimate of the amount of energy used to extract or divert water supplies.

(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.

(3) An estimate of the amount of energy used to treat water supplies.

(4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.

(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.

(6) An estimate of the amount of energy used to place water into or withdraw from storage.

(7) Any other energy-related information the urban water supplier deems appropriate.

(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.

10631.5. (a) (1) Beginning January 1, 2009, the terms of, and eligibility for, a water management grant or loan made to an urban water supplier and awarded or administered by the department, state board, or California Bay-Delta Authority or its successor agency shall be conditioned on the implementation of the water demand management measures described in Section 10631, as determined by the department pursuant to subdivision (b).

(2) For the purposes of this section, water management grants and loans include funding for programs and projects for surface water or groundwater storage, recycling, desalination, water conservation, water supply reliability, and water supply augmentation. This section does not apply to water management projects funded by the federal American Recovery and Reinvestment Act of 2009 (Public Law 111-5).

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has

submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if an urban water supplier submits to the department for approval documentation demonstrating that a water demand management measure is not locally cost effective. If the department determines that the documentation submitted by the urban water supplier fails to demonstrate that a water demand management measure is not locally cost effective, the department shall notify the urban water supplier and the agency administering the grant or loan program within 120 days that the documentation does not satisfy the requirements for an exemption, and include in that notification a detailed statement to support the determination.

(B) For purposes of this paragraph, "not locally cost effective" means that the present value of the local benefits of implementing a water demand management measure is less than the present value of the local costs of implementing that measure.

(b) (1) The department, in consultation with the state board and the California Bay-Delta Authority or its successor agency, and after soliciting public comment regarding eligibility requirements, shall develop eligibility requirements to implement the requirement of paragraph (1) of subdivision (a). In establishing these eligibility requirements, the department shall do both of the following:

(A) Consider the conservation measures described in the Memorandum of Understanding Regarding Urban Water Conservation in California, and alternative conservation approaches that provide equal or greater water savings.

(B) Recognize the different legal, technical, fiscal, and practical roles and responsibilities of wholesale water suppliers and retail water suppliers.

(2) (A) For the purposes of this section, the department shall determine whether an urban water supplier is implementing all of the water demand management measures described in Section 10631 based on either, or a combination, of the following:

(i) Compliance on an individual basis.

(ii) Compliance on a regional basis. Regional compliance shall require participation in a regional conservation program consisting of two or more urban water suppliers that achieves the level of conservation or water efficiency savings equivalent to the amount of conservation or savings achieved if each of the participating urban water suppliers implemented the water demand management measures. The urban water supplier administering the regional program shall provide participating urban water suppliers and the department with data to demonstrate that the regional program is consistent with this clause. The department shall review the data to determine whether the urban water suppliers in the regional program are meeting the eligibility requirements.

(B) The department may require additional information for any determination pursuant to this section.

(3) The department shall not deny eligibility to an urban water supplier in compliance with the requirements of this section that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

(c) In establishing guidelines pursuant to the specific funding authorization for any water management grant or loan program subject to this section, the agency administering the grant or loan program shall include in the guidelines the eligibility requirements developed by the department pursuant to subdivision (b).

(d) Upon receipt of a water management grant or loan application by an agency administering a grant and loan program subject to this section, the agency shall request an eligibility determination from the department with respect to the requirements of this section. The department shall respond to the request within 60 days of the request.

(e) The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities. In addition, for urban water suppliers that are signatories to the Memorandum of Understanding Regarding Urban Water Conservation in California and submit biennial reports to the California Urban Water Conservation Council in accordance with the memorandum, the department may use these reports to assist in tracking the implementation of water demand management measures.

(f) This section shall remain in effect only until July 1, 2016, and as of that date is repealed, unless a later enacted statute, that is enacted before July 1, 2016, deletes or extends that date.

10631.7. The department, in consultation with the California Urban Water Conservation Council, shall convene an independent technical panel to provide information and recommendations to the department and the Legislature on new demand management measures, technologies, and approaches. The panel shall consist of no more than seven members, who shall be selected by the department to reflect a balanced representation of experts. The panel shall have at least one, but no more than two, representatives from each of the following: retail water suppliers, environmental organizations, the business community, wholesale water suppliers, and academia. The panel shall be convened by January 1, 2009, and shall report to the Legislature no later than January 1, 2010, and every five years thereafter. The department shall review the panel report and include in the final report to the Legislature the department's recommendations and comments regarding the panel process and the panel's recommendations.

10632. (a) The plan shall provide an urban water shortage contingency analysis that includes each of the following elements that are within the authority of the urban water supplier:

(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions that are applicable to each stage.

(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

(3) Actions to be undertaken 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.

(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are

appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

(6) Penalties or charges for excessive use, where applicable.

(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

(8) A draft water shortage contingency resolution or ordinance.

(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

(b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) 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 pursuant to this subdivision.

(f) A description of actions, including financial incentives, 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.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

**Article 2.5. Water Service Reliability**

SECTION 10635

10635. (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

**Article 3. Adoption and Implementation of Plans**

SECTION 10640-10645

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the 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. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.

After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644. (a) (1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

(b) (1) Notwithstanding Section 10231.5 of the Government Code, the department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part.

The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(2) A report to be submitted pursuant to paragraph (1) shall be submitted in compliance with Section 9795 of the Government Code.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section 10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

(2) The department shall distribute to the panel convened pursuant to Section 10631.7 the results achieved by the implementation of those water demand management measures described in paragraph (1).

(3) The department shall make available to the public the standard the department will use to identify exemplary water demand management measures.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

## Chapter 4. Miscellaneous Provisions

### SECTION 10650-10656

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. 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" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26

(commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

**California Water Code Division 6, Part 2.55.**

**Chapter 1. General Declarations and Policy** §10608-10608.8
**Chapter 2. Definitions** §10608.12
**Chapter 3. Urban Retail Water Suppliers** §10608.16-10608.44
**Chapter 4. Agricultural Water Suppliers** §10608.48
**Chapter 5. Sustainable Water Management** §10608.50
**Chapter 6 Standardized Data Collection** §10608.52
**Chapter 7 Funding Provisions** §10608.56-10608.60
**Chapter 8 Quantifying Agricultural Water Use Efficiency** §10608.64

# Chapter 1. General Declarations and Policy

SECTION 10608-10608.8

10608. The Legislature finds and declares all of the following:

(a) Water is a public resource that the California Constitution protects against waste and unreasonable use.

(b) Growing population, climate change, and the need to protect and grow California's economy while protecting and restoring our fish and wildlife habitats make it essential that the state manage its water resources as efficiently as possible.

(c) Diverse regional water supply portfolios will increase water supply reliability and reduce dependence on the Delta.

(d) Reduced water use through conservation provides significant energy and environmental benefits, and can help protect water quality, improve streamflows, and reduce greenhouse gas emissions.

(e) The success of state and local water conservation programs to increase efficiency of water use is best determined on the basis of measurable outcomes related to water use or efficiency.

(f) Improvements in technology and management practices offer the potential for increasing water efficiency in California over time, providing an essential water management tool to meet the need for water for urban, agricultural, and environmental uses.

(g) The Governor has called for a 20 percent per capita reduction in urban water use statewide by 2020.

(h) The factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency.

(i) Per capita water use is a valid measure of a water provider's efforts to reduce urban water use within its service area. However, per capita water use is less useful for measuring relative water use efficiency between different water providers. Differences in weather, historical patterns of urban and suburban development, and density of housing in a particular location need to be considered when assessing per capita water use as a measure of efficiency.

10608.4. It is the intent of the Legislature, by the enactment of this part, to do all of the following:

(a) Require all water suppliers to increase the efficiency of use of this essential resource.

(b) Establish a framework to meet the state targets for urban water conservation identified in this part and called for by the Governor.

(c) Measure increased efficiency of urban water use on a per capita basis.

(d) Establish a method or methods for urban retail water suppliers to determine targets for achieving increased water use efficiency by the year 2020, in accordance with the Governor's goal of a 20-percent reduction.

(e) Establish consistent water use efficiency planning and implementation standards for urban water suppliers and agricultural water suppliers.

(f) Promote urban water conservation standards that are consistent with the California Urban Water Conservation Council's adopted best management practices and the requirements for demand management in Section 10631.

(g) Establish standards that recognize and provide credit to water suppliers that made substantial capital investments in urban water conservation since the drought of the early 1990s.

(h) Recognize and account for the investment of urban retail water suppliers in providing recycled water for beneficial uses.

(i) Require implementation of specified efficient water management practices for agricultural water suppliers.

(j) Support the economic productivity of California's agricultural, commercial, and industrial sectors.

(k) Advance regional water resources management.

10608.8. (a) (1) Water use efficiency measures adopted and implemented pursuant to this part or Part 2.8 (commencing with Section 10800) are water conservation measures subject to the protections provided under Section 1011.

(2) Because an urban agency is not required to meet its urban water use target until 2020 pursuant to subdivision (b) of Section 10608.24, an urban retail water supplier's failure to meet those targets shall not establish a violation of law for purposes of any state administrative or judicial proceeding prior to

January 1, 2021. Nothing in this paragraph limits the use of data reported to the department or the board in litigation or an administrative proceeding. This paragraph shall become inoperative on January 1, 2021.

(3) To the extent feasible, the department and the board shall provide for the use of water conservation reports required under this part to meet the requirements of Section 1011 for water conservation reporting.

(b) This part does not limit or otherwise affect the application of Chapter 3.5 (commencing with Section 11340), Chapter 4 (commencing with Section 11370), Chapter 4.5 (commencing with Section 11400), and Chapter 5 (commencing with Section 11500) of Part 1 of Division 3 of Title 2 of the Government Code.

(c) This part does not require a reduction in the total water used in the agricultural or urban sectors, because other factors, including, but not limited to, changes in agricultural economics or population growth may have greater effects on water use. This part does not limit the economic productivity of California's agricultural, commercial, or industrial sectors.

(d) The requirements of this part do not apply to an agricultural water supplier that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect. After the expiration of the Quantification Settlement Agreement, to the extent conservation water projects implemented as part of the Quantification Settlement Agreement remain in effect, the conserved water created as part of those projects shall be credited against the obligations of the agricultural water supplier pursuant to this part.

## Chapter 2 Definitions

SECTION 10608.12

10608.12. Unless the context otherwise requires, the following definitions govern the construction of this part:

(a) "Agricultural water supplier" means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, that distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the department.

(b) "Base daily per capita water use" means any of the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

(c) "Baseline commercial, industrial, and institutional water use" means an urban retail water supplier's base daily per capita water use for commercial, industrial, and institutional users.

(d) "Commercial water user" means a water user that provides or distributes a product or service.

(e) "Compliance daily per capita water use" means the gross water use during the final year of the reporting period, reported in gallons per capita per day.

(f) "Disadvantaged community" means a community with an annual median household income that is less than 80 percent of the statewide annual median household income.

(g) "Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier.

(2) The net volume of water that the urban retail water supplier places into long-term storage.

(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier.

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of Section 10608.24.

(h) "Industrial water user" means a water user that is primarily a manufacturer or processor of materials as defined by the North American Industry Classification System code sectors 31 to 33, inclusive, or an entity that is a water user primarily engaged in research and development.

(i) "Institutional water user" means a water user dedicated to public service. This type of user includes, among other users, higher education institutions, schools, courts, churches, hospitals, government facilities, and nonprofit research institutions.

(j) "Interim urban water use target" means the midpoint between the urban retail water supplier's base daily per capita water use and the urban retail water supplier's urban water use target for 2020.

(k) "Locally cost effective" means that the present value of the local benefits of implementing an agricultural efficiency water management practice is greater than or equal to the present value of the local cost of implementing that measure.

(l) "Process water" means water used for producing a product or product content or water used for research and development, including, but not limited to, continuous manufacturing processes, water used for testing and maintaining equipment used in producing a product or product content, and water used in combined heat and power facilities used in producing a product or product content. Process water does not mean incidental water uses not related to the production of a product or product content, including, but not limited to, water used for restrooms, landscaping, air conditioning, heating, kitchens, and laundry.

(m) "Recycled water" means recycled water, as defined in subdivision (n) of Section 13050, that is used to offset potable demand, including recycled water supplied for direct use and indirect potable reuse, that meets the following requirements, where applicable:

(1) For groundwater recharge, including recharge through spreading basins, water supplies that are all of the following:

(A) Metered.

(B) Developed through planned investment by the urban water supplier or a wastewater treatment agency.

(C) Treated to a minimum tertiary level.

(D) Delivered within the service area of an urban retail water supplier or its urban wholesale water supplier that helps an urban retail water supplier meet its urban water use target.

(2) For reservoir augmentation, water supplies that meet the criteria of paragraph (1) and are conveyed through a distribution system constructed specifically for recycled water.

(n) "Regional water resources management" means sources of supply resulting from watershed-based planning for sustainable local water reliability or any of the following alternative sources of water:

(1) The capture and reuse of stormwater or rainwater.

(2) The use of recycled water.

(3) The desalination of brackish groundwater.

(4) The conjunctive use of surface water and groundwater in a manner that is consistent with the safe yield of the groundwater basin.

(o) "Reporting period" means the years for which an urban retail water supplier reports compliance with the urban water use targets.

(p) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

(q) "Urban water use target" means the urban retail water supplier's targeted future daily per capita water use.

(r) "Urban wholesale water supplier," means a water supplier, either publicly or privately owned, that provides more than 3,000 acre-feet of water annually at wholesale for potable municipal purposes.

## Chapter 3 Urban Retail Water Suppliers

SECTION 10608.16-10608.44

10608.16.(a) The state shall achieve a 20-percent reduction in urban per capita water use in California on or before December 31, 2020.

(b) The state shall make incremental progress towards the state target specified in subdivision (a) by reducing urban per capita water use by at least 10 percent on or before December 31, 2015.

10608.20.(a) (1) Each urban retail water supplier shall develop urban water use targets and an interim urban water use target by July 1, 2011. Urban retail water suppliers may elect to determine and report progress toward achieving these targets on an individual or regional basis, as provided in subdivision (a) of Section 10608.28, and may determine the targets on a fiscal year or calendar year basis.

(2) It is the intent of the Legislature that the urban water use targets described in paragraph (1) cumulatively result in a 20-percent reduction from the baseline daily per capita water use by December 31, 2020.

(b) An urban retail water supplier shall adopt one of the following methods for determining its urban water use target pursuant to subdivision (a):

(1) Eighty percent of the urban retail water supplier's baseline per capita daily water use.

(2) The per capita daily water use that is estimated using the sum of the following performance standards:

(A) For indoor residential water use, 55 gallons per capita daily water use as a provisional standard. Upon completion of the department's 2016 report to the Legislature pursuant to Section 10608.42, this standard may be adjusted by the Legislature by statute.

(B) For landscape irrigated through dedicated or residential meters or connections, water efficiency equivalent to the standards of the Model Water Efficient Landscape Ordinance set forth in Chapter 2.7 (commencing with Section 490) of Division 2 of Title 23 of the California Code of Regulations, as in effect the later of the year of the landscape's installation or 1992. An urban retail water supplier using the approach specified in this subparagraph shall use satellite imagery, site visits, or other best available technology to develop an accurate estimate of landscaped areas.

(C) For commercial, industrial, and institutional uses, a 10-percent reduction in water use from the baseline commercial, industrial, and institutional water use by 2020.

(3) Ninety-five percent of the applicable state hydrologic region target, as set forth in the state's draft 20x2020 Water Conservation Plan (dated April 30, 2009). If the service area of an urban water supplier includes more than one hydrologic region, the supplier shall apportion its service area to each region based on population or area.

(4) A method that shall be identified and developed by the department, through a public process, and reported to the Legislature no later than December 31, 2010. The method developed by the department shall identify per capita targets that cumulatively result in a statewide 20-percent reduction in urban daily per capita water use by December 31, 2020. In developing urban daily per capita water use targets, the department shall do all of the following:

(A) Consider climatic differences within the state.

(B) Consider population density differences within the state.

(C) Provide flexibility to communities and regions in meeting the targets.

(D) Consider different levels of per capita water use according to plant water needs in different regions.

(E) Consider different levels of commercial, industrial, and institutional water use in different regions of the state.

(F) Avoid placing an undue hardship on communities that have implemented conservation measures or taken actions to keep per capita water use low.

(c) If the department adopts a regulation pursuant to paragraph (4) of subdivision (b) that results in a requirement that an urban retail water supplier achieve a reduction in daily per capita water use that is greater than 20 percent by December 31, 2020, an urban retail water supplier that adopted the method

described in paragraph (4) of subdivision (b) may limit its urban water use target to a reduction of not more than 20 percent by December 31, 2020, by adopting the method described in paragraph (1) of subdivision (b).

(d) The department shall update the method described in paragraph (4) of subdivision (b) and report to the Legislature by December 31, 2014. An urban retail water supplier that adopted the method described in paragraph (4) of subdivision (b) may adopt a new urban daily per capita water use target pursuant to this updated method.

(e) An urban retail water supplier shall include in its urban water management plan due in 2010 pursuant to Part 2.6 (commencing with Section 10610) the 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.

(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

(h) (1) The department, through a public process and in consultation with the California Urban Water Conservation Council, shall develop technical methodologies and criteria for the consistent implementation of this part, including, but not limited to, both of the following:

(A) Methodologies for calculating base daily per capita water use, baseline commercial, industrial, and institutional water use, compliance daily per capita water use, gross water use, service area population, indoor residential water use, and landscaped area water use.

(B) Criteria for adjustments pursuant to subdivisions (d) and (e) of Section 10608.24.

(2) The department shall post the methodologies and criteria developed pursuant to this subdivision on its Internet Web site, and make written copies available, by October 1, 2010. An urban retail water supplier shall use the methods developed by the department in compliance with this part.

(i) (1) The department shall adopt regulations for implementation of the provisions relating to process water in accordance with subdivision (l) of Section 10608.12, subdivision (e) of Section 10608.24, and subdivision (d) of Section 10608.26.

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the

Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

(j) (1) An urban retail water supplier is granted an extension to July 1, 2011, for adoption of an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) due in 2010 to allow the use of technical methodologies developed by the department pursuant to paragraph (4) of subdivision (b) and subdivision (h). An urban retail water supplier that adopts an urban water management plan due in 2010 that does not use the methodologies developed by the department pursuant to subdivision (h) shall amend the plan by July 1, 2011, to comply with this part.

(2) An urban wholesale water supplier whose urban water management plan prepared pursuant to Part 2.6 (commencing with Section 10610) was due and not submitted in 2010 is granted an extension to July 1, 2011, to permit coordination between an urban wholesale water supplier and urban retail water suppliers.

10608.22. Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph(3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

10608.24.(a) Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.

(b) Each urban retail water supplier shall meet its urban water use target by December 31, 2020.

(c) An urban retail water supplier's compliance daily per capita water use shall be the measure of progress toward achievement of its urban water use target.

(d) (1) When determining compliance daily per capita water use, an urban retail water supplier may consider the following factors:

(A) Differences in evapotranspiration and rainfall in the baseline period compared to the compliance reporting period.
(B) Substantial changes to commercial or industrial water use resulting from increased business output and economic development that have occurred during the reporting period.

(C) Substantial changes to institutional water use resulting from fire suppression services or other extraordinary events, or from new or expanded operations, that have occurred during the reporting period.

(2) If the urban retail water supplier elects to adjust its estimate of compliance daily per capita water use due to one or more of the factors described in

paragraph (1), it shall provide the basis for, and data supporting, the adjustment in the report required by Section 10608.40.

(e) When developing the urban water use target pursuant to Section 10608.20, an urban retail water supplier that has a substantial percentage of industrial water use in its service area may exclude process water from the calculation of gross water use to avoid a disproportionate burden on another customer sector.

(f) (1) An urban retail water supplier that includes agricultural water use in an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) may include the agricultural water use in determining gross water use. An urban retail water supplier that includes agricultural water use in determining gross water use and develops its urban water use target pursuant to paragraph (2) of subdivision (b) of Section 10608.20 shall use a water efficient standard for agricultural irrigation of 100 percent of reference evapotranspiration multiplied by the crop coefficient for irrigated acres.

(2) An urban retail water supplier, that is also an agricultural water supplier, is not subject to the requirements of Chapter 4 (commencing with Section 10608.48), if the agricultural water use is incorporated into its urban water use target pursuant to paragraph (1).

10608.26.(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

(b) In complying with this part, an urban retail water supplier may meet its urban water use target through efficiency improvements in any combination among its customer sectors. An urban retail water supplier shall avoid placing a disproportionate burden on any customer sector.

(c) For an urban retail water supplier that supplies water to a United States Department of Defense military installation, the urban retail water supplier's implementation plan for complying with this part shall consider the conservation of that military installation under federal Executive Order 13514.

(d) (1) Any ordinance or resolution adopted by an urban retail water supplier after the effective date of this section shall not require existing customers as of the effective date of this section, to undertake changes in product formulation, operations, or equipment that would reduce process water use, but may provide technical assistance and financial incentives to those customers to implement efficiency measures for process water. This section shall not limit

an ordinance or resolution adopted pursuant to a declaration of drought emergency by an urban retail water supplier.

(2) This part shall not be construed or enforced so as to interfere with the requirements of Chapter 4 (commencing with Section 113980) to Chapter 13 (commencing with Section 114380), inclusive, of Part 7 of Division 104 of the Health and Safety Code, or any requirement or standard for the protection of public health, public safety, or worker safety established by federal, state, or local government or recommended by recognized standard setting organizations or trade associations.

10608.28.(a) An urban retail water supplier may meet its urban water use target within its retail service area, or through mutual agreement, by any of the following:

(1) Through an urban wholesale water supplier.

(2) Through a regional agency authorized to plan and implement water conservation, including, but not limited to, an agency established under the Bay Area Water Supply and Conservation Agency Act (Division 31 (commencing with Section 81300)).

(3) Through a regional water management group as defined in Section 10537.

(4) By an integrated regional water management funding area.

(5) By hydrologic region.

(6) Through other appropriate geographic scales for which computation methods have been developed by the department.

(b) A regional water management group, with the written consent of its member agencies, may undertake any or all planning, reporting, and implementation functions under this chapter for the member agencies that consent to those activities. Any data or reports shall provide information both for the regional water management group and separately for each consenting urban retail water supplier and urban wholesale water supplier.

10608.32. All costs incurred pursuant to this part by a water utility regulated by the Public Utilities Commission may be recoverable in rates subject to review and approval by the Public Utilities Commission, and may be recorded in a memorandum account and reviewed for reasonableness by the Public Utilities Commission.

10608.36. Urban wholesale water suppliers shall include in the urban water management plans required pursuant to Part 2.6 (commencing with Section 10610) an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part.

10608.40. Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans

submitted pursuant to Section 10631. The data shall be reported using a standardized form developed pursuant to Section 10608.52.

10608.42.(a) The department shall review the 2015 urban water management plans and report to the Legislature by July 1, 2017, on progress towards achieving a 20-percent reduction in urban water use by December 31, 2020. The report shall include recommendations on changes to water efficiency standards or urban water use targets to achieve the 20-percent reduction and to reflect updated efficiency information and technology changes.

(b) A report to be submitted pursuant to subdivision (a) shall be submitted in compliance with Section 9795 of the Government Code.

10608.43. The department, in conjunction with the California Urban Water Conservation Council, by April 1, 2010, shall convene a representative task force consisting of academic experts, urban retail water suppliers, environmental organizations, commercial water users, industrial water users, and institutional water users to develop alternative best management practices for commercial, industrial, and institutional users and an assessment of the potential statewide water use efficiency improvement in the commercial, industrial, and institutional sectors that would result from implementation of these best management practices. The taskforce, in conjunction with the department, shall submit a report to the Legislature by April 1, 2012, that shall include a review of multiple sectors within commercial, industrial, and institutional users and that shall recommend water use efficiency standards for commercial, industrial, and institutional users among various sectors of water use. The report shall include, but not be limited to, the following:

(a) Appropriate metrics for evaluating commercial, industrial, and institutional water use.

(b) Evaluation of water demands for manufacturing processes, goods, and cooling.

(c) Evaluation of public infrastructure necessary for delivery of recycled water to the commercial, industrial, and institutional sectors.

(d) Evaluation of institutional and economic barriers to increased recycled water use within the commercial, industrial, and institutional sectors.

(e) Identification of technical feasibility and cost of the best management practices to achieve more efficient water use statewide in the commercial, industrial, and institutional sectors that is consistent with the public interest and reflects past investments in water use efficiency.

10608.44. Each state agency shall reduce water use at facilities it operates to support urban retail water suppliers in meeting the target identified in Section 10608.16.

# Chapter 4 Agricultural Water Suppliers

SECTION 10608.48

10608.48.(a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier's pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

(e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.

(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

(g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.

(h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.

(i) (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).

(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

## Chapter 5 Sustainable Water Management

Section 10608.50

10608.50.(a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:

(1) Revisions to the requirements for urban and agricultural water management plans.

(2) Revisions to the requirements for integrated regional water management plans.

(3) Revisions to the eligibility for state water management grants and loans.

(4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.

(5) Increased funding for research, feasibility studies, and project construction.

(6) Expanding technical and educational support for local land use and water management agencies.

(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.

## Chapter 6 Standardized Data Collection

SECTION 10608.52

10608.52.(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.

(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier's compliance with conservation targets pursuant to Section 10608.24 and an agricultural water supplier's compliance with implementation of efficient water management practices pursuant to subdivision (a) of Section 10608.48. The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.

## Chapter 7 Funding Provisions

Section 10608.56-10608.60

10608.56.(a) On and after July 1, 2016, an urban retail water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(b) On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(c) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for achieving the per capita reductions. The supplier may request grant or loan funds to achieve the per capita reductions to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(d) Notwithstanding subdivision (b), the department shall determine that an agricultural water supplier is eligible for a water grant or loan even though the supplier is not implementing all of the efficient water management practices described in Section 10608.48, if the agricultural water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the efficient water management practices. The supplier may request grant or loan funds to implement the efficient water management practices to the extent the request is consistent with the eligibility requirements applicable to the water funds.

(e) Notwithstanding subdivision (a), the department shall determine that an urban retail water supplier is eligible for a water grant or loan even though the supplier has not met the per capita reductions required pursuant to Section 10608.24, if the urban retail water supplier has submitted to the department for approval documentation demonstrating that its entire service area qualifies as a disadvantaged community.

(f) The department shall not deny eligibility to an urban retail water supplier or agricultural water supplier in compliance with the requirements of this part and Part 2.8 (commencing with Section 10800), that is participating in a multiagency water project, or an integrated regional water management plan, developed pursuant to Section 75026 of the Public Resources Code, solely on the basis that one or more of the agencies participating in the project or plan is not implementing all of the requirements of this part or Part 2.8 (commencing with Section 10800).

10608.60.(a) It is the intent of the Legislature that funds made available by Section 75026 of the Public Resources Code should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for grants to implement this part. In the allocation of funding, it is the intent of the Legislature that the department give consideration to disadvantaged communities to assist in implementing the requirements of this part.

(b) It is the intent of the Legislature that funds made available by Section 75041 of the Public Resources Code, should be expended, consistent with Division 43 (commencing with Section 75001) of the Public Resources Code and upon appropriation by the Legislature, for direct expenditures to implement this part.

# Chapter 8 Quantifying Agricultural Water Use Efficiency

SECTION 10608.64

10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.

# Appendix C

## AWMP Act and Related Regulations

# B.5 Legislative History, Current Legislation and Regulations, and Related Programs

## A. Legislative History

### 1. Agricultural Water Management Planning Act of 1986 (AB 1658)

AB 1658 (1986) required all agricultural water suppliers delivering over 50,000 acre-feet of water per year to prepare an Information Report and identify whether the district has a significant opportunity to conserve water or reduce the quantity of saline or toxic drainage water through improved irrigation water management. The legislation applied to the 80 largest agricultural water suppliers in California. The districts that had a significant opportunity to conserve water or reduce drainage were required to prepare water management plans. The legislation required that DWR provide funding to the water suppliers to prepare informational reports and for the preparation of water management plans. This legislation was required to sunset on January 1, 1993.

### 2. AB 3616 Agricultural Efficient Water Management Act of 1990

This legislation required DWR to establish an advisory committee consisting of state, federal, and local agencies; agricultural communities, California university system; environmental and public interest groups; and other interested parties to develop a list of efficient water management practices for agricultural water suppliers. In addition, then California Governor Pete Wilson directed the AB 3616 Advisory Committee to develop a Memorandum of Understanding between the agricultural and environmental communities and other interested parties to further address efficient use of agricultural water in California.

### 3. Water Code §531.1 - AB 1404 (2007) Water Measurement Information

The AB 1404 requires agricultural water suppliers to submit to DWR an annual report that includes measured aggregated farm-gate deliveries data on a monthly or bi-monthly basis. The submittals are also to include farm-gate measurement programs or practices to document implementation of “Best Professional Practices” (BMPs). If water measurement is not locally cost-effective, then the agricultural water supplier may provide supporting documentation to DWR.

## B. Executive Orders

On May 20, 2013, with near record-low precipitation in California, Governor Edmund G. Brown Jr. issued an Executive Order to streamline approvals for voluntary water transfers to assist California's agricultural industry, stating that agriculture is vital to the health of California's economy.

On January 17, 2014, Governor Brown proclaimed a State of Emergency given the historic drought conditions in California. In the State of Emergency declaration, Governor Brown directed state officials to assist farmers and communities that are economically impacted by dry conditions and

to ensure the state can respond if Californians face drinking water shortages. The Governor also directed state agencies to use less water and hire more firefighters and initiated a greatly expanded water conservation public awareness campaign.

On April 1, 2015, Governor Brown announced actions that will save water, increase enforcement to prevent wasteful water use, streamline the state's drought response and invest in new technologies that will make California more drought resilient following the lowest snowpack ever recorded and with no end to the drought in sight. The Executive Order also directed agricultural water suppliers to include a detailed drought management plan in their agricultural water management plans, and directed agricultural water suppliers that provide10,000 to 25,000 irrigated acres to develop and submit to DWR such plans.

## C. Current Legislation and Regulations

### 1. SB X7-7 Water Conservation (Steinberg, Statute of 2009)

### 2. Agricultural Water Measurement
**(Title 23 California Code of Regulations, §597 *et seq., 2011*)**

## D. Related Programs

### 1. California Water Plan Update
http://www.waterplan.water.ca.gov/cwpu2013/index.cfm

### 2. California Agricultural Water Management Council Efficient Water Management Practices (EWMPs)

### 3. Integrated Regional Water Management Plans
http://www.water.ca.gov/irwm/index.cfm

### 4. Bureau of Reclamation Water management/conservation plans (CVPIA).
For the most current Standard Criteria, see:
http://www.usbr.gov/mp/watershare/documents/Water_mgmt/index.html

### 5. Bureau of Reclamation RRA Plans
http://www.usbr.gov/rra/

### 6. Bureau of Reclamation 2008 Conservation Efficiency Standards (PL 102-575)
http://www.usbr.gov/mp/cvpia/title_34/public_law_complete.html

# B.6 Text of the Water Code Pertaining to Agricultural Water Suppliers

[Indentations added for clarity]

### *Chapter 4. Agricultural Water Suppliers*

*10608.48.*

*(a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).*

*(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:*

*(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).*

*(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.*

*(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:*

*(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage.*

*(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.*

*(3) Facilitate the financing of capital improvements for on-farm irrigation systems.*

*(4) Implement an incentive pricing structure that promotes one or more of the following goals:*

*(A) More efficient water use at the farm level.*

*(B) Conjunctive use of groundwater.*

*(C) Appropriate increase of groundwater recharge.*

*(D) Reduction in problem drainage.*

*(E) Improved management of environmental resources.*

*(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.*

*(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.*

*(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.*

*(7) Construct and operate supplier spill and tailwater recovery systems.*

*(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.*

*(9) Automate canal control structures.*

*(10) Facilitate or promote customer pump testing and evaluation.*

*(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.*

*(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:*

*(A) On-farm irrigation and drainage system evaluations.*

*(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.*

*(C) Surface water, groundwater, and drainage water quantity and quality data.*

*(D) Agricultural water management educational programs and materials for farmers, staff, and the public.*

*(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.*

*(14) Evaluate and improve the efficiencies of the supplier's pumps.*

*(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) a report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.*

*(e) The data shall be reported using a standardized form developed pursuant to Section 10608.52.*

*(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.*

*(g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.*

*(h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.*

*(i)*

*(1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b).*

*(2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.*

## *Chapter 5. Sustainable Water Management*

*10608.50.*

*(a) The department, in consultation with the board, shall promote implementation of regional water resources management practices through increased incentives and removal of barriers consistent with state and federal law. Potential changes may include, but are not limited to, all of the following:*

*(1) Revisions to the requirements for urban and agricultural water management plans.*

*(2) Revisions to the requirements for integrated regional water management plans.*

*(3) Revisions to the eligibility for state water management grants and loans.*

*(4) Revisions to state or local permitting requirements that increase water supply opportunities, but do not weaken water quality protection under state and federal law.*

*(5) Increased funding for research, feasibility studies, and project construction.*

*(6) Expanding technical and educational support for local land use and water management agencies.*

*(b) No later than January 1, 2011, and updated as part of the California Water Plan, the department, in consultation with the board, and with public input, shall propose new statewide targets, or review and update existing statewide targets, for regional water resources management practices, including, but not limited to, recycled water, brackish groundwater desalination, and infiltration and direct use of urban stormwater runoff.*

*10608.64. The department, in consultation with the Agricultural Water Management Council, academic experts, and other stakeholders, shall develop a methodology for quantifying the efficiency of agricultural water use. Alternatives to be assessed shall include, but not be limited to, determination of efficiency levels based on crop type or irrigation system distribution uniformity. On or before December 31, 2011, the department shall report to the Legislature on a proposed methodology and a plan for implementation. The plan shall include the estimated implementation costs and the types of data needed to support the methodology. Nothing in this section authorizes the department to implement a methodology established pursuant to this section.*

## *PART 2.8. AGRICULTURAL WATER MANAGEMENT PLANNING*

### *Chapter 1. General Declarations and Policy*

*10800. This part shall be known and may be cited as the Agricultural Water Management Planning Act.*

*10801. The Legislature finds and declares all of the following:*

*(a) The waters of the state are a limited and renewable resource.*
*(b) The California Constitution requires that water in the state be used in a reasonable and beneficial manner.*
*(c) Urban water districts are required to adopt water management plans.*
*(d) The conservation of agricultural water supplies is of great statewide concern.*
*(e) There is a great amount of reuse of delivered water, both inside and outside the water service areas.*
*(f) Significant noncrop beneficial uses are associated with agricultural water use, including streamflows and wildlife habitat.*

*(g) Significant opportunities exist in some areas, through improved irrigation water management, to conserve water or to reduce the quantity of highly saline or toxic drainage water.*
*(h) Changes in water management practices should be carefully planned and implemented to minimize adverse effects on other beneficial uses currently being served.*
*(i) Agricultural water suppliers that receive water from the federal Central Valley Project are required by federal law to prepare and implement water conservation plans.*
*(j) Agricultural water users applying for a permit to appropriate water from the board are required to prepare and implement water conservation plans.*

*10802. The Legislature finds and declares that all of the following are the policies of the state:*

*(a) The conservation of water shall be pursued actively to protect both the people of the state and the state's water resources.*
*(b) The conservation of agricultural water supplies shall be an important criterion in public decisions with regard to water.*
*(c) Agricultural water suppliers shall be required to prepare water management plans to achieve conservation of water.*

## *Chapter 2. Definitions*

*10810. Unless the context otherwise requires, the definitions set forth in this chapter govern the construction of this part.*

*10811. "Agricultural water management plan" or "plan" means an agricultural water management plan prepared pursuant to this part.*

*10812. "Agricultural water supplier" has the same meaning as defined in Section 10608.12.*

*10813. "Customer" means a purchaser of water from a water supplier who uses water for agricultural purposes.*

*10814. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of that entity.*

*10815. "Public agency" means any city, county, city and county, special district, or other public entity.*

*10816. "Urban water supplier" has the same meaning as set forth in Section 10617.*

*10817. "Water conservation" means the efficient management of water resources for beneficial uses, preventing waste, or accomplishing additional benefits with the same amount of water.*

## *Chapter 3. Agricultural Water Management Plans*

### *Article 1. General Provisions*

*10820.*

*(a) An agricultural water supplier shall prepare and adopt an agricultural water management plan in the manner set forth in this chapter on or before December 31, 2012, and shall update that plan on December 31, 2015, and on or before December 31 every five years thereafter.*

*(b) Every supplier that becomes an agricultural water supplier after December 31, 2012, shall prepare and adopt an agricultural water management plan within one year after the date it has become an agricultural water supplier.*

*(c) A water supplier that indirectly provides water to customers for agricultural purposes shall not prepare a plan pursuant to this part without the consent of each agricultural water supplier that directly provides that water to its customers.*

*10821.*

*(a) An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan or reviewing the plan and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision.*

*(b) The amendments to, or changes in, the plan shall be adopted and submitted in the manner set forth in Article 3 (commencing with Section 10840).*

### *Article 2. Contents of Plans*

*10825.*

*(a) It is the intent of the Legislature in enacting this part to allow levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.*

*(b) This part does not require the implementation of water conservation programs or practices that are not locally cost effective.*

*10826. An agricultural water management plan shall be adopted in accordance with this chapter. The plan shall do all of the following:*

*(a) Describe the agricultural water supplier and the service area, including all of the following:*

*(1) Size of the service area.*
*(2) Location of the service area and its water management facilities.*

*(3) Terrain and soils.*
*(4) Climate.*
*(5) Operating rules and regulations.*
*(6) Water delivery measurements or calculations.*
*(7) Water rate schedules and billing.*
*(8) Water shortage allocation policies.*

*(b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:*

*(1) Surface water supply.*
*(2) Groundwater supply.*
*(3) Other water supplies.*
*(4) Source water quality monitoring practices.*
*(5) Water uses within the agricultural water supplier's service area, including all of the following:*
*(A) Agricultural.*
*(B) Environmental.*
*(C) Recreational.*
*(D) Municipal and industrial.*
*(E) Groundwater recharge.*
*(F) Transfers and exchanges.*
*(G) Other water uses.*

*(6) Drainage from the water supplier's service area.*
*(7) Water accounting, including all of the following:*
*(A) Quantifying the water supplier's water supplies.*
*(B) Tabulating water uses.*
*(C) Overall water budget.*

*(8) Water supply reliability.*

*(c) Include an analysis, based on available information, of the effect of climate change on future water supplies.*

*(d) Describe previous water management activities.*

*(e) Include in the plan the water use efficiency information required pursuant to Section 10608.48.*

*10827. Agricultural water suppliers that are members of the Agricultural Water Management Council, and that submit water management plans to that council in accordance with the "Memorandum of Understanding Regarding Efficient Water Management Practices By Agricultural Water Suppliers In California," dated January 1, 1999, may submit the water management plans identifying water demand*

*management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of Section 10826.*

*10828.*

*(a) Agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, may submit those water conservation plans to satisfy the requirements of Section 10826, if both of the following apply:*

*(1) The agricultural water supplier has adopted and submitted the water conservation plan to the United States Bureau of Reclamation within the previous four years.*

*(2) The United States Bureau of Reclamation has accepted the water conservation plan as adequate.*

*(b) This part does not require agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, to prepare and adopt water conservation plans according to a schedule that is different from that required by the United States Bureau of Reclamation.*

*10829. An agricultural water supplier may satisfy the requirements of this part by adopting an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) or by participation in areawide, regional, watershed, or basinwide water management planning if those plans meet or exceed the requirements of this part.*

### *Article 3. Adoption and Implementation of Plans*

*10840. Every agricultural water supplier shall prepare its plan pursuant to Article 2 (commencing with Section 10825).*

*10841. Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection, and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code. A privately owned agricultural water supplier shall provide an equivalent notice within its service area and shall provide a reasonably equivalent opportunity that would otherwise be afforded through a public hearing process for interested parties to provide input on the plan. After the hearing, the plan shall be adopted as prepared or as modified during or after the hearing.*

*10842. An agricultural water supplier shall implement the plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.*

*10843.*

*(a) An agricultural water supplier shall submit to the entities identified in subdivision (b) a copy of its plan no later than 30 days after the adoption of the plan. Copies of amendments or changes to the plans shall be submitted to the entities identified in subdivision (b) within 30 days after the adoption of the amendments or changes.*

*(b) An agricultural water supplier shall submit a copy of its plan and amendments or changes to the plan to each of the following entities:*

*(1) The department.*
*(2) Any city, county, or city and county within which the agricultural water supplier provides water supplies.*
*(3) Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.*
*(4) Any urban water supplier within which jurisdiction the agricultural water supplier provides water supplies.*
*(5) Any city or county library within which jurisdiction the agricultural water supplier provides water supplies.*
*(6) The California State Library.*
*(7) Any local agency formation commission serving a county within which the agricultural water supplier provides water supplies.*

*10844.*

*(a) Not later than 30 days after the date of adopting its plan, the agricultural water supplier shall make the plan available for public review on the agricultural water supplier's Internet Web site.*

*(b) An agricultural water supplier that does not have an Internet Web site shall submit to the department, not later than 30 days after the date of adopting its plan, a copy of the adopted plan in an electronic format. The department shall make the plan available for public review on the department's Internet Web site.*

*10845.*

*(a) The department shall prepare and submit to the Legislature, on or before December 31, 2013, and thereafter in the years ending in six and years ending in one, a report summarizing the status of the plans adopted pursuant to this part.*

*(b) The report prepared by the department shall identify the outstanding elements of any plan adopted pursuant to this part. The report shall include an evaluation of the effectiveness of this part in promoting efficient agricultural water management practices and recommendations relating to proposed changes to this part, as appropriate.*

*(c) The department shall provide a copy of the report to each agricultural water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data*

*for any legislative hearing designed to consider the effectiveness of plans submitted pursuant to this part.*

*(d) This section does not authorize the department, in preparing the report, to approve, disapprove, or critique individual plans submitted pursuant to this part.*

## *Chapter 4. Miscellaneous Provisions*

*10850.*

*(a) Any action or proceeding to attack, review, set aside, void, or annul the acts or decisions of an agricultural water supplier on the grounds of noncompliance with this part shall be commenced as follows:*

*(1) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.*

*(2) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 120 days after submitting the plan or amendments to the plan to entities in accordance with Section 10844 or the taking of that action.*

*(b) In an action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an agricultural water supplier, on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the agricultural water supplier has not proceeded in a manner required by law, or if the action by the agricultural water supplier is not supported by substantial evidence.*

*10851. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part. This part does not exempt projects for implementation of the plan or for expanded or additional water supplies from the California Environmental Quality Act.*

*10852. An agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.*

*10853. No agricultural water supplier that provides water to less than 25,000 irrigated acres, excluding recycled water, shall be required to implement the requirements of this part or Part 2.55 (commencing with Section 10608) unless sufficient funding has specifically been provided to that water supplier for these purposes.*

*SEC. 5. This act shall take effect only if Senate Bill 1 and Senate Bill 6 of the 2009–10 Seventh Extraordinary Session of the Legislature are enacted and become effective.*

B.7 California Code of Regulations, Title 23, §597 et seq. Agricultural Water Measurement

http://www.water.ca.gov/wateruseefficiency/sb7/committees/ag/a2/

**§597. Agricultural Water Measurement**

Under the authority included under California Water Code §10608.48(i)(1), the Department of Water Resources (Department) is required to adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirements in paragraph (1) of subdivision (b) of §10608.48.

*For reference, §10608.48(b) of the California Water Code states that:*

> *Agricultural water suppliers shall implement all of the following critical efficient management practices:*
>
> *(1) Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).*
>
> *(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.*

*For further reference, §531.10(a) of the California Water Code requires that:*

> *(a) An agricultural water supplier shall submit an annual report to the department that summarizes aggregated farm-gate delivery data, on a monthly or bi-monthly basis, using best professional practices.*

Notes:

(1) Paragraphs (1) and (2) of §10608.48(b) specify agricultural water suppliers' reporting of aggregated farm-gate water delivery and adopting a volumetric water pricing structure as the purposes of water measurement. However, this article only addresses developing a range of options for water measurement.

(2) Agricultural water suppliers reporting agricultural water deliveries measured under this article shall use the "Agricultural Aggregated Farm – Gate Delivery Reporting Format for Article 2" (Rev. 6-20-12), developed for this article and hereby incorporated by reference.

(3) The Department shall report on the availability of new commercially available water measurement technologies and impediments to implementation of this article when reporting to the Legislature the status of adopted Agricultural Water Management Plans in plan submittal years 2012, 2015 and every five years thereafter as required by California Water Code §10845. The Department shall also report the findings to the California Water Commission.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 531.10, 10608.48 (b), 10608.48 (i), 10608.52 (b) and 10845 Water Code.

**§597.1. Applicability**

(a) An agricultural water supplier providing water to 25,000 irrigated acres or more, excluding acres that receive only recycled water, is subject to this article.

(b) A wholesale agricultural water supplier providing water to another agricultural water supplier (the receiving water supplier) for ultimate resale to customers is subject to this article at the location at which control of the water is transferred to the receiving water supplier. However, the wholesale agricultural water supplier is not required to measure the receiving agricultural water supplier's deliveries to its customers.

(c) A water supplier providing water to wildlife refuges or habitat lands where (1) the refuges or habitat lands are under a contractual relationship with the water supplier, and (2) the water supplier meets the irrigated acreage criteria of Water Code §10608.12(a), is subject to this article.

(d) An agricultural water supplier providing water to less than 10,000 irrigated acres, excluding acres that receive only recycled water, is not subject to this article.

(e) An agricultural water supplier providing water to 10,000 or more irrigated acres but less than 25,000 irrigated acres, excluding acres that receive only recycled water, is not subject to this article unless sufficient funding is provided specifically for that purpose, as stated under Water Code §10853.

(f) A canal authority or other entity that conveys or delivers water through facilities owned by a federal agency is not subject to this article.

(g) Pursuant to Water Code §10608.8(d), an agricultural water supplier "that is a party to the Quantification Settlement Agreement, as defined in subdivision (a) of Section 1 of Chapter 617 of the Statutes of 2002, during the period within which the Quantification Settlement Agreement remains in effect," is not subject to this article.

(h) Pursuant to Water Code §10608.12(a), the Department is not subject to this article.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 10608.12 (a), 10608.48 (d), 10608.48 (f), 10828, and 10853 Water Code.

**§597.2. Definitions**

**(a) For purposes of this article, the terms used are defined in this section.**

(1) "Accuracy" means the measured volume relative to the actual volume, expressed as a percent. The percent shall be calculated as 100 x (measured value – actual value) / actual value, where "measured value" is the value indicated by the device or determined through calculations using a measured value by the device, such as flow rate, combined with a duration of flow, and "actual value" is the value as determined through laboratory, design or field testing protocols using best professional practices.

(2) "Agricultural water supplier," as defined in Water Code §10608.12(a), means a water supplier, either publicly or privately owned, providing water to 10,000 or more irrigated acres, excluding acres that receive only recycled water. "Agricultural water supplier" includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells water for ultimate resale to customers. "Agricultural water supplier" does not include the Department.

(3) "Approved by an engineer" means a California-registered Professional Engineer has reviewed, signed and stamped the plans, design, testing, inspection, and/or documentation report for a measurement device as described in this article.

(4) "Best professional practices" means practices attaining to and maintaining accuracy of measurement and reporting devices and methods described in this article, such as operation and maintenance procedures and practices recommended by measurement device manufacturers, designers, and industry professionals.

(5) "Customer" means the purchaser of water from an agricultural water supplier who has a contractual arrangement with the agricultural water supplier for the service of conveying water to the customer delivery point.

(6) "Delivery point" means the location at which the agricultural water supplier transfers control of delivered water to a customer or group of customers. In most instances, the transfer of control occurs at the farm-gate, which is therefore, a delivery point.

(7) "Existing measurement device," means a measurement device that was installed in the field prior to the effective date of this article.

(8) "Farm-gate," as defined in Water Code §531(f), means the point at which water is delivered from the agricultural water supplier's distribution system to each of its customers.

(9) "Irrigated acres," for purposes of applicability of this article, is calculated as the average of the previous five-year acreage within the agricultural water supplier's service area that has received irrigation water from the agricultural water supplier.

(10) "Manufactured device" means a device that is manufactured by a commercial enterprise, often under exclusive legal rights of the manufacturer, for direct off-the-shelf purchase and installation. Such devices are capable of directly measuring flow rate, velocity, or accumulating the volume of water delivered, without the need for additional components that are built on-site or in-house.

(11) "Measurement device" means a device by which an agricultural water supplier determines the numeric value of flow rate, velocity or volume of the water passing a designated delivery point. A measurement device may be a manufactured device, on-site built device or in-house built device.

(12) "New or replacement measurement device" means a measurement device installed after the effective date of this article.

(13) "Recycled water" is defined in subdivision (n) of §13050 of the Water Code as water that, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur, and is therefore considered a valuable resource.

(14) "Type of device" means a measurement device that is manufactured or built to perform similar functions. For example, rectangular, v-notch, and broad crested weirs are one type of device. Similarly, all submerged orifice gates are considered one type of device.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 10608.12 (a), 10608.12 (m), 10608.48, and 10813 Water Code.

**§597.3 Range of Options for Agricultural Water Measurement**

An agricultural water supplier subject to this article shall measure surface water and groundwater that it delivers to its customers pursuant to the accuracy standards in this section. The supplier may choose any applicable single measurement option or combination of options listed in paragraphs (a) or (b) of this section. Measurement device accuracy and operation shall be certified, tested, inspected and/or analyzed as described in §597.4 of this article.

**(a) Measurement Options at the Delivery Point or Farm-gate of a Single Customer**

An agricultural water supplier shall measure water delivered at the delivery point or farm-gate of a single customer using one of the following measurement options. The stated numerical accuracy for each measurement option is for the volume delivered. If a device measures a value other than volume, for example, flow rate,

velocity or water elevation, the accuracy certification must incorporate the measurements or calculations required to convert the measured value to volume as described in §597.4(e).

(1) An existing measurement device shall be certified to be accurate to within ±12% by volume.

and,

(2) A new or replacement measurement device shall be certified to be accurate to within:

(A) ±5% by volume in the laboratory if using a laboratory certification; (B) ±10% by volume in the field if using a non-laboratory certification.

**(b) Measurement Options at a Location Upstream of the Delivery Points or Farm-gates of Multiple Customers**

(1) An agricultural water supplier may measure water delivered at a location upstream of the delivery points or farm-gates of multiple customers using one of the measurement options described in §597.3(a) if the downstream individual customer's delivery points meet either of the following conditions:

(A) The agricultural water supplier does not have legal access to the delivery points of individual customers or group of customers needed to install, measure, maintain, operate, and monitor a measurement device.

Or,

(B) An engineer determines that, due to small differentials in water level or large fluctuations in flow rate or velocity that occur during the delivery season at a single farm-gate, accuracy standards of measurement options in §597.3(a) cannot be met by installing a measurement device or devices (manufactured or on-site built or in-house built devices with or without additional components such as gauging rod, water level control structure at the farm- gate, etc.). If conditions change such that the accuracy standards of measurement options in §597.3(a) at the farm-gate can be met, an agricultural water supplier shall include in its Agricultural Water Management Plan, a schedule, budget and finance plan to demonstrate progress to measure water at the farm-gate in compliance with §597.3(a) of this article.

(2) An agricultural water supplier choosing an option under paragraph (b)(1) of this section shall provide the following current documentation in its Agricultural Water Management Plan(s) submitted pursuant to Water Code §10826:

(A) When applicable, to demonstrate lack of legal access at delivery points of individual customers or group of customers downstream of the point of measurement, the agricultural water supplier's legal counsel shall certify to the Department that it does not have legal access to measure water at customers delivery points and that it has sought and been denied access from its customers to measure water at those points.

(B) When applicable, the agricultural water supplier shall document the water measurement device unavailability and that the water level or flow conditions described in §597.3(b)(1)(B) exist at individual customer's delivery points downstream of the point of measurement as approved by an engineer.

(C) The agricultural water supplier shall document all of the following criteria about the methodology it uses to apportion the volume of water delivered to the individual downstream customers:

(i) How it accounts for differences in water use among the individual customers based on but not limited to the duration of water delivery to the individual customers, annual customer water use patterns, irrigated acreage, crops planted, and on-farm irrigation system,

and;

(ii) That it is sufficient for establishing a pricing structure based at least in part on the volume delivered,

and;

(iii) That it was approved by the agricultural water supplier's governing board or body.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 531.10, 10608.48 *(i)* (1), and 10826 Water Code.

**§597.4 Accuracy Certification, Records Retention, Device Performance, and Reporting**

**(a) Initial Certification of Device Accuracy**

The accuracy of an existing, new or replacement measurement device or type of device, as required in §597.3, shall be initially certified and documented as follows:

(1) For existing measurement devices, the device accuracy required in section 597.3(a) shall be initially certified and documented by either:

(A) Field-testing that is completed on a random and statistically representative sample of the existing measurement devices as described in §597.4(b)(1) and§597.4(b)(2). Field-testing shall be performed by individuals trained in the use of field-testing equipment, and documented in a report approved by an engineer.

Or,

(B) Field-inspections and analysis completed for every existing measurement device as described in §597.4(b)(3). Field-inspections and analysis shall be performed by trained individuals in the use of field inspection and analysis, and documented in a report approved by an engineer.

(2) For new or replacement measurement devices, the device accuracy required in sections 597.3 (a)(2) shall be initially certified and documented by either:

(A) Laboratory Certification prior to installation of a measurement device as documented by the manufacturer or an entity, institution or individual that tested the device following industry-established protocols such as the National Institute for Standards and Testing (NIST) traceability standards. Documentation shall include the manufacturer's literature or the results of laboratory testing of an individual device or type of device.

Or,

(B) Non-Laboratory Certification after the installation of a measurement device in the field, as documented by either:

(i) An affidavit approved by an engineer submitted to the agricultural water supplier of either (1) the design and installation of an individual device at a specified location, or (2) the standardized design and installation for a group of measurement devices for each type of device installed at specified locations.

Or,

(ii) A report submitted to the agricultural water supplier and approved by an engineer documenting the field-testing performed on the installed measurement device or type of device, by individuals trained in the use of field testing equipment.

**(b) Protocols for Field-Testing and Field-Inspection and Analysis of Existing Devices**

(1) Field-testing shall be performed for a sample of existing measurement devices according to manufacturer's recommendations or design specifications and following best professional practices. It is recommended that the sample size be no less than 10% of existing devices, with a minimum of 5, and not to exceed 100 individual devices for any particular device type. Alternatively, the supplier may develop its own sampling plan using an accepted statistical methodology.

(2) If during the field-testing of existing measurement devices, more than one quarter of the samples for any particular device type do not meet the criteria pursuant to §597.3(a), the agricultural water supplier shall provide in its Agricultural Water

Management Plan, a plan to test an additional 10% of its existing devices, with a minimum of 5, but not to exceed an additional 100 individual devices for the particular device type. This second round of field-testing and corrective actions shall be completed within three years of the initial field-testing.

(3) Field-inspections and analysis protocols shall be performed and the results shall be approved by an engineer for every existing measurement device to demonstrate that the design and installation standards used for the installation of existing measurement devices meet the accuracy standards of §597.3(a) and operation and maintenance protocols meet best professional practices.

**(c) Records Retention**

Records documenting compliance with the requirements in §597.3 and §597.4 shall be maintained by the agricultural water supplier for ten years or two Agricultural Water Management Plan cycles.

**(d) Performance Requirements**

(1) All measurement devices shall be correctly installed, maintained, operated, inspected, and monitored as described by the manufacturer, the laboratory or the registered Professional Engineer that has signed and stamped certification of the device, and pursuant to best professional practices.

(2) If an installed measurement device no longer meets the accuracy requirements of §597.3(a) based on either field-testing or field-inspections and analysis as defined in sections 597.4 (a) and (b) for either the initial accuracy certification or during operations and maintenance, then the agricultural water supplier shall take appropriate corrective action, including but not limited to, repair or replacement to achieve the requirements of this article.

**(e) Reporting in Agricultural Water Management Plans**

Agricultural water suppliers shall report the following information in their Agricultural Water Management Plan(s):

(1) Documentation as required to demonstrate compliance with §597.3 (b), as outlined in section §597.3(b)(2), and §597.4(b)(2).

(2) A description of best professional practices about, but not limited to, the (1) collection of water measurement data, (2) frequency of measurements, (3) method for determining irrigated acres, and (4) quality control and quality assurance procedures.

(3) If a water measurement device measures flow rate, velocity or water elevation, and does not report the total volume of water delivered, the agricultural water supplier must document in its Agricultural Water Management Plan how it converted the

measured value to volume. The protocols must follow best professional practices and include the following methods for determining volumetric deliveries:

(A) For devices that measure flow-rate, documentation shall describe protocols used to measure the duration of water delivery where volume is derived by the following formula: Volume = flow rate x duration of delivery.

(B) For devices that measure velocity only, the documentation shall describe protocols associated with the measurement of the cross-sectional area of flow and duration of water delivery, where volume is derived by the following formula: Volume = velocity x cross-section flow area x duration of delivery.

(C) For devices that measure water elevation at the device (e.g. flow over a weir or differential elevation on either side of a device), the documentation shall describe protocols associated with the measurement of elevation that was used to derive flow rate at the device. The documentation will also describe the method or formula used to derive volume from the measured elevation value(s).

(4) If an existing water measurement device is determined to be out of compliance with §597.3, and the agricultural water supplier is unable to bring it into compliance before submitting its Agricultural Water Management Plan in December 2012, the agricultural water supplier shall provide in its 2012 plan, a schedule, budget and finance plan for taking corrective action in three years or less.

Note: Authority cited: Section 10608.48, Water Code. Reference: Sections 531.10, 10608.48 *(i)* (1), and 10826 Water Code.

# B.7 Text of the Governor's Executive Orders Pertaining to Agricultural Water Suppliers

May 20, 2013
**Executive Order B-21-13**

…

NOW, THEREFORE, I, EDMUND G. BROWN JR., Governor of the State of California, do hereby issue this Order to become effective immediately.

IT IS HEREBY ORDERED that the Department of Water Resources (DWR) and the State Water Resources Control Board (SWRCB) take immediate action to address the dry conditions and water delivery limitations, by doing the following:

1. Expedite processing of one-year water transfers for 2013 and assist water transfer proponents and suppliers as necessary, provided that the transfers will not harm other legal users of water and will not unreasonably affect fish, wildlife, or other in-stream beneficial uses.
2. The SWRCB shall expedite review and processing of water transfer petitions in accordance with applicable provisions of the Water Code.
3. The DWR shall expedite and facilitate water transfer proposals in accordance with applicable provisions of the Water Code.
4. The DWR shall coordinate State Water Project operations, in cooperation with Central Valley Project operations, to alleviate critical impacts to San Joaquin Valley agriculture.
5. The DWR shall continue to analyze trends in groundwater levels in the San Joaquin Valley, together with impacts of groundwater extraction on land subsidence.
6. The DWR and the SWRCB shall make all efforts to coordinate with relevant federal agencies, water districts, and water agencies to expedite the review and approval of water transfers in California.

This order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.

I FURTHER DIRECT that as soon as hereafter possible, this Executive Order be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this Executive Order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 20th day of May 2013.

_____
EDMUND G. BROWN JR.
Governor of California

ATTEST:

_____
DEBRA BOWEN
Secretary of State

**January 17, 2014**
**A PROCLAMATION OF A STATE OF EMERGENCY**

…

**IT IS HEREBY ORDERED THAT:**

1.State agencies, led by the Department of Water Resources, will execute a statewide water conservation campaign to make all Californians aware of the drought and encourage personal actions to reduce water usage. This campaign will be built on the existing Save Our Water campaign (www.saveourh20.org) and will coordinate with local water agencies. This campaign will call on Californians to reduce their water usage by 20 percent.
…

4.The Department of Water Resources and the State Water Resources Control Board (Water Board) will expedite the processing of water transfers, as called for in Executive Order B-21-13. Voluntary water transfers from one water right holder to another enables water to flow where it is needed most.

5.The Water Board will immediately consider petitions requesting consolidation of the places of use of the State Water Project and Federal Central Valley Project, which would streamline water transfers and exchanges between water users within the areas of these two major water projects.

6.The Department of Water Resources and the Water Board will accelerate funding for water supply enhancement projects that can break ground this year and will explore if any existing unspent funds can be repurposed to enable near-term water conservation projects.

7.The Water Board will put water right holders throughout the state on notice that they may be directed to cease or reduce water diversions based on water shortages.

8.The Water Board will consider modifying requirements for reservoir releases or diversion limitations, where existing requirements were established to implement a water quality control plan. These changes would enable water to be conserved upstream later in the year to protect cold water pools for salmon and steelhead, maintain water supply, and improve water quality.

9.The Department of Water Resources and the Water Board will take actions necessary to make water immediately available, and, for purposes of carrying out directives 5 and 8, Water Code section 13247 and Division 13 (commencing with section 21000) of the Public Resources Code and regulations adopted pursuant to that Division are suspended on the basis that strict compliance with them will prevent, hinder, or delay the mitigation of the effects of the emergency. Department of Water Resources and the Water Board shall maintain on their websites a list of the activities or approvals for which these provisions are suspended.

…
11.The Department of Water Resources will evaluate changing groundwater levels, land subsidence, and agricultural land fallowing as the drought persists and will provide a public update by April 30 that identifies groundwater basins with water shortages and details gaps in groundwater monitoring.

12.The Department of Water Resources will work with counties to help ensure that well drillers submit required groundwater well logs for newly constructed and deepened wells in a timely manner and the Office of Emergency Services will work with local authorities to enable early notice of areas experiencing problems with residential groundwater sources.

13.The California Department of Food and Agriculture will launch a one-stop website (www.cdfa.ca.gov/drought) that provides timely updates on the drought and connects farmers to state and federal programs that they can access during the drought.
…

**I FURTHER DIRECT** that as soon as hereafter possible, this Proclamation be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this Proclamation.

**IN WITNESS WHEREOF** I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 17th day of January, 2014.

_____
EDMUND G. BROWN JR.,
Governor of California

ATTEST:

_____
DEBRA BOWEN,
Secretary of State

**April 25, 2014**
**A PROCLAMATION OF A CONTINUED STATE OF EMERGENCY**

…

**IT IS HEREBY ORDERED THAT:**

1. The orders and provisions contained in Proclamation No. 1-17-2014, dated January 17, 2014, remain in full force and effect except as modified herein.

2. The Department of Water Resources and the State Water Resources Control Board (Water Board) will immediately and expeditiously process requests to move water to areas of need, including requests involving voluntary water transfers, forbearance agreements, water exchanges, or other means. If necessary, the Department will request that the Water Board consider changes to water right permits to enable such voluntary movements of water.

…

5. All state agencies that distribute funding for projects that impact water resources, including groundwater resources, will require recipients of future financial assistance to have appropriate conservation and efficiency programs in place.

…

9. The Department of Water Resources will expedite the consideration and, where appropriate, the implementation, of pump-back delivery of water through the State Water Project on behalf of water districts.

…

11. The Department of Water Resources will conduct intensive outreach and provide technical assistance to local agencies in order to increase groundwater monitoring in areas where the drought has significant impacts, and develop updated contour maps where new data becomes available in order to more accurately capture changing groundwater levels. The Department will provide a public update by November 30 that identifies groundwater basins with water shortages, details remaining gaps in groundwater monitoring, and updates its monitoring of land subsidence and agricultural land fallowing.

…

13. The Department of Water Resources and the Water Board, in coordination with other state agencies, will provide appropriate assistance to public agencies or private water companies in establishing temporary water supply connections to mitigate effects of the drought.

…

15. Pursuant to the drought legislation I signed into law on March 1, 2014, by July 1, 2014, the California Department of Food and Agriculture, in consultation with the Department of Water Resources and Water Board, will establish and implement a program to provide financial incentives to agricultural operations to invest in water irrigation treatment and distribution systems that reduce water and energy use, augment supply, and increase water and energy efficiency in agricultural applications.

…

19. For several actions called for in this proclamation, environmental review required by the California Environmental Quality Act is suspended to allow these actions to take place as quickly as possible. Specifically, for actions taken by state agencies pursuant to directives 2, 3, 6¬-10, 13, 15, and 17, for all actions taken pursuant to directive 12 when the Office of Planning and Research concurs that local action is required, and for all necessary permits needed to implement these respective actions, Division 13 (commencing with section 21000) of the Public Resources Code and regulations adopted pursuant to that Division are hereby suspended. The entities implementing these directives will maintain on their websites a list of the activities or approvals for which these provisions are suspended. This suspension and that provided in paragraph 9 of the January 17,

2014 Proclamation will expire on December 31, 2014, except that actions started prior to that date shall not be subject to Division 13 for the time required to complete them.

20. For several actions called for in this proclamation, certain regulatory requirements of the Water Code are suspended to allow these actions to take place as quickly as possible. Specifically, for actions taken pursuant to directive 2, section 13247 of the Water Code is suspended. The 30-day comment period provided in section 1726(f) of the Water Code is also suspended for actions taken pursuant to directive 2, but the Water Board will provide for a 15-day comment period. For actions taken by state agencies pursuant to directives 6 and 7, Chapter 3 of Part 3 (commencing with section 85225) of the Water Code is suspended. The entities implementing these directives will maintain on their websites a list of the activities or approvals for which these provisions are suspended.

**I FURTHER DIRECT** that as soon as hereafter possible, this Proclamation shall be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this Proclamation.

**IN WITNESS WHEREOF** I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 25th day of April, 2014

_____
EDMUND G. BROWN JR.
Governor of California

ATTEST:

_____
DEBRA BOWEN
Secretary of State

April 1, 2015
Executive Order B-29-15

…

IT IS HEREBY ORDERED THAT:

1. The orders and provisions contained in my January 17, 2014 Proclamation, my April 25, 2014 Proclamation, and Executive Orders B-26-14 and B-28-14 remain in full force and effect except as modified herein.

…

INCREASE ENFORCEMENT AGAINST WATER WASTE

…

12. Agricultural water suppliers that supply water to more than 25,000 acres shall include in their required 2015 Agricultural Water Management Plans a detailed drought management plan that describes the actions and measures the supplier will take to manage water demand during drought. The Department shall require those plans to include quantification of water supplies and demands for 2013, 2014, 2015 to the extent data is available. The Department will provide technical assistance to water suppliers in preparing the plans.

13. Agricultural water suppliers that supply water to 10,000 to 25,000 acres of irrigated lands shall develop Agricultural Water Management Plans and submit the plans to the Department by July 1, 2016. These plans shall include a detailed drought management plan and quantification of water supplies and demands in 2013, 2014, and 2015, to the extent that data is available. The Department shall give priority in grant funding to agricultural water suppliers that supply water to 10,000 to 25,000 acres of land for development and implementation of Agricultural Water Management Plans.

…

This Executive Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, employees, or any other person.

**I FURTHER DIRECT** that as soon as hereafter possible, this Order shall be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this Order.

**IN WITNESS WHEREOF** I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 1st day of April, 2015

_____
EDMUND G. BROWN JR.
Governor of California

ATTEST:

_____
ALEX PADILLA
Secretary of State

**Figure 3 Aggregated Farm-gate Delivery Reporting Form**

State of California — The Natural Resources Agency — Department of Water Resources

## Agricultural Aggregated Farm-Gate[1] Delivery Reporting Form for Article 2

Title 23, Division 2, Chapter 5.1, Article 2 of the CCR requires water supplier subject to the regulation to report to DWR the previous calendar year's aggregated farm gate delivery by July 31 of the subsequent year

### 1. Water Supplier Information

Name:

Address:

Phone Number:

Fax:

Total Number of Farm-Gates:

Number of Measured Farm-Gates:

Irrigated Acreage for Reporting Period:

Total Service Area Acreage:

### 2. Contact information

Name:

Title:

Address:

Phone Number:

Fax:

E-mail:

Submittal date:

Reporting year:

### 3. Aggregated Farm-Gate Delivery Data[2]: (*provide monthly or bimonthly data, acre-feet*)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Monthly Deliveries | | | | | | | | | | | | | |

| | Jan-Feb | Mar-Apr | May-Jun | Jul-Aug | Sep-Oct | Nov-Dec | Total |
|---|---|---|---|---|---|---|---|
| Bimonthly Deliveries | | | | | | | |

### 4. Explanations, Comments and Best Professional Practices[3]:

**Note:** An agricultural water supplier's total water use may be different from Aggregated Farm-Gate deliveries because measurement at these points may not account for other practices (such as groundwater recharge/conjunctive use, water transfers, wheeling to other agencies, urban use, etc).

1. "Farm-gate" means the point at which water is delivered from the agricultural water supplier's distribution system to each of its individual customers as specified in the Agricultural Water Measurement Regulation (Title 23, Division 2, Chapter 5.1, Article 2 of the CCR).
2. "Aggregated farm-gate delivery data" means information reflecting the total volume of water an agricultural water supplier provides to its customers and is calculated by totaling its deliveries to customers.
3. "Best Professional Practices" is defined in Title 23, Division 2, Chapter 5.1, Article 2 of the CCR, Section 597.2.

Article 2 Form - Rev.8 28 2013

# Appendix D

## CMWD Notifications and Resolutions for UWMP/AWMP

**CASITAS MUNICIPAL WATER DISTRICT**

**Resolution No. 16-15**

**RESOLUTION ADOPTING THE URBAN WATER MANAGEMENT PLAN/AGRICULTURAL WATER MANAGEMENT PLAN FOR CASITAS MUNICIPAL WATER DISTRICT**

WHEREAS, the California Legislature in its 1983-84 Regular Session, adopted the Urban Water Management Planning Act; and

WHEREAS, said Act requires all urban water purveyors with greater than 3,000 service connections or water use of more than 3,000 acre feet per year served directly to consumers to prepare and submit an urban water management plan to the California Department of Water Resources every five years; and

WHEREAS, the plan shall be reviewed periodically, at least every five years, and Casitas shall make any amendments or changes to its plan which are indicated by the reviews; and

WHEREAS, the original plan was adopted and sent to the California Department of Water Resources in March, 1996; and

WHEREAS, the reviewed plan must be filed with the California Department of Water Resources within thirty days of adoption; and

WHEREAS, the Agricultural Water Management Plan was added to address State Water Resources Control Board requirements, as stated to Casitas in mid-2015, to allow the subtraction of agriculture water use from monthly urban water use reporting requirements; and

WHERAS, the following Urban Water Management Plan/Agricultural Water Management Plan addresses all state requirements for such plans; and

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Casitas Municipal Water District as follows:

1. The final 2015 (2016) Urban Water Management Plan/Agricultural Water Management Plan for Casitas Municipal Water District has been reviewed, modified and is on file in Casitas' office and is hereby adopted.

2. A copy of the final 2015 (2016) Urban Water Management Plan/Agricultural is to be forwarded to the California Department of Water Resources and other entities per California Code requirements.

APPROVED this 22nd Day of June, 2016

Pete Kaiser, President
Casitas Municipal Water District

ATTEST:

James W. Word, Secretary
Casitas Municipal Water District

OVN06-07-2016
Published Ojai Valley News
June 8 & 15, 2016

**NOTICE OF PUBLIC HEARING**

Notice is hereby given that the Casitas Municipal Water District Board of Directors will hold a public hearing on Wednesday, June 22, 2016 at 3:00 p.m., at Casitas Municipal Water District, 1055 Ventura Avenue, Oak View, CA 93022 to hear input from the public regarding the revised Urban Water Management Plan/ Agriculture Water Management Plan. A copy of the revised Urban Water Management Plan/Agriculture Water Management Plan can be viewed online at www.casitaswater.org.

April 15, 2016

Ojai Valley Land Conservancy
P.O. Box 1092
Ojai, CA 93024

Subject: Casitas Municipal Water District's 2016 Urban Water Conservation Plan-Agricultural Water Management Plan

Dear Ojai Valley Land Conservancy,

The Casitas Municipal Water District (Casitas) is developing its 2016 Urban Water Management Plan (UWMP). This plan is being prepared in accordance with the California Urban Water Management Planning Act (Water Code §§ 10610 et seq.), which requires that we submit a new plan every five years. The UWMP is a planning document and a source document to direct urban water suppliers to evaluate their water supply, water reliability, and water conservation efforts. In addition, Casitas will be including data in the UWMP to also meet the requirements of an Agricultural Water Management Plan (AWMP). Casitas will combine the information in one UWMP-AWMP document.

Casitas invites your comments or suggestions on our UWMP-AWMP. Casitas will hold a public workshop on **Wednesday May 18, 2016, 5:30 p.m to 7:30 p.m.** regarding the public review draft of the UWMP-AWMP. The workshop will include a summary of the UWMP-AWMP and an opportunity for the public to ask questions. Casitas will also hold a public hearing to adopt the UWMP-AWMP on **Wednesday June 22, 2016, 3:00 p.m.** in the regular meeting of the Board of Directors. Both the workshop and public hearing will be held at Casitas' Board Room, 1055 Ventura Avenue, Oak View, California, 93022. Please be sure to check our website at casitaswater.org to confirm meeting dates and times as they may change.

A copy of the UWMP-AWMP will be available prior to the meetings at Casitas' main office located at the 1055 Ventura Avenue, Oak View, California 93022 and at www.casitaswater.org.

If you have any questions regarding Casitas' UWMP-AWMP please feel free to contact me at (805) 649-2251 Ext 118 or at rmerckling@casitaswater.com.

Sincerely,

Ron Merckling
Water Conservation and Public Affairs Manager

## Casitas MWD Agricultural/Urban Water Management Plan Workshop

**Wednesday, May 18, 2016 2:00 pm –4:00 pm**


# Casitas is working on its agricultural/urban water management plan

Casitas is planning to hold a public workshop on the draft Agricultural/Urban Water Management Plan (AUWMP) May 18th. Casitas is required to submit an updated AUWMP to the California Department of Water Resources every five years. The plan is a summary of water supplies, demands, conversation, and overall water service reliability for the next 25 years.

The AUWMP update will be made available for public review prior to the May workshop. The final plan will presented at the public hearing in June of 2016. More information will be made available at www.casitaswater.org. Anyone interested in receiving additional updates can call Bryan Sandoval at (805) 649-2251 extension 105 or email at bsandoval@casitaswater.com.

# Calendar

**Urban Water / Agricultural Water Management Plan Meeting**
18th May, 2016
Urban Water / Agricultural Water Management Plan Meeting

Please join us to discuss all the updates for Lake Casitas Urban Water/ Agricultural Water Management Plans. This meeting will help give everybody a better understating of the water management work that goes on at Casitas MWD.

When: Saturday, May 18, 2016 from 5:30 PM to 7 PM

Where: Board Room at Casitas' main office

To RSVP by email, please click here or call (805) 649-2251 ext. 105

**Lake Casitas Recreation Area**
11311 Santa Ana Road Ventura, CA 93001
General Information: 805-649-2233
Reservations: 805-649-1122

**Casitas Municipal Water District - Office**
1055 Ventura Ave Oak View, CA 93022
Phone: 805-649-2251 Fax: 805-649-4485

CASITAS MUNICIPAL WATER DISTRICT
1055 Ventura Avenue
Oak View, CA 93022-9622

# Account Statement

**ADDRESS SERVICE REQUESTED**

**AUTO**SCH 5-DIGIT 93023 2 PS5 96083AC31-A-1
275 1 AV 0.388

Billing Inquiries: (805) 649-2251 * Fax: (805) 649-4485
Office Hours: 8:00 AM to 4:30 PM Monday through Friday

## ACCOUNT INFORMATION

ACCOUNT NUMBER:
SERVICE ADDRESS:
BILLING PERIOD: 02/02/16 TO 03/04/1
BILLING DATE: 03/31/1
**DUE DATE: 04/28/1**

## CURRENT METER INFORMATION

| Meter Number | Previous Read Date | Current Read Date | Previous Read | Current Read | Consumptio |
|---|---|---|---|---|---|
| 2319986 | 02/02/16 | 03/04/16 | 3174 | 3186 | 1 |
| 10 | Units @ 0.882 | | | | 8.8 |
| 2 | Units @ 1.344 | | | | 2.6 |

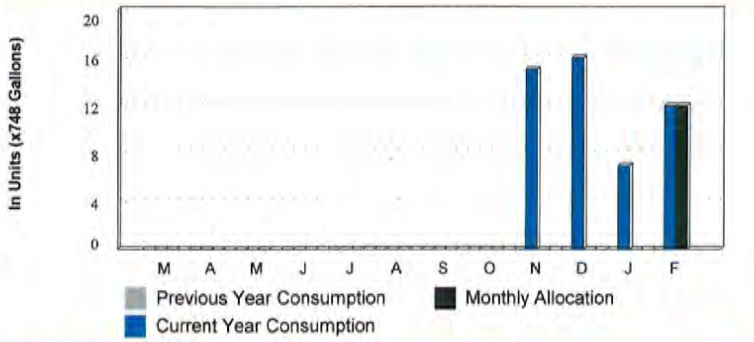
## CURRENT CHARGES

| Description | Amour |
|---|---|
| WATER | 11.5 |
| CONSERVATION PENALTY | 0.0 |
| MONTHLY STANDBY CHARGES | 23.3 |
| **TOTAL CURRENT CHARGES** | **34.8** |

## AMOUNT DUE

| | |
|---|---|
| PAYMENTS | -29.5 |
| BALANCE FORWARD | 0.0 |
| CURRENT AMOUNT DUE BY 04/28/16 | 34.8 |
| CURRENT AMOUNT DUE IF PAID AFTER 04/28/16 | 38.3 |
| **TOTAL ACCOUNT BALANCE** | **34.8** |

## 2 YEAR MONTHLY WATER USAGE




## 1 UNIT = 100 CUBIC FEET (HCF) = 748 GALLONS

| Bill Period | Days | Units | Gallons | Gallons/Day |
|---|---|---|---|---|
| Current Year | 31 | 12 | 8,976 | 290 |
| Previous Year | | 0 | 0 | |

## MONTHLY ALLOCATION

| | |
|---|---|
| CURRENT MONTH ALLOCATION: | 12 |
| CURRENT MONTH USAGE: | 12 |
| USAGE UNDER ALLOCATION: | 0 |
| NEXT MONTH ALLOCATION: | 12 |

## SPECIAL MESSAGE

Save the dates - Saturday, May 14th from 9:00 a.m. - noon "Oaks & Orchards Drought Care" located at the Oak View Park & Resource Center, 555 Mahoney Ave. Wednesday, May 18 from 5:30p.m. - 7:00 p.m "Agricultural Water Management Plan/Urban Water Management Plan" located in the Board Room at Casitas' District Office To R.S.V.P. and additional information, please call Bryan Sandoval 805-649-2251 ext. 105 or visit www.casitaswater.org

**PAYMENT IS DUE UPON RECEIPT. IF PAYMENT IS NOT MADE BY DELINQUENT DATE, SERVICE IS SUBJECT TO TURN OFF.**

ayment
# Coupon

Please return this portion along with your payment and write your account number on your check.

Make your check payable to **Casitas Municipal Water District**

| PAST DUE BALANCE DUE IMMEDIATELY | CURRENT AMOUNT DUE | TOTAL ACCOUNT BALANCE |
|---|---|---|
| | 04/28/16 | |
| 0.00 | 34.85 | **34.85** |

## ACCOUNT INFORMATION

ACCOUNT NUMBER:
SERVICE ADDRESS:
BILLING PERIOD: 02/02/16 TO 03/04/16
BILLING DATE: 03/31/16
**DUE DATE: 04/28/16**

## AMOUNT ENCLOSED

$_____

OJAI CA 93023-4183

CASITAS MUNICIPAL WATER DISTRICT
1055 VENTURA AVE
OAK VIEW CA 93022-9622

☐ Check box for change of mailing address (see reverse).

31325140800000348500000038337

# Appendix E

## UWMP Required Tables

| Table 2-2: Plan Identification | | | |
|---|---|---|---|
| **Select Only One** | **Type of Plan** | | **Name of RUWMP or Regional Alliance** *if applicable* *drop down list* |
| ☑ | **Individual UWMP** | | |
| | ☐ | Water Supplier is also a member of a RUWMP | |
| | ☐ | Water Supplier is also a member of a Regional Alliance | |
| ☐ | **Regional Urban Water Management Plan (RUWMP)** | | |
| NOTES: | | | |

| Table 2-3: Agency Identification | |
|---|---|
| Type of Agency (select one or both) | |
| ☑ | Agency is a wholesaler |
| ☐ | Agency is a retailer |
| Fiscal or Calendar Year (select one) | |
| ☐ | UWMP Tables Are in Calendar Years |
| ☑ | UWMP Tables Are in Fiscal Years |
| If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd) | |
| *7/1* | |
| Units of Measure Used in UWMP (select from Drop down) | |
| Unit | AF |
| NOTES: | |

| Table 2-4 Wholesale: Water Supplier Information Exchange (select one) | |
|---|---|
| ☑ | Supplier has informed more than 10 other water suppliers of water supplies available in accordance with CWC 10631. Completion of the table below is optional. If not completed include a list of the water suppliers that were informed. |
| | **Provide page number for location of the list.** |
| ☐ | Supplier has informed 10 or fewer other water suppliers of water supplies available in accordance with CWC 10631.<br>**Complete the table below.** |
| Water Supplier Name *(Add additional rows as needed)* | |
| See UWMP Section 1, Section 1.5, Table 1-2 | |
| | |
| | |
| NOTES: list of agencies notified included in Section 1, Section 1.5, Table 1-2 | |

| Table 3-1 Wholesale: Population - Current and Projected | | | | | | |
|---|---|---|---|---|---|---|
| Population Served | 2015 | 2020 | 2025 | 2030 | 2035 | 2040*(opt)* |
| | 70,847 | 73,137 | 75,725 | 78,312 | 82,914 | 85,431 |
| NOTES: CMWD staff, 2016 | | | | | | |

| Table 4-1 Wholesale: Demands for Potable and Raw Water - Actual | | | |
|---|---|---|---|
| Use Type<br>*(Add additional rows as needed)* | 2015 Actual | | |
| ***Drop down list***<br>*May select each use multiple times*<br>*These are the only use types that will be recognized by the WUE data online submittal tool* | Additional Description<br>*(as needed)* | Level of Treatment When Delivered<br>*Drop down list* | Volume |
| Sales to other agencies | | Drinking Water | 6,192 |
| Agricultural irrigation | | Drinking Water | 8,048 |
| Retail demand for use by agencies that are primarily wholesalers with a small volume of retail sales | | | 2,507 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | **TOTAL** | 16,747 |
| NOTES: Data from CMWD 2015 Consumption Report. | | | |

| Table 4-2 Wholesale: Demands for Potable and Raw Water - Projected | | | | | | |
|---|---|---|---|---|---|---|
| Use Type *(Add additional rows as needed)* | Additional Description *(as needed)* | Projected Water Use *Report To the Extent that Records are Available* | | | | |
| ***Drop down list*** *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool.* | | 2020 | 2025 | 2030 | 2035 | 2040 *( opt)* |
| Sales to other agencies | | 6,200 | 6,200 | 6,500 | 6,500 | 6,500 |
| Agricultural irrigation | | 8,000 | 8,000 | 8,000 | 8,000 | 8,000 |
| Retail demand for use by agencies that are primarily wholesalers with a small volume of retail sales | | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| **TOTAL** | | 17,200 | 17,200 | 17,500 | 17,500 | 17,500 |
| NOTES: CMWD staff, 2016 | | | | | | |

| Table 4-3 Wholesale: Total Water Demands | | | | | | |
|---|---|---|---|---|---|---|
| | 2015 | 2020 | 2025 | 2030 | 2035 | 2040*(opt)* |
| Potable and Raw Water<br>*From Tables 4-1 and 4-2* | 16,747 | 17,200 | 17,200 | 17,500 | 17,500 | 17,500 |
| Recycled Water Demand*<br>*From Table 6-4* | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL WATER DEMAND** | 16,747 | 17,200 | 17,200 | 17,500 | 17,500 | 17,500 |
| **Recycled water demand fields will be blank until Table 6-4 is complete.* | | | | | | |
| NOTES: CMWD staff, 2016 | | | | | | |

| Table 4-4 Wholesale: 12 Month Water Loss Audit Reporting | |
|---|---|
| Reporting Period Start Date (mm/yyyy) | Volume of Water Loss* |
| 2014 | 669.927 |
| ** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.* | |
| NOTES: value in AFY; CMWD staff, 2016 | |

| Table 6-1 Wholesale: Groundwater Volume Pumped | | | | | | |
|---|---|---|---|---|---|---|
| ☐ | Supplier does not pump groundwater.<br>The supplier will not complete the table below. | | | | | |
| Groundwater Type<br>***Drop Down List***<br>*May use each category multiple times* | Location or Basin Name | 2011 | 2012 | 2013 | 2014 | 2015 |
| Alluvial Basin | Ventura River GW Basin | 67 | 232 | 173 | 42 | 54 |
| | | | | | | |
| | | | | | | |
| **TOTAL** | | 67 | 232 | 173 | 42 | 54 |

NOTES: CMWD staff, 2016

**Table 6-3 Wholesale: Wastewater Treatment and Discharge Within Service Area in 2015**

| ☑ | Wholesale supplier neither distributes nor provides supplemental treatment to recycled water. The supplier will not complete the table below. |
|---|---|

| Wastewater Treatment Plant Name | Discharge Location Name or Identifier | Discharge Location Description | Wastewater Discharge ID Number *(optional)* | Method of Disposal *Drop down list* | Does This Plant Treat Wastewater Generated Outside the Service Area? | Treatment Level *Drop down list* | 2015 volumes | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Wastewater Treated | Discharged Treated Wastewater | Recycled Within Service Area | Recycled Outside of Service Area |
| *Add additional rows as needed* | | | | | | | | | | |
| Valley Sanitary Di | Ventura River | No. 001 | CA0053961 | River or creek outfall | Yes | Tertiary | 1,617 | 1,617 | 0 | 158 |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | **Total** | 1,617 | 1,617 | 0 | 158 |

NOTES: Data provided by Bradshaw Pruit, OVSD, 2016

| Table 6-4 Wholesale: Current and Projected Retailers Provided Recycled Water Within Service Area | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☑ | Recycled water is not directly treated or distributed by the supplier. The supplier will not complete the table below. | | | | | | |
| Name of Receiving Supplier or Direct Use by Wholesaler | Level of Treatment *Drop down list* | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 *(opt)* |
| *Add additional rows as needed* | | | | | | | |
| Casitas Municipal Water District | | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| **Total** | | 0 | 0 | 0 | 0 | 0 | 0 |
| NOTES: CMWD staff, 2016 | | | | | | | |

| Table 6-5 Wholesale: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual | | |
|---|---|---|
| ☑ | Recycled water was not used or distributed by the supplier in 2010, nor projected for use or distribution in 2015.<br>The wholesale supplier will not complete the table below. | |
| Name of Receiving Supplier or Direct Use by Wholesaler | 2010 Projection for 2015 | 2015 actual use |
| *Add additional rows as needed* | | |
| Casitas Municipal Water District | 0 | 0 |
| | | |
| | | |
| **Total** | 0 | 0 |
| NOTES: CMWD staff, 2016 | | |

| Table 6-7 Wholesale: Expected Future Water Supply Projects or Programs | | | | | | |
|---|---|---|---|---|---|---|
| ☑ | No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below. | | | | | |
| ☑ | Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format. | | | | | |
| | Provide page location of narrative in the UWMP | | | | | |
| Name of Future Projects or Programs | Joint Project with other agencies? | | Description *(if needed)* | Planned Implementation Year | Planned for Use in Year Type *Drop Down list* | Expected Increase in Water Supply to Agency |
| | *Drop Down Menu* | *If Yes, Agency Name* | | | | |
| *Add additional rows as needed* | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| NOTES: CMWD staff, 2016 | | | | | | |

| Table 6-8 Wholesale: Water Supplies — Actual | | | | |
|---|---|---|---|---|
| Water Supply | Additional Detail on Water Supply | 2015 | | |
| ***Drop down list*** *May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool* | | Actual Volume | Water Quality *Drop Down List* | Total Right or Safe Yield *(optional)* |
| *Add additional rows as needed* | | | | |
| Surface water | Lake Casitas | 17,339 | Raw Water | 20,540 |
| Groundwater | Well 1 | 54 | Drinking Water | 300 |
| | | | | |
| | | | | |
| | **Total** | 17,393 | | 20,840 |
| NOTES: CMWD staff, 2016 | | | | |

**Table 6-9 Wholesale: Water Supplies — Projected**

| Water Supply | Additional Detail on Water Supply | Projected Water Supply *Report To the Extent Practicable* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2020 | | 2025 | | 2030 | | 2035 | | 2040 *(opt)* | |
| ***Drop down list*** *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool* | | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* | Reasonably Available Volume | Total Right or Safe Yield *(optional)* |
| *Add additional rows as needed* | | | | | | | | | | | |
| Surface water | Lake Casitas | 20,540 | 20,540 | 20,540 | 20,540 | 20,540 | 20,540 | 20,540 | 20,540 | 20,540 | 20,540 |
| Groundwater | Well 1 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 | 300 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| **Total** | | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |

NOTES: CMWD staff, 2016

**Table 7-1 Wholesale: Basis of Water Year Data**

| Year Type | Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000* | Available Supplies if Year Type Repeats | |
|---|---|---|---|
| | | ☐ Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____ | |
| | | ☑ Quantification of available supplies is provided in this table as either volume only, percent only, or both. | |
| | | **Volume Available** | **% of Average Supply** |
| Average Year | 2011 | 20840 | 100% |
| Single-Dry Year | 2014 | 20840 | |
| Multiple-Dry Years 1st Year | 1987 | 20840 | |
| Multiple-Dry Years 2nd Year | 1988 | 20840 | |
| Multiple-Dry Years 3rd Year | 1989 | 20840 | |
| Multiple-Dry Years 4th Year *Optional* | NR | NR | |
| Multiple-Dry Years 5th Year *Optional* | NR | NR | |
| Multiple-Dry Years 6th Year *Optional* | NR | NR | |

Agency may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If an agency uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table. Suppliers may create an additional worksheet for the additional tables.

NOTES: NR = not required; CMWD staff, 2016

| Table 7-2 Wholesale: Normal Year Supply and Demand Comparison | | | | | |
|---|---|---|---|---|---|
| | 2020 | 2025 | 2030 | 2035 | 2040 *(Opt)* |
| Supply totals *(autofill from Table 6-9)* | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| Demand totals *(autofill fm Table 4-3)* | 17,200 | 17,200 | 17,500 | 17,500 | 17,500 |
| Difference | 3,640 | 3,640 | 3,340 | 3,340 | 3,340 |
| NOTES: CMWD staff, 2016 | | | | | |

| Table 7-3 Wholesale: Single Dry Year Supply and Demand Comparison | | | | | |
|---|---|---|---|---|---|
| | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
| Supply totals | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| Demand totals | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| Difference | 0 | 0 | 0 | 0 | 0 |
| NOTES: CMWD staff, 2016 | | | | | |

| Table 7-4 Wholesale: Multiple Dry Years Supply and Demand Comparison | | | | | | |
|---|---|---|---|---|---|---|
| | | 2020 | 2025 | 2030 | 2035 | 2040 (Opt) |
| First year | Supply totals | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Second year | Supply totals | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Third year | Supply totals | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Demand totals | 20,840 | 20,840 | 20,840 | 20,840 | 20,840 |
| | Difference | 0 | 0 | 0 | 0 | 0 |
| Fourth year *(optional)* | Supply totals | NR | NR | NR | NR | NR |
| | Demand totals | NR | NR | NR | NR | NR |
| | Difference | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! |
| Fifth year *(optional)* | Supply totals | NR | NR | NR | NR | NR |
| | Demand totals | NR | NR | NR | NR | NR |
| | Difference | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! |
| Sixth year *(optional)* | Supply totals | NR | NR | NR | NR | NR |
| | Demand totals | NR | NR | NR | NR | NR |
| | Difference | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! |

NOTES: NR = not required; CMWD staff, 2016

| Table 8-1 Wholesale<br>Stages of Water Shortage Contingency Plan | | |
|---|---|---|
| Stage | Complete Both | |
| | Supply Reduction[1] | Water Supply Condition<br>(*Narrative description)* |
| *Add additional rows as needed* | | |
| 1 | 20% | Lake Casitas storage at 254,000 AF |
| 2 | 20% | Lake Casitas storage at 127,000 AF |
| 3 | 30% | Lake Casitas storage at 100,000 AF |
| 4 | 40% | Lake Casitas storage at 75,000 AF |
| 5 | 50% | Lake Casitas storage at 65,000 AF |
| [1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.* | | |
| NOTES: CMWD staff, 2016 | | |

| Table 8-4 Wholesale: Minimum Supply Next Three Years | | | |
|---|---|---|---|
| | 2016 | 2017 | 2018 |
| Available Water Supply | 20,840 | 20,840 | 20,840 |
| NOTES: CMWD staff, 2016 | | | |

| Table 10-1 Wholesale: Notification to Cities and Counties (select one) | | |
|---|---|---|
| ☑ | Supplier has notified more than 10 cities or counties in accordance with CWC 10621 (b) and 10642.<br>**Completion of the table below is not required. Provide a separate list of the cities and counties that were notified.** | |
| | Provide the page or location of this list in the UWMP. | |
| ☐ | Supplier has notified 10 or fewer cities or counties.<br>**Complete the table below.** | |
| City Name | 60 Day Notice | Notice of Public Hearing |
| *Add additional rows as needed* | | |
| City of Ojai | ☑ | ☑ |
| City of Ventura | ☑ | ☑ |
| | ☐ | ☐ |
| County Name<br>*Drop Down List* | 60 Day Notice | Notice of Public Hearing |
| *Add additional rows as needed* | | |
| Ventura County | ☑ | ☑ |
| | ☐ | ☐ |
| NOTES: list of agencies notified included in Section 1 | | |

# Appendix F

## AWMP Required Worksheets

**Worksheet 1. Summary of Coordination, Adoption, and Submittal Activities**

| Potential Interested Parties | Notified of AWMP Preparation | Requested Copy of Draft | Commented on Draft/Action Taken by Supplier | Notified of Public Meetings | Attended Public Meetings | Copy of Adopted AWMP/ Amendment Sent |
|---|---|---|---|---|---|---|
| Carpinteria Valley Water District | 4/15/2016 | | | 4/15/2016 | | |
| Faria Beach Homeowner's Association | 4/15/2016 | | | 4/15/2016 | | |
| Golden State Water Company | 4/15/2016 | | | 4/15/2016 | | |
| Hermitage Mutual Water Company | 4/15/2016 | | | 4/15/2016 | X | |
| Meiners Oaks Water District | 4/15/2016 | X | | 4/15/2016 | | |
| City of Ojai | 4/15/2016 | | | 4/15/2016 | | [Date] |
| Ojai Basin Groundwater Agency | 4/15/2016 | | | 4/15/2016 | | [Date] |
| Ojai Pixie Growers Association | 4/15/2016 | | | 4/15/2016 | | |
| Ojai Land Conservancy | 4/15/2016 | | | 4/15/2016 | | |
| Ojai Valley Sanitary District | 4/15/2016 | | | 4/15/2016 | X | |
| Oak View Library | 4/15/2016 | N/A | N/A | 4/15/2016 | N/A | [Date] |
| Rancho Del Cielo Mutual Water Company | 4/15/2016 | | | 4/15/2016 | | |
| Rincon Water & Road Works | 4/15/2016 | | | 4/15/2016 | | |
| Senior Canyon Mutual Water Company | 4/15/2016 | | | 4/15/2016 | | |
| Siete Robles Mutual Water Company | 4/15/2016 | | | 4/15/2016 | | |
| Sisar Mutual Water Company | 4/15/2016 | | | 4/15/2016 | | |
| Sulphur Mountain Road Water Assoc. | 4/15/2016 | | | 4/15/2016 | | |
| Tico Mutual Water Company | 4/15/2016 | | | 4/15/2016 | | |
| County of Ventura, Supervisor Bennett | 4/15/2016 | | | 4/15/2016 | | |
| Ventura County Agricultural Comm. | 4/15/2016 | | | 4/15/2016 | | |
| Ventura County Resource Conservation District | 4/15/2016 | | | 4/15/2016 | | |
| Ventura County Watershed Protection District | 4/15/2016 | | | 4/15/2016 | | [Date] |
| Ventura River Watershed Coordinator | 4/15/2016 | | | 4/15/2016 | | [Date] |
| City of Ventura | 4/15/2016 | | | 4/15/2016 | X | [Date] |
| Ventura Water | 4/15/2016 | | | 4/15/2016 | X | [Date] |
| Ventura County Farm Bureau | 4/15/2016 | | | 4/15/2016 | | |
| Ventura River Water District | 4/15/2016 | | | 4/15/2016 | | |
| CA State Library | N/A | N/A | N/A | N/A | N/A | [Date] |
| LAFCO Ventura County | 4/15/2016 | X | | 4/15/2016 | | [Date] |
| Department of Water Resources | N/A | N/A | N/A | N/A | N/A | [Date] |
| State Water Resources Control Board | N/A | N/A | N/A | N/A | N/A | |
| Ojai Valley News | N/A | N/A | N/A | 6/8/2016 and 6/15/2016 | N/A | N/A |
| CMWD Website | 5/13/2016 | N/A | N/A | 5/13/2016 | N/A | [Date] |

**"Date" means required.**

**Worksheet 2. Water Supplier History and Size**

| | |
|---|---|
| **Date of Formation** | **CMWD is authorized and Dam construction began in 1956** |
| **Source of Water** | Surface Water: Lake Casitas |
| Local Surface Water | **Lake Casitas** |
| Local Groundwater | **Mira Montes Well** |
| Wholesaler | |
| USBR | |
| SWP | |
| Service Area Gross Acreage | circa 137.50 sq mi without service area in ocean |
| Service Area Irrigated Acreage | 5,372 acres |

Note: Additional rows/columns can be added as applicable.

**Worksheet 3. Expected Changes to Service Area**

| Change to Service Area [Delete non-applicable row(s)] | Estimate of Magnitude | Effect on the Water Supplier |
|---|---|---|
| Reduced Service Area Size | **none** | **NA** |
| Increased Service Area Size | **none** | **NA** |
| New Governmental Entity | **none** | **NA** |
| Other [Define/Identify] | **none** | **NA** |

Note: Additional rows/columns can be added as applicable.

**Worksheet 4. Water Conveyance and Delivery System**

| System Used | Number of Miles |
|---|---|
| Unlined Canal | |
| Lined Canal | **5.25 miles** |
| Pipelines | **91 miles** |
| Drains | |

Note: Additional rows/columns can be added as applicable.

**Worksheet 5. Water Supplier Reservoirs**

| | |
|---|---|
| Number | **2** |
| Total Capacity (AF) | **Casita Dam/Lake capacity is 254,000 AF**<br>**Matilija Dam and reservoir capacity 2473 AF** |

**Worksheet 6. Tailwater/Spill Recovery System**

| **System** | **yes there is spill way** |
|---|---|
| District Operated Tailwater/Spill Recovery | **Distric has a spill but has not been used since 1998** |
| Grower Operated Tailwater/Spill Recovery | None |

**Worksheet 7. Landscape Characteristics**

| Topography Characteristic | % of the District | Effect on Water Operations and Drainage |
|---|---|---|
| **NA** | **[Percent]** | **NA** |
| **[Text]** | **[Percent]** | **NA** |

| Soil Characteristic/ Classification | % of the District | Effect on Water Operations and Drainage | Percolation Rate (inches/hour) |
|---|---|---|---|
| **NA** | **[Percent]** | **[Text]** | **[Fraction]** |

N/A

**Worksheet 8. Summary Climate Characteristics**

| Climate Characteristic | Value (1) |
|---|---|
| Average Annual Precipitation (inches) (1) | 21.21 |
| Annual Minimum Precipitation (inches) (1) | 4.35 |
| Annual Maximum Precipitation (inches) (1) | 47.3 |
| Average Annual Minimum Temperature ($^{o}$F) (2) | 44.9 |
| Average Annual Maximum Temperature ($^{o}$F) (2) | 77.9 |

Note: Additional rows/columns can be added as applicable.

Notes:

(1) Data from Western Region Climate Center

(2) Station data obtained from Western Region Climate Center,

**Worksheet 9. Detailed Climate Characteristics***

| Month/Time | Average Precipitation, Inches (1) | Average Reference Evapotranspiration (Eto), Inches (2) total for the month in 2015 in red | Average Minimum Temperature, °F (1) | Average Maximum Temperature, °F (1) |
|---|---|---|---|---|
| January | **4.92** | **2.22** | **35.9** | **66.6** |
| February | **4.94** | **2.42** | **38** | **67.9** |
| March | **3.53** | **3.94** | **39.9** | **70.1** |
| April | **1.42** | **4.83** | **43.1** | **74** |
| May | **0.4** | **5.99** | **46.9** | **77.4** |
| June | **0.07** | **6.02** | **50.3** | **83.4** |
| July | **0.02** | **6.50** | **54.5** | **90.9** |
| August | **0.04** | **6.54** | **54.3** | **91.5** |
| September | **0.27** | **5.19** | **52.1** | **88.7** |
| October | **0.66** | **3.73** | **46.7** | **82.1** |
| November | **1.82** | **2.38** | **40.3** | **74.7** |
| December | **3.13** | **1.65** | **36.4** | **67.9** |
| Annual Average | **21.22** | **51.39** | **44.9** | **77.9** |
| Wet Season (3) | **20.42** | **21.15** | **280.3** | **503.3** |
| Dry Season (4) | **0.80** | **30.24** | **258.1** | **431.9** |
| Extreme Conditions (if applicable) | **Last 4 years have been drier condition than normal** | | | |
| Other [Identify] | **NA** | **NA** | **NA** | **NA** |

Notes:

(1) Data from Western Region Climate Center,
(2) Data obtained from California Department of Water Resources, CIMIS, Santa Paula Station (XXX), 2015.
(3) October to April
(4) May to September

**Worksheet 10. Supplier Delivery System**

| Type | Check if Used | Percent of System Supplied |
|---|---|---|
| On Demand | **X** | **100** |
| Modified Demand | | |
| Rotation | | |
| Other | | |

Note: Additional rows/columns can be added as applicable.

**Worksheet 11. Water Allocation Policy**

| | (Check if applicable) | | | Allocation | |
|---|---|---|---|---|---|
| Basis of Water Allocation | Flow | Volume | Seasonal Allocations | Normal Year | Percent of Water Deliveries (%) |
| Area within the service area | | | | | |
| Amount of land owned | | | X | | |
| Riparian rights | | | | | |
| Other | | | | | |

Note: Additional rows/columns can be added as applicable.

Allowcations are based on several factors see below
Category tha the account falls on
Lake levels are also determinates factors of allocations
Stage of shortage
written agreements
application of historical water use data
application of documented water use standards
site audits and surveys
residental allacations are on a monthly basis
agriculture, CII, and resale allocations are all on annual basis

**Worksheet 12. Actual Lead Times**

| Operations | Hours/Days |
|---|---|
| Water orders | **NA** |
| Water shut-off | **NA** |

Note: Additional rows/columns can be added as applicable.

**Worksheet 13. Water Delivery Measurements**

| Measurement Device | Frequency of Calibration (Months) | Frequency of Maintenance (Months) | Estimated Level of Accuracy (%) |
|---|---|---|---|
| Orifices (meter gates) | | | |
| Propeller Meters | **≤ 2 inches are propellller meters, 2≥ are measuring chambers** | | **+/-2%** |
| Weirs | | | |
| Flumes | | | |
| Verturi Meters | | | |
| Pump, Run Time | | | |
| Pump, KWH | | | |
| Positive Displacement (ag.) turbine meters | **CMWD >2 inches** | | **+/-2%** |

**Worksheet 14. Water Rate Basis**

| Water Charge Basis | Check if Used | Percent of Water Deliveries (%) | Description |
|---|---|---|---|
| Volume of Water Delivered | **X** | **100** | |
| Rate and Duration of Water Delivered | | | |
| Acre | | | |
| Crop | | | |
| Land Assessment | | | |
| Other | | | |

**Worksheet 15. Rate Structure**

| Type of Billing | Check if Used | Description |
|---|---|---|
| Declining | | |
| Uniform (1) | **X** | **$0.624-$0.904** |
| Increasing Block Rate (2) | **X** | **$0.602-$1.770** |
| Increasing Block Rate (3) | **X** | **$0.602-$2.614** |
| Other (4) | **X** | **$0.827-$1.785** |

Notes:
1) agriculture only customers
2) agriculture-residential customers
3) residential only customers
4) business, industrial, resale, other, temporary, and recreation customers

**Worksheet 16. Frequency of Billing**

| Frequency | Check if Used |
|---|---|
| Weekly | |
| Biweekly | |
| Monthly | **X** |
| Bimonthly | |
| Semiannually | |
| Annually | |

**Worksheet 17. Decreased Water Supplies Allocations**

| | | |
|---|---|---|
| | 80% of 89 | |
| Allocation Method | Usage | |
| By crop | **Citrus and Avocados** | 2AF per Acre planted |
| First come first served | | |
| Area in district | | Within District |
| Other | | |
| No specific policy | Allocation is set to only Ag in district boundaries | |

**Worksheet 18. Enforcement Methods of Allocation Policies**

| Enforcement Method | Check if used |
|---|---|
| Fines | **X** |
| Water Shut-off | |
| Other<br>No specific policy | |

**Worksheet 19. Representative Year**

| | Description |
|---|---|
| Representative year(s) based upon | **2011** |
| First month of representative year | **7/1** |
| Last month of representative year | **6/30** |

Notes:

(1) approximates year with average annual precipitation
Safeyield 8880 AF for AG

**Worksheet 20. Annual Agricultural Water Use (AF) (Fiscal Year)**

| | | Planning Cycle | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source | Rep. Year - 2010-2011 | 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 | | | |
| **Agricultural Water Supplier Delivered** | | | | | | | | | |
| Surface Water (1) | **5,139** | **5,139** | **6,063** | **7,978** | **9,385** | **8,048** | | | |
| Groundwater | **0** | **0** | **0** | **0** | **0** | **0** | | | |
| Other (define) | **0** | **0** | **0** | **0** | **0** | **0** | | | |
| **subtotal** | **5,139** | **5,139** | **6,063** | **7,978** | **9,385** | **8,048** | | 5206 | 6295 |
| **Other Water Supplies Used** | | | | | | | | | |
| Surface Water | **0** | **0** | **0** | **0** | **0** | **0** | | | |
| Groundwater | **0** | **0** | **0** | **0** | **0** | **0** | | | |
| Other (define) | **0** | **0** | **0** | **0** | **0** | **0** | | | |
| subtotal | **0** | **0** | **0** | **0** | **0** | **0** | | | |
| **Total** | **5,139** | **5,139** | **6,063** | **7,978** | **9,385** | **8,048** | **36,613** | | |

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

Notes: Calculations were based on adding ag and ag domestic from July of X year through June of the following year

(1) All surface water and groundwater is blended prior to distribution.

**Worksheet 21. Agricultural Crop Data For 2014**

| Crop | 100% on Casitas water | Casitas Water is backup supply | Total Acreage | Irrigation Method | Planting Month | Harvest Month | ET crop(AF/Ac) Min | ET crop(AF/Ac) Max | Cultural Practices(AF/Ac) | Leaching Requirement (AF/Ac) | Total Crop Water Needs (AF) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Navels** | **102.2** | **204.2** | 306.5 | **mini sprinkler, n** | **NA** | **NA** | **0.70** | **0.40** | **NA** | **NA** | |
| **Valencia** | **433.9** | **605.1** | 1,039.0 | **mini sprinkler, s** | **NA** | **NA** | **0.70** | **0.40** | **NA** | **NA** | |
| **Tangerines** | **116.7** | **159.8** | 276.4 | **Mini Sprinkler, drip irrigation, fan jet** | | | **0.70** | **0.40** | **NA** | **NA** | |
| **Lemons** | **260.5** | **192.8** | 453.3 | **Mini sprinkler, Drip irrigation** | | | **0.70** | **0.40** | **NA** | **NA** | |
| **Walnuts** | **57.0** | **0.0** | 57.0 | **Drip irrigation** | | | | | **NA** | **NA** | |
| **Avacados** | **1,745.6** | **663.2** | 2,408.8 | **Mini Sprinkler, fan jet, drip tape, drip l** | | | **0.70** | **0.40** | **NA** | **NA** | |
| **Strawberries** | **40.0** | **0.0** | 40.0 | **Drip Irrigation, n** | **NA** | **NA** | | | **NA** | **NA** | |
| **Hay** | **317.7** | **22.0** | 339.7 | **Sprinkler, set lin** | **NA** | **NA** | **1.00** | **1.00** | **NA** | **NA** | |
| **Misc. Fruit** | **245.5** | **111.1** | 356.6 | **Drip line, micro s** | **NA** | **NA** | | | **NA** | **NA** | |
| **Pasture** | **73.6** | **20.5** | 94.1 | **Sprinkler** | **NA** | **NA** | **0.95** | **0.95** | **NA** | **NA** | |
| TOTAL | **3,392.8** | **1,978.7** | 5,371.5 | | **NA** | **NA** | **5.45** | **3.95** | | | |

Notes:

**Worksheet 22. Irrigated Acres**

| | Planning Cycle | | | | | |
|---|---|---|---|---|---|---|
| | Rep. Year - 2011 | 1st Year - 2011 | 2nd Year - 2012 | 3rd Year - 2013 | 4th Year - 2014 | 5th Year - 2015 |
| Total Irrigated Acres | | | | | | |
| irrigated acres using 100% CMWD Water | **2,996** | **2,996** | **2,960** | **2,931** | **3,174** | **3,361** |
| irrigated acres using 1-99% CMWD Water | **1,841** | **1,841** | **1,905** | **1,897** | **1,980** | **1,993** |
| Total Irrigated Acres using CMWD water | **4,837** | **4,837** | **4,865** | **4,828** | **5,154** | **5,354** |

Notes:

Notes:
(1) Data available through December 31 2014; 2015 land use forthcoming
Data comes from crop report and it is in calandar year

**Worksheet 23. Multiple Crop Information**

| Cropping System | Rep. Year - 2010-2011 | Planning Cycle 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 |
|---|---|---|---|---|---|---|
| Single-Cropped Acres | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Inter-Cropping Acres | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Double-Cropping Acres | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |

NA - data not available

**Worksheet 24. Environmental Water Uses (AF)**

| Environmental Resources | Rep. Year - 2010-2011 | Planning Cycle 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 |
|---|---|---|---|---|---|---|
| **From Supplier** | | | | | | |
| Vernal pools | **0** | **0** | **0** | **0** | **0** | **0** |
| Streams | **0** | **0** | **0** | **0** | **0** | **0** |
| Lakes or reservoirs | **0** | **0** | **0** | **0** | **0** | **0** |
| Riparian Vegetation | **0** | **0** | **0** | **0** | **0** | **0** |
| Other [Identify] | **0** | **0** | **0** | **0** | **0** | **0** |
| TOTAL | **0** | **0** | **0** | **0** | **0** | **0** |
| **All Sources** | | | | | | |
| Vernal pools | **0** | **0** | **0** | **0** | **0** | **0** |
| Streams | **0** | **0** | **0** | **0** | **0** | **0** |
| Lakes or reservoirs | **0** | **0** | **0** | **0** | **0** | **0** |
| Riparian Vegetation | **0** | **0** | **0** | **0** | **0** | **0** |
| Other [Identify] | **0** | **0** | **0** | **0** | **0** | **0** |
| TOTAL | **0** | **0** | **0** | **0** | **0** | **0** |

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 25. Recreational Water Uses (AF)**

Planning Cycle

| Recreational Facility | Rep. Year - 2010-2011 | 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 |
|---|---|---|---|---|---|---|
| Public Parks | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |
| City Pool | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |
| Recreational Facility | **77.71** | **77.71** | **77.74** | **72.28** | **79.28** | **47.82** |
| **TOTAL** | **77.71** | **77.71** | **77.74** | **72.28** | **79.28** | **47.82** |

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 26. Municipal/Industrial Water Uses (AF)**

Planning Cycle

| Municipal/ Industrial Entity | Rep. Year - 2010-2011 | 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 |
|---|---|---|---|---|---|---|
| | **All Comm, Residential, Public, Landscape** | | | | | |
| Municipal Entity | **8,349** | **8,349** | **8,554** | **8,105** | **9,686** | **8,669** |
| Industrial Entity | **61** | **61** | **38** | **23** | **22** | **29** |
| **TOTAL** | **8,410** | **8,410** | **8,592** | **8,128** | **9,708** | **8,698** |
| Notes: | Data Source Casitas -Consumption Report data in Fiscal Year. Total minus AG an | | | | | |

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 27. Groundwater Recharge Water Uses (AF)**

Planning Cycle

| Location/ Groundwater Basin | Method of Recharge | Rep. Year - 2010-2011 | 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 |
|---|---|---|---|---|---|---|---|
| Commitments/Dedicated | | **0** | **0** | **0** | **0** | **0** | **0** |
| Voluntary/Opportunistic | | **0** | **0** | **0** | **0** | **0** | **0** |
| TOTAL | | **0** | **0** | **0** | **0** | **0** | **0** |

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available..

**Worksheet 28. Transfers and Exchanges Water Uses**

| From What Agency | To What Agency | Type (Ag to M&I, M&I to Ag, or Ag to Ag) | Volume (AF) |
|---|---|---|---|
| 2011 | | | |
| CMWD | **CVWD** | **M&I to Ag** | **0** |
| 1st Year - 2011 | | | |
| CMWD | **CVWD** | **M&I to Ag** | **0** |
| 2nd Year - 2012 | | | |
| CMWD | **CVWD** | **M&I to Ag** | **0** |
| 3rd Year - 2013 | | | |
| CMWD | **CVWD** | **M&I to Ag** | **0** |
| 4th Year - 2014 | | | |
| CMWD (1) | **CVWD** | **M&I to Ag** | **0** |
| 5th Year - 2015 | | | |
| CMWD (1) | **CVWD** | **M&I to Ag** | **0** |

Notes:
Per Executive Order B-29-15, report water supplies and demands for 2013, 2014, and 2015 to the extent data is available.
Notes:
(1) Casitas MWD delivered 2.05 AF in FY 2014 and 35.9 AF in FY2015 to Carpinteria Valley Water District for Casitas MWD customers. The Casitas MWD considers this water part of the Casitas MWD annual customer demands and not a transfer.

**Worksheet 29. Other Water Uses (AF)**

| | | Planning Cycle | | | | |
|---|---|---|---|---|---|---|
| Water Use | Rep. Year - 2010-2011 | 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 |
| **Temporary / Construction meters** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| TOTAL | **0** | **0** | **0** | **0** | **0** | **0** |

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 30. Surface Water Supplies (AF)**

| Source | Diversion Restriction | Rep. Year - 2010-2011 | Planning Cycle 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 | Anticipated Changes |
|---|---|---|---|---|---|---|---|---|
| Pre-1914 water rights | **NA** | **0** | **0** | **0** | **0** | **0** | **0** | **NA** |
| CVP class I water contract | **NA** | **0** | **0** | **0** | **0** | **0** | **0** | **NA** |
| SWP water contract | **NA** | **0** | **0** | **0** | **0** | **0** | **0** | **NA** |
| Other imported water surface water | **NA** | **0** | **0** | **0** | **0** | **0** | **0** | **NA** |
| Local surface water - Lake Casitas | **NA** | **14,678** | **14,678** | **15,233** | **18,223** | **20,415** | **17,340** | **reduction due to conservation measures** |
| Upslope drain water | **NA** | **0** | **0** | **0** | **0** | **0** | **0** | **NA** |
| Transfers /Exchanges | **NA** | **0** | **0** | **0** | **0** | **0** | **0** | **NA** |
| TOTAL | | **14,678** | **14,678** | **15,233** | **18,223** | **20,415** | **17,340** | |

Notes:

Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 31. Restrictions on Water Sources**

| Source | Restrictions* | Name of Agency Imposing Restrictions | Operational Constraints |
|---|---|---|---|
| Groundwater | none | **NA** | **NA** |
| Lake Casitas | none | **NA** | **NA** |

Notes:

*Examples of possible restrictions are amount of water supplied by DWR, USBR; environmental laws.

**Worksheet 32. Groundwater Basins**

| Basin Name | Size(Sq. Mi.) | Usable Capacity(AF) | Safe Yield(AF/Yr) |
|---|---|---|---|
| **Ojay Valley** | **10.1** | **85,000** | **5,026** |
| **Upper Ojai Valley** | **4.4** | **5,681** | **unavailable** |
| **Upper Ventura River** | **14.6** | **35,118** | **9482** |
| **Lower Ventura River** | **9.5** | **8,743** | **2,130** |
| **Carpinteria** | **12** | **39,000** | **4,000** |

Note:

**Worksheet 33. Groundwater Management Plan**

Ojai Basin,
Written By **Ojai Basin Groundwater Management Agency**

Year **2007**

Upper Ojai Basin,
Written By NA
Year

Ventura River
Basin, Written By NA
Year

Carpinteria
Basin, Written By **Carpinteria Valley Water District**
Year **1996**

**Worksheet 34. Groundwater Supplies (AF)**

| Groundwater Basin | Diversion Restriction | Planning Cycle Rep. Year - 2010-2011 | 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 | Anticipated Changes |
|---|---|---|---|---|---|---|---|---|
| District Pumping | | **67.21** | **67.21** | **231.70** | **173.09** | **42.40** | **54.10** | **none** |
| Private Pumping | | **na** | **na** | **na** | **na** | **na** | **na** | **none** |
| TOTAL | | **67** | **67** | **232** | **173** | **42** | **54** | **none** |

Notes:

Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 35. Drainage Discharge (AF)**

| Surface/Subsurface Drainage Path | Planning Cycle | | | | | | End Use | Inside/ Outside Service Area |
|---|---|---|---|---|---|---|---|---|
| | Rep. Year - 2010-2011 | 1st Year - 2010-2011 | 2nd Year - 2011-2012 | 3rd Year - 2012-2013 | 4th Year - 2013-2014 | 5th Year - 2014-2015 | | |
| | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |

Note:

**Worksheet 36. [Lake Casitas] Water Supply Quality**

| | | Planning Cycle | | | | | |
|---|---|---|---|---|---|---|---|
| **Parameter** | **Units** | **Rep. Year - 2010-2011** | **1st Year - 2010-2011** | **2nd Year - 2011-2012** | **3rd Year - 2012-2013** | **4th Year - 2013-2014** | **5th Year - 2014-2015** |
| TDS | mg/L | 340 | 340 | 330 | 320 | 370 | 400 |
| Se | ug/L | Non -detect | Non -detect | Non -detect | Non -detect | Non -detect | Non -detect |
| B | ug/L | 93.3 | 93.3 | 91.2 | 91.0 | 98.5 | 93.9 |
| Mo | | Not Sampled | Not Sampled | Not Sampled | Not Sampled | Not Sampled | Not Sampled |
| As | ug/L | Non -detect | Non -detect | 2 | Non -detect | Non -detect | 2 |
| Na | mg/L | 26 | 26 | 24 | 26 | 29 | 30 |
| Cl | mg/L | 15 | 15 | 13 | 13 | 15 | 15 |
| Pesticide* | ug/L | * | * | * | * | * | * |
| Herbicide* | ug/L | * | * | * | * | * | * |
| Fertilizer(NO3) | mg/L | 0.4 | 0.4 | 0.5 | 0.5 | 1.0 | 1.3 |
| Glyphosate | ug/L | Non -detect | Not Sampled | Non -detect | Non -detect | Non -detect | Non -detect |

*The lake (Lake Casitas) source is sampled for volatile organic compounds every three years (2013 and 2016); results are ND. Lake Casitas has a waiver for synthetic organic compound sampling.

**Worksheet 36. [Mira Monte Well] Water Supply Quality**

| | | Planning Cycle | | | | | |
|---|---|---|---|---|---|---|---|
| **Parameter** | **Units** | **Rep. Year - 2010-2011** | **1st Year - 2010-2011** | **2nd Year - 2011-2012** | **3rd Year - 2012-2013** | **4th Year - 2013-2014** | **5th Year - 2014-2015** |
| TDS | mg/L | 410 | 410 | | 420 | (1) | (1) |
| Se | ug/L | Non -detect | Non -detect | | Non -detect | (1) | (1) |
| B | ug/l | 102 | 102 | | 102 | (1) | (1) |
| Mo | | Not Sampled | Not Sampled | | Not Sampled | (1) | (1) |
| As | ug/L | Non -detect | Non -detect | | Non -detect | (1) | (1) |
| Na | mg/L | 55 | 55 | | 54 | (1) | (1) |
| Cl | mg/L | 61 | 61 | | 66 | (1) | (1) |
| Pesticide* | ug/L | * | * | * | * | (1) | (1) |
| Herbicide* | ug/L | * | * | * | * | (1) | (1) |
| Fertilizer(NO3) | mg/L | 57.1 | 57.1 | | 55.7 | (1) | (1) |

*Mira Monte Well is sampled for volatile organic compounds every three years (2013 and due 2016); results are ND. Sampling for synthetic organic compounds has been waived except for Atrazine and Simazine (2012 sampling with results of ND).
(1) Well is currently turned off

**Worksheet 37. Drainage Reuse Effects**

Drainage Reuse Limitations (Check)

| Analyte | Detected (Check) | Increased Leaching | Blending Supplies | Restricted Area of Use | Restricted Crops | Other |
|---|---|---|---|---|---|---|
| TDS | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Se | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| B | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Mo | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| As | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Na | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Cl | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Pesticide | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Herbicide | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Fertilizer(NO3) | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| Other | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |

Note:

**Worksheet 38. Water Quality Monitoring Practices**

| Water Source | Monitoring Location | Measurement/ Monitoring Method or Practice | Frequency |
|---|---|---|---|
| **Mira Monte 03 (5610024-003)** | **Casitas main building** | **Monitoring frequency and methods are done according to state & federal requirements** | |

Note: Additional rows/columns can be added as applicable.

**Worksheet 39. Water Quality Monitoring Programs for Surface/Sub-Surface Drainage**

| Monitoring Program | Analyses Performed | Frequency of Analysis |
|---|---|---|
| **none** | **NA** | **NA** |

Note: Additional rows/columns can be added as applicable.

**Worksheet 40. Surface and Other Water Supplies For 2011 (AF)**

| Source | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CVP Class 1 Contracts | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Pre-1914 Rights | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| SWP | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Local Surface Water | **570** | **680** | **520** | **853** | **1,596** | **2,034** | **1,884** | **1,973** | **1,721** | **1,195** | **797** | **1,018** | **14,841** |
| Upslope Drain Water | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Transfers & Exchanges | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Recycled Water | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Groundwater(Mira Monte Well) | **0.29** | **0.10** | **0.09** | **0.48** | **0.31** | **1.20** | **7.09** | **8.95** | **9.10** | **18.13** | **7.41** | **10.75** | **63.90** |
| Total | **570.29** | **680.10** | **520.09** | **853.48** | **1,596.31** | **2,035.20** | **1,891.09** | **1,981.95** | **1,730.10** | **1,213.13** | **804.41** | **1,028.75** | **14,904.90** |

Notes:

Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available

**Worksheet 41. Groundwater Supplies Summary For 2011 (AF)**

| | Pumped by the Water Supplier | Pumped within Service Area by Customers | | | | | |
|---|---|---|---|---|---|---|---|
| Month | Upper Ventura River basin | Basin 2 | Basin 3 | Basin 1 | Basin 2 | Basin 3 | TOTAL |
| January | 0.292 | **0** | **0** | **0** | **0** | **0** | **0.29** |
| February | 0.098 | **0** | **0** | **0** | **0** | **0** | **0.10** |
| March | 0.092 | **0** | **0** | **0** | **0** | **0** | **0.09** |
| April | 0.475 | **0** | **0** | **0** | **0** | **0** | **0.48** |
| May | 0.314 | **0** | **0** | **0** | **0** | **0** | **0.31** |
| June | 4.196 | **0** | **0** | **0** | **0** | **0** | **4.20** |
| July | 7.088 | **0** | **0** | **0** | **0** | **0** | **7.09** |
| August | 8.954 | **0** | **0** | **0** | **0** | **0** | **8.95** |
| September | 9.096 | **0** | **0** | **0** | **0** | **0** | **9.10** |
| October | 18.127 | **0** | **0** | **0** | **0** | **0** | **18.13** |
| November | 7.413 | **0** | **0** | **0** | **0** | **0** | **7.41** |
| December | 10.753 | **0** | **0** | **0** | **0** | **0** | **10.75** |
| TOTAL | **66.90** | **0** | **0** | **0** | **0** | **0** | **66.90** |

Notes:

**Worksheet 42. Effective Precipitation Summary (AF)**

| Month | Rep. Year - 2011 | 1st Year - 2011 (1) | 2nd Year - 2012 (1) | 3rd Year - 2013 (1) | 4th Year - 2014 (1) | 5th Year - 2015 (1) |
|---|---|---|---|---|---|---|
| July | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |
| Aug | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |
| Sep | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** |
| Oct | **883.57** | **883.57** | **489.74** | **369.99** | **106.32** | **0.00** |
| Nov | **695.22** | **695.22** | **739.54** | **986.98** | **284.94** | **365.74** |
| Dec | **1,860.71** | **1,860.71** | **106.32** | **879.88** | **161.61** | **1,744.76** |
| Jan | **233.90** | **233.90** | **501.83** | **586.44** | **0.00** | **626.73** |
| Feb | **1,506.61** | **1,506.61** | **0.00** | **0.00** | **1,665.75** | **382.75** |
| Mar | **1,809.00** | **1,809.00** | **1,331.35** | **558.24** | **1,175.34** | **263.67** |
| Apr | **0.00** | **0.00** | **950.05** | **0.00** | **114.83** | **102.07** |
| May | **412.52** | **412.52** | **0.00** | **97.81** | **0.00** | **221.15** |
| June | **102.07** | **102.07** | **0.00** | **0.00** | **0.00** | **102.07** |
| TOTAL | **7,503.61** | **7,503.61** | **4,118.83** | **3,479.34** | **3,508.78** | **3,808.94** |

Notes:

(1) Effective precipitation values based on formula by Stramm, Gilbert, USBR, 1967.

Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 43. Applied Water (AF)**

Planning Cycle

| | Rep. Year - 2011 | 1st Year - 2011 | 2nd Year - 2012 | 3rd Year - 2013 | 4th Year - 2014 | 5th Year - 2015 |
|---|---|---|---|---|---|---|
| Applied Water (from Worksheet 20) | **5,206** | **5,206** | **6,295** | **8,151** | **9,427** | **8,102** |

Note:

(1) Total only includes surface water and ground water delivered to agricultural customers by CMWD.

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 44. Quantify Water Use (AF)**

| Water Use | | Rep. Year - 2011 | Planning Cycle 1st Year - 2011 | 2nd Year - 2012 | 3rd Year - 2013 | 4th Year - 2014 | 5th Year - 2015 |
|---|---|---|---|---|---|---|---|
| **Crop Water Use (1)** | (from Worksheets 20-21) | **5,139** | **5,139** | **6,063** | **7,978** | **9,385** | **8,048** |
| | Crop Evapotranspiration | | | | | | |
| 1 | Min | **5.45** | **5.45** | **5.45** | **5.45** | **5.45** | **5.45** |
| 2 | Leaching | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| 3 | Cultural practices | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| **Conveyance & Storage System** (2) | | | | | | | |
| 4 | Conveyance seepage | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| 5 | Conveyance evaporation | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| 6 | Conveyance operational spills | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| 7 | Reservoir evaporation | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| 8 | Reservoir seepage | **NA** | **NA** | **NA** | **NA** | **NA** | **NA** |
| **Environmental Use (Consumptive)** | | | | | | | |
| 9 | Environmental use – wetlands (from Worksheet 24) | **0** | **0** | **0** | **0** | **0** | **0** |
| 10 | Environmental use – Other (from Worksheet 24) | **0** | **0** | **0** | **0** | **0** | **0** |
| 11 | Riparian vegetation (from Worksheet 24) | **0** | **0** | **0** | **0** | **0** | **0** |
| 12 | Recreational use (from Worksheet 25) | **77.71** | **77.71** | **77.74** | **72.28** | **79.28** | **47.82** |
| **Municipal and Industrial** | | | | | | | |
| 13 | Municipal (from Worksheet 26) | **8,349** | **8,349** | **8,554** | **8,105** | **9,686** | **8,669** |
| 14 | Industrial (from Worksheet 26) | **61** | **61** | **38** | **23** | **22** | **29** |
| **Outside the District** | | | | | | | |
| 15 | Transfers or Exchanges out of the service area (from Worksheet 28) | **0** | **0** | **0** | **0** | **0** | **0** |
| **Conjunctive Use** | | | | | | | |
| 16 | Groundwater recharge (from Worksheet 27) | **0** | **0** | **0** | **0** | **0** | **0** |
| **Other** | (from Worksheet 29) | **0** | **0** | **0** | **0** | **0** | **0** |
| **Total** | | **13,632** | **13,632** | **14,738** | **16,184** | **19,178** | **16,799** |

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

(1) Includes District pumping and private pumping.

(2) Calculated

**Worksheet 45. Quantify Water Leaving the District (AF)**

| | | Planning Cycle | | | | | |
|---|---|---|---|---|---|---|---|
| | | Rep. Year - 2011 | 1st Year - 2011 | 2nd Year - 2012 | 3rd Year - 2013 | 4th Year - 2014 | 5th Year - 2015 |
| 1 | Surface drain water leaving the service area | **0** | **0** | **0** | **0** | **0** | **0** |
| 2 | Subsurface drain water leaving the service area | **0** | **0** | **0** | **0** | **0** | **0** |
| Total | | **0** | **0** | **0** | **0** | **0** | **0** |

Notes:

**Worksheet 46. Irrecoverable Water Losses* (AF)**

| | Planning Cycle | | | | | |
|---|---|---|---|---|---|---|
| | Rep. Year - 2011 | 1st Year - 2011 | 2nd Year - 2012 | 3rd Year - 2013 | 4th Year - 2014 | 5th Year - 2015 |
| Flows to saline sink | **0** | **0** | **0** | **0** | **0** | **0** |
| Flows to perched water table | **0** | **0** | **0** | **0** | **0** | **0** |
| System Losses (calculated) | **1,000** | **1,000** | **1,000** | **1,000** | **889** | **1,000** |
| Total | **1,000** | **1,000** | **1,000** | **1,000** | **889** | **1,000** |

Notes:

**Worksheet 47. Quantify Water Supplies (AF)**

| | Water Supplies | Rep. Year - 2011 | Planning Cycle 1st Year - 2011 | 2nd Year - 2012 | 3rd Year - 2013 | 4th Year - 2014 | 5th Year - 2015 |
|---|---|---|---|---|---|---|---|
| 1 | Surface Water* (summary total from Worksheet 40) | **14,678** | **14,678** | **15,233** | **18,223** | **20,415** | **17,340** |
| 2 | Groundwater (summary total from Worksheet 41) | **67.21** | **67.21** | **231.70** | **173.09** | **42.40** | **54.10** |
| 3 | Annual Effective Precipitation (summary total from Worksheet 42) | **7,504** | **7,503.61** | **4,118.83** | **3,479.34** | **3,508.78** | **3,808.94** |
| 4 | Water purchases | **0** | **0** | **0** | **0** | **0** | **0** |
| Subtotal | | **22,249** | **22,249** | **19,584** | **21,875** | **23,966** | **21,203** |

Notes:

*Subtract water purchases if included in totals; water purchases will be included on line 4.
Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

**Worksheet 48. Budget Summary (AF)**

| | Water Accounting | Planning Cycle Rep. Year - 2011 | 1st Year - 2011 | 2nd Year - 2012 | 3rd Year - 2013 | 4th Year - 2014 | 5th Year - 2015 |
|---|---|---|---|---|---|---|---|
| 1 | Subtotal of Water Supplies (Worksheet 47) | **22,249** | **22,249** | **19,584** | **21,875** | **23,966** | **21,203** |
| 2 | Subtotal of Water Uses (Worksheet 44) | **13,632** | **13,632** | **14,738** | **16,184** | **19,178** | **16,799** |
| 3 | Drain Water Leaving Service Area (Worksheet 45) | **0** | **0** | **0** | **0** | **0** | **0** |
| | Excess Deep Percolation (1) | **8,617** | **7,511** | **3,400** | **2,698** | **7,167** | **4,404** |

Notes:
(1) General estimate as calculated from sum of lines 2 and 3, then subtracted from line 1.

Per Executive Order B-29-15, report water supplies and demands for 2013, 2014, and 2015 to the extent data is available.

# Appendix G

## CMWD Water Rates

# CASITAS MUNICIPAL WATER DISTRICT
## EXCERPT OF RATES AND REGULATIONS FOR WATER SERVICE

| Volume Rate | Units of water* | Gravity (Served without pumping) Rate per Unit* | | Pumped (Most customers) Rate per Unit* | |
|---|---|---|---|---|---|
| **9.3.1 RATE SCHEDULE — CLASS 1 SERVICE** | | | | | |
| **Customer Type** | | **Effective** | | **Effective** | |
| Residential | | **July 1, 2013** | | **July 1, 2013** | |
| Bi-monthly Lifeline | 0-20 Units | $0.602 | | $0.882 | |
| Bi-monthly Usage | 21-34 Units | $1.064 | | $1.344 | |
| Bi-monthly Usage | 35-100 Units | $1.489 | | $1.770 | |
| Bi-monthly Usage | Over 101 Units | $2.334 | | $2.614 | |
| Business | | $1.336 | | $1.617 | |
| Industrial | | $1.336 | | $1.617 | |
| Resale | | $0.827 | | $1.488 | |
| Other | | $1.336 | | $1.617 | |
| Temporary | | $1.506 | | $1.785 | |
| Recreation | | $1.336 | | $1.617 | |
| **9.3.3 RATE SCHEDULE — CLASS 3 SERVICE** | | | | | |
| Ag-Residential | | | | | |
| Monthly Lifeline | 0-10 Units | $0.602 | | $0.882 | |
| Monthly Usage | 11-17 Units | $1.064 | | $1.344 | |
| Monthly Usage | 18-50 Units | $1.489 | | $1.770 | |
| Irrigation (AG) | 51 units + | $0.624 | | $0.904 | |

| **9.4.2 RATE SCHEDULE — SERVICE CHARGES** | | | |
|---|---|---|---|
| **Meter Service Charge** | | **Effective as of July 1, 2012** | |
| **Meter Size** | Max Cap. GPM | Monthly | Bi-Monthly |
| 5/8"-3/4" | 20-30 | $23.34 | $40.62 |
| 1" | 50 | $34.86 | $63.66 |
| 1 1/2" | 120 | $63.66 | $121.25 |
| 2" | 160 | $98.22 | $190.38 |
| 2 1/2" | 300 | $150.05 | N/A |
| 3" | 320 | $207.65 | $409.23 |
| 4" | 1000 | $368.92 | $731.78 |
| 6" | 2000 | $812.42 | $1,618.76 |
| Over 6" | Over 2000 | $2.82751 per gpm | $5.65502 per gpm |

*One unit equals 100 cubic feet or 748 gallons.

# Appendix H

## CMWD Water Supply and Demand Study

# CASITAS MUNICIPAL WATER DISTRICT

# WATER SUPPLY AND USE STATUS REPORT

December 7, 2004

Prepared by Staff of the Casitas Municipal Water District:
Steven E. Wickstrum, Principal Civil Engineer
Leo Lentsch, Fisheries Biologist and Steelhead Enhancement Program Manager

Reviewed by: John J. Johnson, General Manager, Casitas Municipal Water District

Peer Review By: MBK Engineers – Mark Van Camp
Entrix – David Blankenhorn

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# CASITAS MUNICIPAL WATER DISTRICT

# WATER SUPPLY AND USE STATUS REPORT

## PURPOSE

The purpose of this report is to provide information on the status of water supply and use for the Casitas Municipal Water District (Casitas) and suggest strategies for meeting water use in the future.

## BACKGROUND

Quantifying water supply and use patterns in the Ventura River Basin can be a complicated task. To aide in the understanding of these patterns and their implications to water management activities, this section provides useful definitions of water supply and use terms, describes previous water supply and use studies, and summarizes recent changes to water supply and use within the district.

### USEFUL DEFINITIONS

**Water Supply**: Quantity of water managed by Casitas.
This term refers to the quantity of surface water and groundwater resources managed by Casitas within the Ventura River Basin.

**Safe Yield**: Rate at which the available water supply can be "safely" depleted.
This term was defined by Meinzer (1) as "the rate at which water can be withdrawn from an aquifer for human use without depleting the supply to such an extent that the withdrawal at this rate is harmful to the aquifer itself, or to the quantity of water, or is no longer economically feasible." The calculation of safe yield for Casitas is based on the storage volume of Lake Casitas (the aquifer), the surface water and groundwater supply managed by Casitas, and the length of time that the water supply needs to last (i.e. longest drought on record). The safe yield value is an interpolated value that is held constant over the period of the critical drought, bringing the level of storage to the desired minimum volume.

**Water Use**: Quantity of water delivered from Lake Casitas to the conveyance system, as measured at the start of the system at Casitas Dam.
This term is used to describe the volume of water that is directly taken from the available water supply. Casitas measures the rate of water use by quantifying the amount of water delivered to the water distribution system from Lake Casitas. The measurement of water use is performed through the use of accurate flow tube sensors.

**Metered Water Sales**: Quantity of water that is metered and sold at the individual service connections in the water distribution system.

This term refers to the summation of the quantity water measured through water service connections within the Casitas district. The metered water sales are categorized by the type of customer (i.e. residential, business, resale, and agriculture) and summarized on an annual basis.

**Water Allocation**: Quantity of water assigned to service connections.
This term refers to the primary tool used by Casitas to manage the quantity of water used by customers (i.e. metered water sales). Service connections are assigned an allocation (limited quantity of water). Residential, business, industrial, resale, and interdepartmental service connections have individual allocations. Agricultural service connections are combined into a single allocation for the entire group. The allocation program was designed as a price-driven water conservation measure that provides for a base cost that escalates once metered water sales exceed service connection allocations.

## PREVIOUS WATER SUPPLY AND USE STUDIES

The ability of local water supplies to meet demands was evaluated by the Bureau of Reclamation, in the 1954 evaluation of Ventura River Project, and later by the District during the 1989 drought period. Each of these evaluations considered the ability of Lake Casitas storage, under the hydrology determined as the most critical drought period of record, to meet the water demands of the District's service area. The critical drought period of record is considered to have occurred during 1944 through 1965. The findings of each report are summarized in a memorandum prepared by Richard Barnett, dated June 7, 1989, were as follows:

1) The safe yield of Lake Casitas without an integrated Matilija Dam was 21,500 acre-feet, and 21,920 with Matilija Dam as a part of the system;
2) The estimated total water supplies in the District service area was 30,907 acre-feet and the water demands for the same service area were approximately 30,320 acre-feet;
3) The District should consider implementing a variety of alternatives for balancing water supply and demand.

## RECENT WATER SUPPLY/USE CHANGES

In 1989, the District's service area was in the middle of a short-term drought that began in 1987 and ended in March 1992. The Ventura River and Ojai groundwater basins were being depleted and Lake Casitas water storage dropped to near fifty percent capacity. The District-wide water usage was beginning to escalate because of the lack of rainfall and the depletion of groundwater supplies. The Casitas Municipal Water District recognized that water use was very rapidly approaching the availability of supply (Barnett Memorandum, June 7, 1989) and that the District needed to apply strategies to meet future water needs. The District moved to a temporary moratorium on providing new water service connections. The moratorium continued for approximately two years until an additional 300 acre-feet of water was developed from Mira Monte Well. The Mira Monte Well supply, therefore, was available for issuance of new water service connections.

During the 1990's, the drought pattern ended with the occurrence of three heavy rainfall years (1992, 1995, and 1998). Lake Casitas and the groundwater basins filled to full capacity. The District continued to issue new service connections on the basis of water made available from the Mira Monte Well supply. The addition of new water service connections in the District's service area grew slowly, averaging approximately 25 new service connections each year for the 1990's.

One major water use change occurred in 1991. The City of San Buenaventura reduced their use of Casitas water due of the lack of filtration treatment of Lake Casitas water supplies. The City purchased 9,510 acre-feet during 1989 and reduced water purchases to only 1,370 acre-feet in 1992. The reduction in metered water sales by the City continued until 1997, when the District finally met the filtration requirements. The City and the District came to agreement that the annual metered water sales to the City from Casitas supplies would be a minimum of 6,000 acre-feet.

In 1997, the National Marine Fisheries Service (NMFS) listed anadromous steelhead in Southern California as endangered under the Endangered Species Act. The Ventura River Basin has been identified as important spawning habitat for Southern California steelhead. A result of this listing was the requirement for the District to construct a fish passage facility at the Robles Diversion Dam and change the Robles Diversion operational release criteria to one that provided additional downstream release of flows for fish passage. The issuance of the Biological Opinion (BO) by the NMFS in March 2003 set into place the revised operational criteria for the Robles Diversion Dam and Fish Passage Facility. The change of operational criteria for the Robles Diversion Facility has caused Casitas to take immediate management actions to ensure the protection of long-term water supplies.

On April 23, 2003, Casitas suspended the issuance of new water service connections. The suspension has remained in effect through June 8, 2004. It will remain in effect as long as deemed necessary by the Casitas Board of Directors. Since suspending new service connections, Casitas has implemented water conservation measures, evaluated potential supplies of additional water, and initiated an evaluation of water supply and use within the district. The purpose of this narrative is to present results of the water supply/use analysis.

Another significant potential change to Casitas water supplies is the future disposition of Matilija Dam. This facility is presently being evaluated for the potential decommissioning and removal. Sediment deposition in the Matilija Reservoir has reduced the water storage volume behind Matilija Dam to approximately 600 acre-feet. NMFS has made the determination that the dam structure is a barrier to steelhead migration. The goals of the project proponents are to promote the migration of steelhead to the upper reaches of the Matilija Creek and enhance movement of sediment to Ventura County beaches. The removal of the Matilija Dam could impact water supply and water quality for both the short term and long term. It is important, therefore, for Casitas to have a clear understanding of these potential impacts.

## CURRENT WATER SUPPLY AND USE STUDY

This study evaluated the: (1) potential impact of the Robles BO operating criteria and the removal of Matilija Dam on the Casitas water supply, (2) the effect of predicted water use on the Casitas water supply, and (3) levels of reductions in water use required to balance water supply and use. The study applies hydrology information from 1945 through 1965 as the critical drought period and information from 1966 through 1980 as the reservoir recovery period. These periods have empirical hydrology information that provide an opportunity to model different operating scenarios for the Robles Diversion Facility.

WATER SUPPLY

The Casitas water supply was evaluated with a reservoir routing model. It included application of the Robles BO Operating Criteria and the 1959 Trial Operating Criteria for Robles Diversion Facility during the drought and reservoir recovery periods. The evaluation also considered the benefit of Matilija Dam to water supply. The methods, assumptions, and summaries that were applied and developed for the water supply evaluations are outlined in **Appendix A.**

WATER USE

Predictions for Casitas water use were developed for the drought and reservoir recovery periods. Empirical information on the quantity of water delivered to the conveyance system was limited to the post 1959 period. Therefore, a model to predict Casitas water use for the drought (1945-1965) and reservoir recovery (1966-1980) periods was developed. The predicted water use is based on recent historical trends o water use in the District's service area and annual rainfall records for both periods. The methods, assumptions, and summaries that were applied and developed for the water use predictions are outlined in **Appendix B**.

BALANCING USE WITH SUPPLY

To determine the level of reduction required to balance water use (Appendix B) with water supply (Appendix A), for any operational scenarios that predicted a water shortage, four different scenarios were evaluated. These included: (1) a constant percent reduction in use, (2) a staged reduction in use, (3) an inverse staged reduction in use, and (4) a volume reduction in use. Implementation of any reduction in use, at this point, would rely on the Casitas Allocation Program. Casitas adopted the water allocation program to primarily provide water use guidelines and reductions in the event of a prolonged drought. **Appendix C** provides an assessment of the current level of allocation issued by the District and direction on further action on this program.

## FINDINGS

### CRITICAL DROUGHT PERIOD (1945-1965)

The critical drought study period represents the longest drought on record. Within the Ventura River Basin the longest drought on record occurred between the 1945 and 1965 water years. A numerical summary of the analytical results for the critical drought period is provided in Table 1.

Water Supply and Safe Yield: With the Matilija Dam remaining in operation, the reservoir routing model predicted the annual Lake Casitas safe yield for the 1959 Trial Operating Criteria and the Biological Opinion Operating Criteria at 22,770 and 21,630 acre-feet, respectively. The reduction of the annual safe yield, when moving from the 1959 Operating Criteria to the Robles BO Operating Criteria, is approximately 1,140 acre-feet. The total difference of safe yield volume of water that would accumulate through the change in operational criteria at Robles Diversion Dam over the 21-year critical dry period is 23,940 acre-feet. In the event Matilija Dam is decommissioned and removed, the available supply under the Robles BO Operating Criteria will be further reduced by

790 acre-feet. Under this scenario, the annual safe yield supply for the drought period would be 20,840 acre-feet. The difference between the annual safe yield available supplies under the 1959 Trial Operating Criteria with Matilija Dam and the Robles BO Operating Criteria without Matilija Dam is 1,930 acre-feet.

Predicted Water Use. Predicted water use patterns for this study period illustrated that consecutive dry year water demands could place stress water supplies in Lake Casitas. Based on the rainfall patterns of the critical drought period, the predicted average annual water use is 21,200 acre-feet, as shown on Table B6. The maximum to minimum values of predicted annual water use, based on consecutive dry year trend equation, is 27,057 and 15,610 acre-feet, respectively.

Comparison between Water Supply and Water Use. Water supplies exceeded water use, throughout the study period, in all but one operational scenario: Robles BO operating criteria without benefit of Matilija (Table 1). In this case, water use could exceed supplies by approximately 360 acre-feet per year. Over the 21-year study period, this annual difference could accumulate to a deficiency of supply in the amount of 7,560 acre-feet.

## RESERVOIR RECOVERY PERIOD (1966 TO 1980)

The recovery period represents the hydrologic patterns immediately following the critical drought study period. For this analysis, it occurred from the time Lake Casitas would be at its lowest storage volume (as a result of drought conditions) until the reservoir was at full storage capacity. This time period was occurred form the 1965 through the 1980 water years. In actual perspective, this was the actual period that Lake Casitas went from a newly created lake to full capacity. A numerical summary of the analytical results for the reservoir recovery period is provided in Table 2.

Water Supply and Yield: Yield, for this study period, was determined by iteratively applying a constant rate of depletion to the water supply in Lake Casitas until a value was reached where the reservoir filled at the same point in time as the D20 study (February 1980). This approach was applied to each of the operational scenarios. Under the wetter conditions of this study period, the yield values vary from a maximum of 24,180 acre-feet under the 1959 Trial Operating Criteria with Matilija Dam, to a minimum of yield value of 19,780 acre-feet under the BO Operating Criteria without Matilija Dam.

Predicted Water Use. The higher rainfall years represented in the recovery study period tended to reduce water use within the District's service area. The average annual predicted water use for the period is 18,820 acre-feet, as shown on Table B9. The maximum to minimum range of predicted water use, based on consecutive dry year trend equation, are 22,704 and 15,249 acre-feet, respectively. These reduction in predicted water use, from that experienced during the drought cycle, is primarily due to lower quantities of water used for agriculture. For orchard crops, less water is required from Lake Casitas during the wet periods.

Comparison between Water Supply and Water Use. Under all four of the operational criteria conditions studied for the reservoir recovery period, the available yield (water supply) values are higher than the predicted water use values. The conclusion that could be developed is that under actual use conditions, the storage of Lake Casitas may restore to full capacity in less time than with theoretical yield values. The rate at which the reservoir fills would be diminished by moving from

the historical 1959 Operational Criteria to the Robles BO Operating Criteria, and is further diminished with the loss of Matilija Dam. The risk of having Lake Casitas fill at a slower rate is that the reservoir may not achieve full storage capacity before onset of another long-term drought period.

## BALANCING WATER USE WITH AVAILABLE SUPPLIES

The application of the Biological Opinion Criteria, at this time, is in place and will be the method by which the District operates the Robles Diversion Dam and Fish Passage Facility. The loss of reservoir storage resulting from the decommissioning of Matilija Dam or the sediment deposition of the remaining storage volume appears to be inevitable. Given these conditions, the District must continue to balance water use with the available water supply. In addition to the many options that have been prescribed by past studies and staff recommendations, this evaluation has further reviewed the application of mandatory reductions to water use during the study period.

Reduced Water Use through Conservation and/or Mandatory Use Curtailment. The District reviewed four different methods of water use reduction (Table 3). The key differences between the methods are the level of reduction and the time at which each reduction was applied. The goal of the reduction is to bring the average annual water use during the critical dry period to as close to the safe yield level of supply availability found with the Robles BO Operating Criteria (20,869 acre-feet) without the benefit of Matilija Reservoir.

The four different magnitudes and sequences of water use reductions were applied to the supply in such a manner that resulted in depleting Lake Casitas to minimum pool storage by the end of the critical dry period. The patterns of each water use reduction are presented in Table 3, along with the summaries for the safe yield and predicted water use values.

Prior to the implementation of any of these programs, the District should carefully consider the acceptability of water use reduction impacts to the water user, the realistic ability to attain such reductions, and the desirable frequency of causing the reductions. It is important to distinguish between curtailment and conservation. Conservation measures should focus on the long-term and lasting efficiencies that do not affect the quality of life. Curtailment measures focus on short term, temporary actions that may impact quality of life. The course of the District should consider the acceptability of the impacts on the quality of life cause by either conservation or curtailment.

## OTHER FACTORS

During the study, there were several other issues that deserved acknowledgement and consideration by the District. These issues were not included in the development of the study's data or computations, but may be relevant points to include in the development of strategies and assessment of risks for managing the District's water supplies.

Minimum Lake Elevation. All studies on the Lake Casitas safe yield considered the extraction of water from Lake Casitas to a minimum pool. There may be some impacts that could arise when minimum pool is approached in Lake Casitas, such as:

Water Quality – the degree of the water quality impacts are unknown at this time. There is a potential for concentrating salts, organics, elements (manganese and/or boron) and nutrients as the water volume diminishes to minimum pool. Warm, shallow water may also promote the growth of algae, which in turn could lead to taste and odor problems in the drinking water supply. Storm runoff events into the minimum pool may have elevated turbidity that may exceed the capability of existing water treatment plant. Plant growth in the exposed beach areas of the lake may add to organic loading as the lake recovers its storage and the plant materials decay.

Water Delivery to the Distribution System –a certain level of water storage in Lake Casitas in order to adequately supply water to the distribution system. The District will have to consider other pump facilities (and associated costs), perhaps even barge pumps set into the lake, in order to move water through the treatment plant into the distribution system.

Recreation – the recreational opportunities are likely to be diminished at minimum pool. Boating and fishing would likely be curtailed, and the lack revenue generation from these activities may impact the District's ability to maintain recreation.

The study has indicated that the change of the minimum pool setting has a direct relationship to the safe yield value. For each 20,000 acre-feet of storage above minimum pool it is desired to add to the lake storage, there is a 1,000 acre-foot reduction impact to the safe yield value. The reduction of the safe yield of Lake Casitas in order to lessen the chance of impacts of minimum pool may not be the District's preferred solution.

Losses at Robles Diversion Dam. The District is in the process of constructing the fish passage facility. There may be inherent operational problems at the facility that could interfere with ability to divert water to Lake Casitas. These factors have not been quantified and were not included in the study conditions for diversion. The key problems that may occur are (1) the loss of water transfer through the fish screens, the plugging of the fine meshed screen that is used to protect fish from entering the Robles-Casitas Canal, and (2) silt deposition in the diversion facility that may be associated with the loss of Matilija Dam. This may be a target area for the District to document and develop data during future operations of the Robles Diversion and Fish Passage Facility.

Increase in Groundwater Extractions above Robles Diversion Dam. The study included the level of groundwater extraction that has historically occurred above Robles Diversion Dam. If there is an increase in the amount of groundwater extractions, there may be some impact to the amount of water available for diversion to Lake Casitas.

Socio-economic Impacts Associated with Water Use Reductions. The study has developed the values for safe yield and water use, and further reviewed the trends from applying water reductions. There are several issues that the decision-makers must consider when applying the water reduction measures. What level of water use reduction is attainable? What are the acceptable and unacceptable impacts to the water user's lifestyle and economic interest (agriculture, oil industry, tourism, and the residences of the service area)? Are the requests for water use reduction frequent and/or of long duration? These are questions that should be addressed as the District moves forward with the management of water supplies.

Variability of Supply. The Ventura River system is a highly variable water system with erratic and unpredictable periods of drought and rainfall. It should be noted that there is a large variation in the annual diversions, and thus the ability to restore supply, in both the drought and recovery periods. Table 4 provides a summary of the mean annual diversions, the range and confidence interval (CI) for diversions, under various study conditions. The water supply is highly variable in its occurrence over time. Small changes to climate or the natural sequences of rainfall events from the actual events of both periods can have an impact on the availability of water supply.

System Losses: Water losses occur within the Casitas water distribution system. Theoretically, the difference between water deliveries to the conveyance system and metered water sales represents system losses. **Appendix D** provides an explanation of water losses within the distribution system. Appendix D also provides an explanation of the significant differences between terms used by Casitas, and their relationship to actual data that is recorded by Casitas.

## CONCLUSIONS AND RECOMMENDATIONS

The methods and model presented in this study provide decision-makers a tool for determining the level and timing of water use reductions needed to ensure a safe water supply. Water supply and use in the Casitas Municipal Water District has reached a balance and may be moving towards imbalance with the recently proposed changes to the water supply system.

During the course of developing the reservoir model and applying the individual runoff data, staff noted the sensitivity of the regional hydrology to each storm event or series of rainfall events. Given this potential for variation, it needs to be noted that small changes in hydrological patterns could result in different conclusions from this study.

In order to continue to meet future water demands and drought-proof the Casitas Municipal Water District service area, Casitas should actively develop and pursue a water conservation management program and while developing and implementing a strategy to secure alternative water supplies. Casitas should also perform a thorough accounting of the service connection allocations issued to date and propose to make adjustments to those allocations, where adjustments can be reasonably made, to benefit long-term water supply and continued water use by the customer.

Table 1. Predicted available water supply and water use for the Casitas Municipal Water District based on hydrologic conditions for the longest drought on record in the Ventura River Basin (1945-1965 water years).

| Predicted Water Supply and Use Drought Period (1945-1965 WY) | 1959 Operating Criteria | | Robles BO Operating Criteria | |
|---|---|---|---|---|
| | With Matilija | Without Matilija | With Matilija | Without Matilija |
| Average Annual Volume of Water[1] (AF/YR) | | | | |
| *Ventura River Supply* | | | | |
| Ventura River Flows (Inflow to Robles Facility) | 16,850 | 16,850 | 16,850 | 16,850 |
| Water Loss (Robles Facility Operations) | (1,290) | (1,290) | (1,290) | (1,290) |
| Water Bypassed at Robles Facility | 7,560 | 8,020 | 8,700 | 9,490 |
| Water Diverted to Lake Casitas | 8,000 | 7,540 | 6,860 | 6,070 |
| *Lake Casitas Supply* | | | | |
| Water Captured from Tributaries | 6,000 | 6,000 | 6,000 | 6,000 |
| Net Water Loss (Evaporation-Rainfall) | (2,630) | (2,630) | (2,630) | (2,630) |
| *District Supply and Use: 21-Year Period* | | | | |
| Safe Yield: Available Supply[2] (Lake Casitas plus Mira Monte Well) | 22,770 | 22,310 | 21,630 | 20,840 |
| Water Use: Deliveries to Water Distribution System | 21,200 | 21,200 | 21,200 | 21,200 |
| Difference between supply and use | 1,570 | 1,110 | 430 | (360) |
| Total Volume of Water[1] (AF) | | | | |
| *Ventura River Supply* | | | | |
| Ventura River Flows (Inflow to Robles Facility) | 353,850 | 353,850 | 353,850 | 353,850 |
| Water Loss (Robles Facility Operations) | (27,090) | (27,090) | (27,090) | (27,090) |
| Water Bypassed at Robles Facility | 158,760 | 168,420 | 182,700 | 199,290 |
| Water Diverted to Lake Casitas | 168,000 | 158,340 | 144,060 | 127,470 |
| *Lake Casitas Supply* | | | | |
| Water Captured from Tributaries | 126,000 | 126,000 | 126,000 | 126,000 |
| Net Water Loss (Evaporation-Rainfall) | (55,230) | (55,230) | (55,230) | (55,230) |
| *District Supply and Use: 21-Year Period* | | | | |
| Safe Yield: Available Supply[2] (Lake Casitas plus Mira Monte Well) | 478,170 | 468,510 | 454,230 | 437,640 |
| Water Use: Deliveries to Water Distribution System | 445,200 | 445,200 | 445,200 | 445,200 |
| Difference between supply and use | 32,970 | 23,310 | 9,030 | (7,560) |
| | | | | |

1:Predicted values were based on methods outlined in Appendix A and B. Values presented in this table were rounded to the closest 10 AF. Furthermore, they are subject to revision following peer review.

2:These estimates were based on the same hydrologic period used in the Kienlen D20 study: October 1, 1944 through October 1, 1966. The safe yield was calculated by setting an annual extraction value that forced the reservoir to decrease from 237,890 AF to 4,800 for this period.

Table 2. Predicted available water supply and water use for the Casitas Municipal Water District based on hydrologic conditions for the period immediately following the longest drought on record in the Ventura River Basin (1966-1980 water years).

| Predicted Water Supply and Use Recovery Period (1966-1980 WY) | 1959 Operating Criteria | | Robles BO Operating Criteria | |
|---|---|---|---|---|
| | With Matilija | Without Matilija | With Matilija | Without Matilija |
| Average Annual Volume of Water[1] (AF/YR) | | | | |
| *Ventura River Supply* | | | | |
| Ventura River Flows (Inflow to Robles Facility) | 45,590 | 45,590 | 45,590 | 45,590 |
| Water Loss (Robles Facility Operations) | (1,690) | (1,690) | (1,690) | (1,690) |
| Water Bypassed at Robles Facility | 22,100 | 22,850 | 25,000 | 26,460 |
| Water Diverted to Lake Casitas | 21,800 | 21,050 | 18,900 | 17,440 |
| *Lake Casitas Supply* | | | | |
| Water Captured from Tributaries | 21,700 | 21,700 | 21,700 | 21,700 |
| Net Water Loss (Evaporation-Rainfall) | (3,670) | (3,670) | (3,670) | (3,670) |
| *District Supply and Use: 15-Year Period* | | | | |
| Yield: Available Supply[2] (Lake Casitas plus Mira Monte Well) | 24,180 | 23,500 | 21,180 | 19,780 |
| Water Use: Deliveries to Water Distribution System | 18,820 | 18,820 | 18,820 | 18,820 |
| Difference between supply and use | 5,360 | 4,680 | 2,360 | 960 |
| Total Volume of Water[1] (AF) | | | | |
| *Ventura River Supply* | | | | |
| Ventura River Flows (Inflow to Robles Facility) | 683,850 | 683,850 | 683,850 | 683,850 |
| Water Loss (Robles Facility Operations) | (25,350) | (25,350) | (25,350) | (25,350) |
| Water Bypassed at Robles Facility | 331,500 | 342,750 | 375,000 | 396,900 |
| Water Diverted to Lake Casitas | 327,000 | 315,750 | 283,500 | 261,600 |
| *Lake Casitas Supply* | | | | |
| Water Captured from Tributaries | 325,500 | 325,500 | 325,500 | 325,500 |
| Net Water Loss (Evaporation-Rainfall) | (55,050) | (55,050) | (55,050) | (55,050) |
| *District Supply and Use: 15-Year Period* | | | | |
| Yield: Available Supply[2] (Lake Casitas plus Mira Monte Well) | 362,700 | 352,500 | 317,700 | 296,700 |
| Water Use: Deliveries to Water Distribution System | 282,300 | 282,300 | 282,300 | 282,300 |
| Difference between supply and use | 80,400 | 70,200 | 35,400 | 14,400 |
| | | | | |

1: Predicted values were based on methods outlined in Appendix A and B. Values presented in this table were rounded to the closest 10 AF. Furthermore, they are subject to revision following peer review.

2: These estimates were based on the same hydrologic period used in the Kienlen D20 study to fill the reservoir: October 1966 through February 1980. The yield was calculated by setting an annual extraction value that allowed the reservoir to increase from 4,800 AF to 254,000 AF within this period.

Table 3. Comparisons for the level of reductions in water use needed to balance water supply and use during a critical drought period without the benefit of Matilija Reservoir.

| | Predicted Values | | Water Use Reduction Scenarios | | | |
|---|---|---|---|---|---|---|
| Water Year | Safe Yield (AF) | Water Use (AF) | Constant 4.70% (AF) | Staged 3.47, 2.6% (AF) | Increase 4, 2, 0% (AF) | Constant 880 AF (AF) |
| 1945 | 20,840 | 18,936 | 18,614 | 18,936 | 18,179 | 18,576 |
| 1946 | 20,840 | 19,616 | 19,283 | 19,616 | 18,831 | 19,256 |
| 1947 | 20,840 | 19,697 | 19,362 | 19,697 | 18,909 | 19,337 |
| 1948 | 20,840 | 23,102 | 22,709 | 23,102 | 22,178 | 22,742 |
| 1949 | 20,840 | 23,966 | 23,559 | 23,966 | 23,007 | 23,606 |
| 1950 | 20,840 | 24,459 | 24,043 | 24,459 | 23,481 | 24,099 |
| 1951 | 20,840 | 27,057 | 26,597 | 26,597 | 26,516 | 26,697 |
| 1952 | 20,840 | 16,382 | 16,104 | 16,104 | 16,054 | 16,022 |
| 1953 | 20,840 | 22,305 | 21,926 | 21,926 | 21,859 | 21,945 |
| 1954 | 20,840 | 22,312 | 21,933 | 21,933 | 21,866 | 21,952 |
| 1955 | 20,840 | 24,402 | 23,987 | 23,987 | 23,914 | 24,042 |
| 1956 | 20,840 | 18,751 | 18,432 | 18,263 | 18,751 | 18,391 |
| 1957 | 20,840 | 21,309 | 20,947 | 20,755 | 21,309 | 20,949 |
| 1958 | 20,840 | 15,610 | 15,345 | 15,204 | 15,610 | 15,250 |
| 1959 | 20,840 | 21,688 | 21,319 | 21,124 | 21,688 | 21,328 |
| 1960 | 20,840 | 23,531 | 23,131 | 22,919 | 23,531 | 23,171 |
| 1961 | 20,840 | 25,175 | 24,747 | 24,520 | 25,175 | 24,815 |
| 1962 | 20,840 | 16,437 | 16,158 | 16,010 | 16,437 | 16,077 |
| 1963 | 20,840 | 19,604 | 19,271 | 19,094 | 19,604 | 19,244 |
| 1964 | 20,840 | 21,791 | 21,421 | 21,224 | 21,791 | 21,431 |
| 1965 | 20,840 | 19,068 | 18,744 | 18,572 | 19,068 | 18,708 |
| **All Years** | | | | | | |
| Total | 437,640 | 445,198 | 437,630 | 438,009 | 437,758 | 437,688 |
| Mean | 20,840 | 21,200 | 20,840 | 20,858 | 20,846 | 20,840 |
| Maximum | 20,840 | 27,057 | 26,597 | 26,597 | 26,516 | 26,697 |
| Minimum | 20,840 | 15,610 | 15,345 | 15,204 | 15,610 | 15,250 |

1. Changes to the level of use reduction correspond with periods when Lake Casitas would drop below 127,000 and 65,000 Af of storage.

Table 4. Variability of Diversions for Study Conditions – Drought and Recovery Periods.

| | Annual Diversion Rate (Acre-ft) | | | | | |
|---|---|---|---|---|---|---|
| | With Matilija | | | Without Matilija | | |
| | Mean | 95%CI | Range | Mean | 95%CI | Range |
| **Drought Period** | | | | | | |
| 1959 Criteria | 7,996 | ±6,087 | 0 to 57,990 | 7,534 | ±5,988 | 0 to 57,595 |
| Robles BO Criteria | 6,861 | ±5,169 | 0 to 49,689 | 6,066 | ±4,944 | 0 to 48,058 |
| Difference | 1,134 | ±953 | 0 to 8,302 | 1,469 | ±1,128 | 0 to 9,557 |
| | | | | | | |
| **Recovery Period** | | | | | | |
| 1959 Criteria | 21,801 | ±11,549 | 589 to 68,645 | 21,050 | ±11,430 | 334 to 66,872 |
| Robles BO Criteria | 18,905 | ±9,953 | 589 to 58,553 | 17,438 | ±9,777 | 334 to 57,871 |
| Difference | 2,895 | ±1,924 | 0 to 10,262 | 3,612 | ±1,854 | 0 to 10,331 |

# Appendix A – Casitas MWD Water Supply Predictions

## Introduction

The reliability of water storage in Casitas Reservoir to adequately meet water use patterns through drought periods is dependent on the hydrology of the Ventura River Basin and the water use demands placed on reservoir storage. It is not possible to predict future weather patterns, and thus the hydrology, to an exact degree. The observation of recent weather and hydrology of the basin may provide adequate information that can be applied to a reservoir routing study. Determining the reliability of a water storage reservoir requires the review of relevant historical hydrology of the drainage basin and the assumption that the hydrology will repeat itself, in some manner, on a reliable basis (Figure A1). Further, determining the reliability of a water storage reservoir must also consider and apply system changes and influences that have or will occur in the foreseeable future.

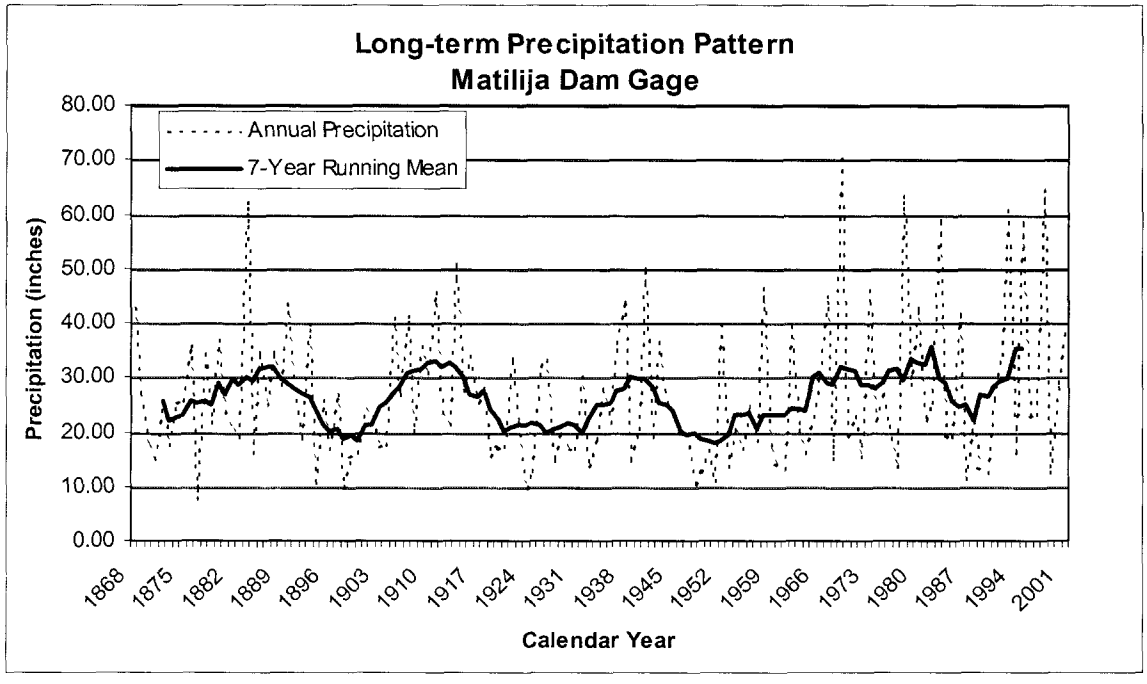



Figure A1. Long-term precipitation pattern as recorded at the Matilija Gage 1868-2001.

The District has compiled, to the best of their knowledge, the assumptions and historical data to develop a reservoir routing model that will consider the changes and influences that are foreseen at this time.

## Background

The Ventura River watershed encompasses approximately 228 square miles in western Ventura County as illustrated in Figure A2. The area is subject to a Mediterranean type climate, with long periods of no rainfall followed by short periods of intense rainfall and high runoff peaks (1). The hydrology of the Ventura River system has been well documented since the early 1900's.

In the early 1940's, the agricultural communities in the Ventura River basin realized the inability of the local groundwater supplies to support water uses during drought periods. The first move to supplementing groundwater supplies was construction of Matilija Dam in the late 1940's. It was not long before the community leaders determined that the Matilija Dam project had limited value to water supplies and replenishment of the Ojai groundwater basin, particularly during long-term drought conditions. The next step, that the local communities pursued, to develop reliable water supplies was the construction of the Ventura River Project, under the guidance and initial funding of the United States Bureau of Reclamation.

The key components of the Ventura River Project were the Robles Diversion Dam, Robles-Casitas Canal, Casitas Dam, Casitas Reservoir, and the water distribution system (pipelines, pump plants, and steel reservoirs). Casitas Reservoir provides 254,000 acre-feet of reservoir water storage while Robles diversion system provides a maximum of 500 cubic feet per second conveyance capacity from the Ventura River to Casitas Reservoir. Figure A3 presents a representation of the river and water delivery system. The Casitas Reservoir and Robles diversion system became operable in January 1959. Since the initial operation of the Robles Diversion Dam and canal, the District operated diversions and downstream releases in accordance with a given set of guidelines, formally referred to as the 1959 Trial Operating Criteria (hereafter 1959 Operating Criteria) for the Robles Diversion Dam. The operating criteria provided for a minimum of 20 cfs bypass, when more than 20 cfs was available at Robles Diversion Dam, and criteria for bypassing less than 20 cfs when downstream aquifers were in full condition.

In 1998, the listing of the steelhead as an endangered species, and the desire to return the species to the Ventura River, led to changes in the operating criteria for Robles Diversion Dam (Robles Biological Opinion Operating Criteria: hereafter Robles BO Operating Criteria). In 2002, there developed an interest in the removal of Matilija Dam and restoration of steelhead migration to all mainstem reaches of the Ventura River. The County of Ventura is presently considering the full-scale removal of Matilija Dam.

## Water Supply Prediction Components

An adequate water supply study must identify the periods and provide adequate data, and/or relatively sound basis for assumptions, to apply to the reservoir routing for each

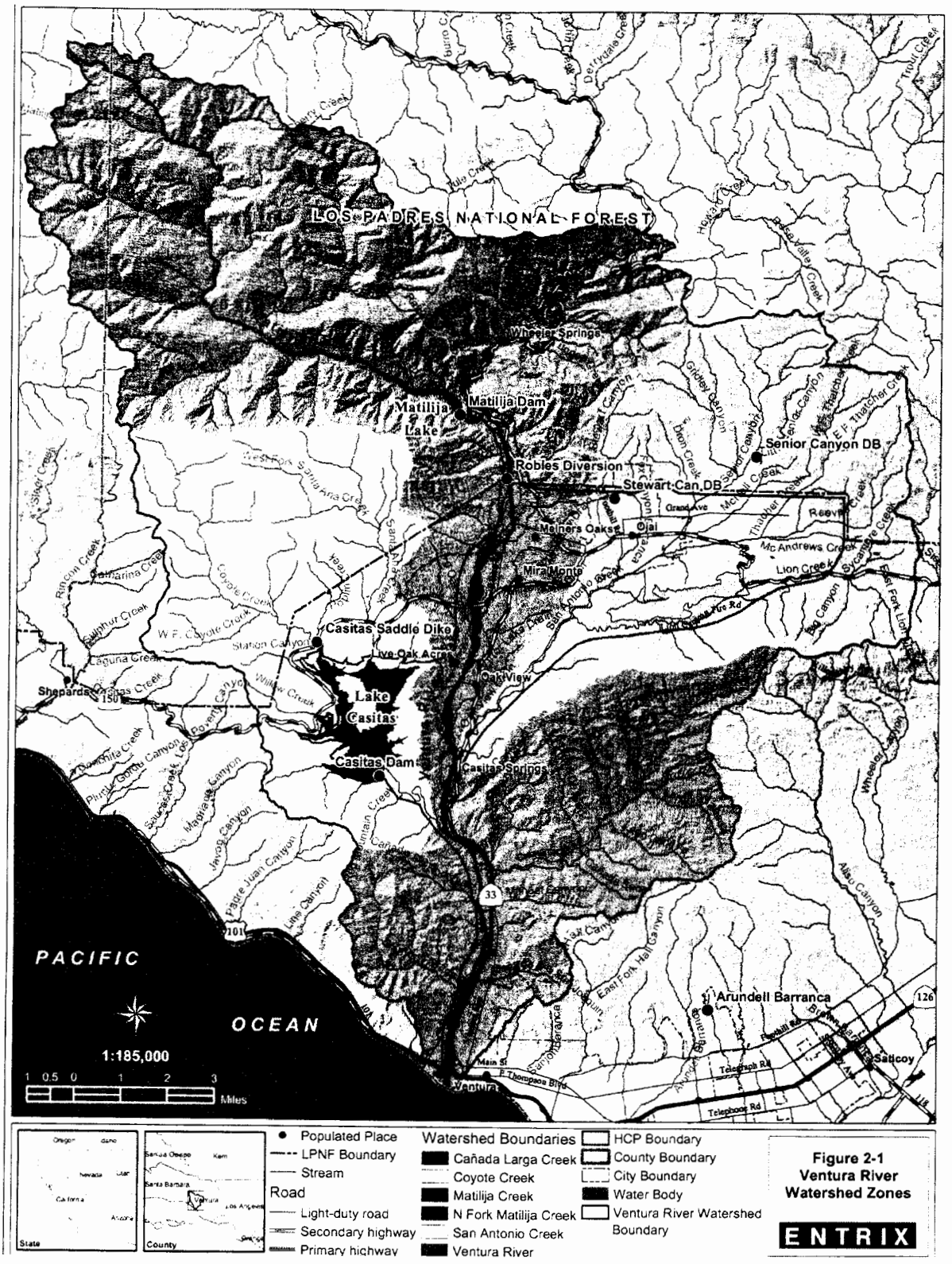



Figure A2. Ventura River Watershed (excerpt from the Habitat Conservation Plan – Entrix)

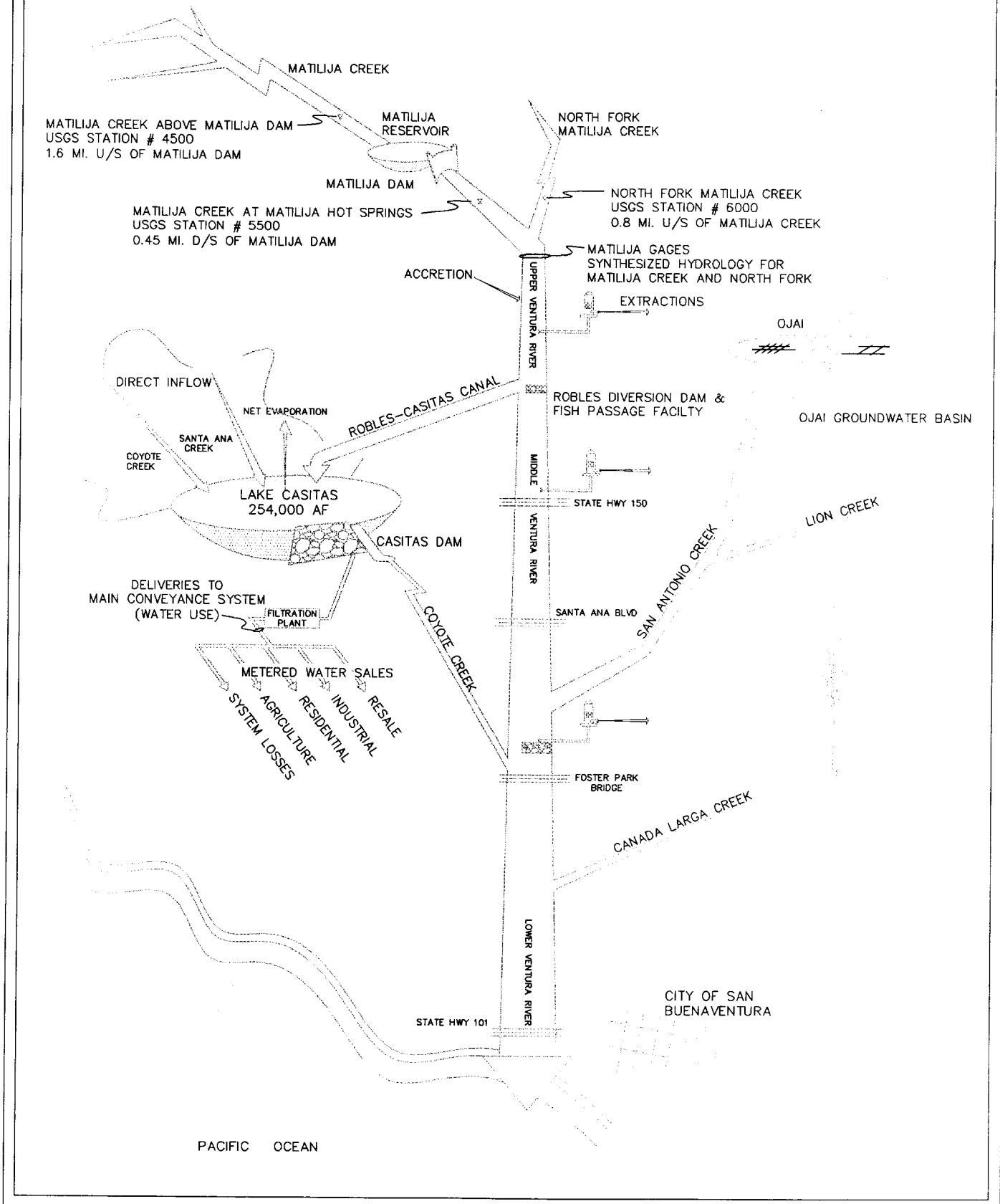



Figure A3. KEY ELEMENTS OF THE VENTURA RIVER WATER SUPPLY

period. The outline provided in this appendix provides the supply data and assumptions that were applied in the reservoir routing analysis.

There are two specific periods that the District is concerned with in the reservoir routing and determination of supply reliability. The first period is the longest period of drought. Assuming the reservoir is at full capacity, test the ability of the reservoir to withstand the longest drought of recent record. The second period is the recovery period of the reservoir from minimum storage level, after the reservoir has experienced the longest drought period, to full stage and ready for the next drought sequence.

The District has identified the period of 1944 through 1965 as the longest period of drought. The hydrology of the period is well documented. Other factors such as the current demands for the water supply are represented by the data gathered for the period. Such data will have to be extrapolated from current conditions to meet the hydrology of the study period.

The period of 1946 to 1980 has been identified as the recovery period. It is known that the Ventura River hydrology during the 1959 to 1978 period contributed to the initial filling of Casitas Reservoir to full capacity. Other factors and data, such as the demand for water supply and evaporation rates, may not be available from the study period or are not representative of current levels of influence. These factors must be reasonably developed from current data and trends, and then applied to the reservoir routing study. Many of these factors have been developed during prior studies and should be considered for this study.

## Water Supply Prediction Methods

The analysis of water supply for Casitas Municipal Water District was derived from the methods used by Kienlen in the late 1980s and early 1990 to evaluate a series of alternatives for utilizing water supplies in the Ventura River Basin (Murray, Burns and Kienlen 1990). These methods developed a water balance model for the Ventura River Basin and Lake Casitas that accounted for: 1) surface flows in the Ventura River, Matilija Creek, North Fork Matilija Creek, Coyote Creek, and Santa Ana Creek; 2) groundwater and surface water extraction above Robles diversion; 3) flow accretion above Robles Diversion; 4) operational efficiency of the Robles Diversion; 5) evaporation and rainfall at Lake Casitas; and 6) an estimate of the available supply from Lake Casitas on an annual basis expressed as annual yield. For this analysis, the approach used by Kienlen for the D20 study was used as a basis for the calculations in this analysis. Since Kienlen performed the D20 analysis additional water supplies have been developed, new operational criteria for Robles have been established, methods have been refined, and understanding the role of Matilija Reservoir to Casitas water supply has become more important. Therefore, the methods and/or assumptions used in the Kienlen D20 analysis were modified as appropriate based on current and/or relevant information and methods.

## Ventura River Inflow to Robles

This is an estimate of the volume of water flowing into the Robles facility. It is based on the hydrologic records from USGS gauging stations, operational criteria for Matilija Reservoir, an estimate of the volume of accretion flow between the gages and robles, and an estimate of the volume of water that is depleted between the gages and Robles.

In review of the data from each gaging station and understanding that the Matilija Dam changed flows entering the Robles Diversion Dam location, the model had to consider development of the Ventura River hydrology with and without the influence of Matilija Dam. Records of flow above Matilija Dam had been gathered until 1969, at which time the station had been destroyed and not replaced. The synthesis of the hydrology has been determined by developing an unencumbered flow (no Matilija Dam) at the Matilija Creek at Matilija Hot Springs station and then combining with the flow recorded at the North Fork Matilija Creek station. Where no records of flow were gathered for above Matilija Dam (the period of 1969 to 1980), a correlation was used to develop the unencumbered flow. The correlations are described in the equations outlined in the following sections. This method provided the baseline hydrology for the upper Ventura River without the influence of the Matilija Dam, which is one of the conditions that was later applied to the scenarios of this study. From the baseline hydrology and the operational criteria for Matilija Dam, a second hydrology was synthesized for the condition of Matilija Dam in operation for the entire study period. To provide accurate estimates for these values, calculations were based on daily values.

The combination of the synthesized hydrology for the Matilija Creek with the records for North Fork of the Matilija Creek has provided the flow values for water at the confluence of the Matilija Creek and the North Fork Matilija Creek. The term used for the combination of the records is "Matilija Gages". To develop the quantity of water that is available at the Robles Diversion Dam, the factors for accretion, upstream flow depletion and facility losses are applied to the "Matilija Gages" hydrology record.

<u>Drought Period Hydrology – October 1 1944 through September 30 1965</u>

1) Matilija Creek hydrology
    a. Empirical USGS gage records
        i. #5500: Matilija Hot Springs - October 1 1944 – May 31 1948
        ii. #4500: Above Matilija - June 1 1948 – September 30 1965

2) North Fork Matilija Creek hydrology
    a. Empirical USGS gage records
        i. #6000: October 1 1944 – September 30 1965

<u>Reservoir Recovery Period Hydrology – October 1 1965 through September 30 1980</u>

1) Matilija Creek hydrology
    a. Empirical USGS gage records

i. #4500: October 1 1965 – September 30 1969
ii. #5500: October 1 1973 – October 31 1973

b. Daily flows predicted from NF Matilija daily USGS records
i. Loss at Matilija Reservoir = 0.1167%
01) Added to Annual AF estimate for #5500
ii. Equation: #5500 = ((Annual AF 5500/Annual AF 4500)*#4500)
iii. Estimated: October 1 1969 – September 30 1973
iv. Estimated: November 1 1973 – September 30 1980

2) North Fork Matilija Creek hydrology
a. Empirical USGS gage records
i. #6000: October 1 964 – September 30 1973
ii. #6000: November 1 1973 – September 30 1978

b. Flows predicted from Matilija Creek USGS daily records
i. Equation: #6000 = (0.00003*(#5500^2))+(0.3158*#5500)
ii. Estimated: October 1 1973 – October 31 1973

Matilija Reservoir Operations: Influence and Benefit

1) Storage Capacity
a. Maximum storage: 650 AF
b. Minimum storage: 250 AF

2) Operational Criteria
a. Fill with storm events and available flows
b. Reduce to minimum storage once full
i. Generally post storm events (Figure A2)
ii. Release up to 100-150 cfs

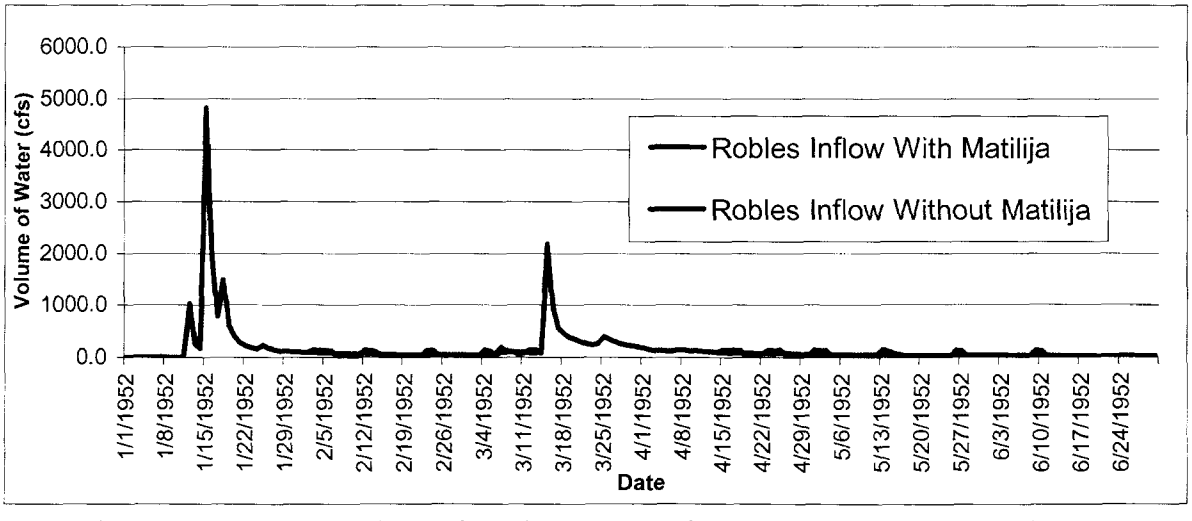



Figure A4. Potential effect of Matilija Reservoir operations on Ventura River flows.

Flow Accretion

This is an estimate of the volume of water that is gained between the USGS gauging stations and the Robles Diversion. Accretion flows would generally occur in association with storm events.

1) Variable – associated with rain events

2) Applied to average daily combined flow at Matilija and North fork Matilija Creek gages

3) Correction Factors: Applied to estimated average daily flow
    a. 0.05 increase applied to combined records from #5500 and #6000 gages
    b. 0.11 increase applied to combined records from #4500 and #6000 gages

Flow Depletion /Extraction

This is an estimate of the volume of water that is depleted between the gauges and Robles diversion. The volume of these depletions are generally related to water extractions via wells and surface diversions to beneficial water use, and replenishment of the groundwater aquifer.

1) Characteristics: variable on a monthly basis
        i. October: 7.58% of annual extraction volume
        ii. November: 5.35% of annual extraction volume
        iii. December: 4.34% of annual extraction volume
        iv. January: 4.75% of annual extraction volume
        v. February: 0.328% of annual extraction volume
        vi. March: 4.94% of annual extraction volume
        vii. April: 7.01% of annual extraction volume
        viii. May: 10.41% of annual extraction volume
        ix. June: 14.06 % of annual extraction volume
        x. July: 16.18% of annual extraction volume
        xi. August: 12.10% of annual extraction volume
        xii. September: 9.99% of annual extraction volume
    b. Related to substrate permeability/groundwater recharge and extraction
    c. Dependent upon direct diversions

2) Annual Estimates were used from the Kienlen D20 study
    a. Drought period:
        i. Up to 2800 AF/yr
        ii. Average of 2,168 AF/yr for 1944-1965 period (11.8% of gages)
    b. Wet period:
        i. Up to 2,800 AF/yr
        ii. Average of 1,628 AF/yr for 1966 – 1980 period (3.7% of gages)
    c. Applied to average daily combined flow values from Matilija and North fork Matilija Creek gages

## Robles Diversion Operations

This is an estimate of the volume of water flowing out of the Robles facility. It is based on the volume of water flowing into the facility (described above), water losses associated with facility operations, the volume of water available for diversion, diversion operational criteria, and the volume of water that bypasses the facility. To provide accurate estimates for these values, calculations were based on daily values.

Facility Losses

This is the volume of water loss from operating the diversion. It reduces the volume of water available for diversion. It is assumed that the majority of this volume of water goes subsurface and recharges groundwater aquifers.

1) Estimates used from Kienlen D20 Study
    a. Drought period: average 1,321 AF (7.7% of inflow)
    b. Wet period: average 1,628 AF (3.7% of inflow)
    c. Applied to average daily flow coming into the Robles facility

2) BOR (1959) estimated operational loss for the diversion at 5%

Water Available for Diversion

This is an estimate of the volume of water coming into the Robles Facility minus the volume of water loss due to operating the facility.

Volume of Water Diverted

This is the volume of water diverted into the Robles/Casitas Canal based on the 1959 and Robles BO operating criteria.

1) 1959 Operating Criteria estimates:
    a. Operating period
        i. October 1 through June 30
        ii. Initiated after surface flows occur at Santa Ana Blvd Bridge
        iii. Diversion cease when storage volume in Lake Casitas reaches 248,616 acre-feet (2 feet from spill elevation)
    b. Diversion volume
        i. Maximum diversion: 500 cfs
        ii. Minimum diversion: 5 cfs
    c. Minimum release (if available)
        i. Surface flow at Santa Ana Blvd. Bridge: release 3 cfs
            1. Assume after 2nd storm, and
            2. Drought period: Cumulative Robles inflow >11,000 AF/yr
            3. Recovery period: Cumulative Robles inflow >26,000 AF/yr
        ii. No surface flow at Santa Ana Blvd. Bridge: release 20 cfs
            1. Kienlen study assumed 20 cfs release/bypass at all times

2) Robles BO operating criteria estimates
    a. Operating period
        i. Fish passage operating period criteria
            1. January 1 – June 30
            2. Initiate after 1st storm event
            3. Initiate if sandbar has breached
        ii. 1959 operating criteria
            1. Apply whenever fish passage criteria are not met
            2. Initiated after October 1
        iii. General criteria
            1. Diversions cease when the storage volume in Lake Casitas is 248,616 acre-feet (2 feet below spill elevation)
    b. Diversion volumes
        i. Maximum diversion: 500 cfs
        ii. Minimum criteria: 5 cfs
    c. Fish releases (if available)
        (This is the quantity of water released off of the diversion canal to satisfy fish requirements outlined in the Robles BO and based on the volume of water flowing into the Robles Facility)
        i. Ratcheted release over 12 day period from 171 cfs to 30 cfs
        ii. Associated with storm events
        iii. Reduced fish releases would occur if Lake Casitas storage volume drops to < 100,000 AF and again at <65,000 AF through agreement and based on an equitable sharing of the temporary reduction in water allocations to customers (i.e. demonstrated reduction in water use)
        iv. Will cease if Lake Casitas storage volume is < 17,000 AF and until it reaches a volume of 65,000 AF
    d. Minimum release (if available)
        i. 30 cfs after first storm event and until June 30

<u>Volume of Water Bypassed.</u>
This is the total volume of water that bypasses the Robles Diversion facility. It includes the volume of water that is not diverted and bypasses the facility as well as the volume of water that is released from the Robles/Casitas canal for steelhead migration in the Ventura River.

1) Estimation
    a. Kienlen D20 study: bypass = Total inflow – loss – diversions
    b. Drought period: 50.7% of inflow
    c. Wet period: 52.9% of inflow
    d. Entire period: 52.1% of inflow

**Lake Casitas Supply**

The supply of water in Lake Casitas is dependent upon inflows from the Robles/Casitas canal, Santa Ana Creek, Coyote Creek, and unnamed tributaries as well as reductions associated with evaporation.

Volume from Robles/Casitas Canal

This is the volume of water diverted to Lake Casitas from the Robles Diversion. It is based on the calculations described above.

Santa Ana Creek

This analysis used estimates from the Kienlen D20 study.

Coyote Creek

This analysis used estimates from the Kienlen D20 study

Unnamed Tributaries

This analysis used estimates from the Kienlen D20 study.

Net Evaporation

This analysis used estimates from the Kienlen D20 study.

**Mira Monte Well Supply**

Annual yield estimated at 300 AF per year.

**Safe Yield: Drought Period – Casitas Municipal Water District**

Safe yield is a risk management tool used to estimate the volume of water that can be withdrawn from a water supply to the extent that the withdrawal is not harmful to recreation, water quality, or physical facilities. Methods for this assessment were based on the previous safe yield studies conducted by the BOR and Kienlen. However, this study accounted for three additional supply factors that were not included in the Kienlen analysis: 1) under the 1959 operating criteria minimum releases could be 3 cfs under specific conditions; 2) Mira Monte well supply; and Matilija Reservoir supply.

1) Estimates based of Kienlen D20 study variables and values:
    a. Timeframe: 21 years – 1945-1965 water years
    b. Minimum pool: approximately 4800 AF (based on D20 study)
    c. Monthly Distribution of Yield:
        i. October: 7.12% of annual yield
        ii. November: 6.07% of annual yield
        iii. December: 6.09% of annual yield
        iv. January: 6.69% of annual yield
        v. February: 4.5% of annual yield
        vi. March: 6.41% of annual yield

vii. April: 7.59% of annual yield
viii. May: 9.55% of annual yield
ix. June: 10.99 % of annual yield
x. July: 13.2% of annual yield
xi. August: 12.04% of annual yield
xii. September: 9.75% of annual yield

2) Water supply from the Mira Monte well was included in the safe yield estimate:
   a. 300 AF per year
   b. Applied at a constant rate for each month

3) Water supply from Matilija Reservoir was estimated.

4) Safe yield estimates made for four scenarios
   a. 1959 Operating Criteria
      i. With and without Matilija
   b. Robles BO Operating Criteria
      i. With and Without Matilija

**Yield: Recovery Period – Casitas Municipal Water District**

Yield is used to estimate the volume of water that can be withdrawn from a water supply to the extent that the withdrawal allows the reservoir to fill in a timely fashion. Methods for this assessment were based on the timeframe in which the reservoir filled following the longest period on record from previous studies conducted by Kienlen. However, this study accounted for three additional supply factors that were not included in the Kienlen analysis: 1) under the 1959 operating criteria minimum releases could be 3 cfs under specific conditions; 2) Mira Monte well supply; and Matilija Reservoir supply.

2) Estimates based of Kienlen D20 study variables and values:
   a. Timeframe: 15 years – 1966-1980 water years
   b. Initial pool: approximately 4800 AF (based on D20 study)
   c. Monthly Distribution of Yield:
      i. October: 7.12% of annual yield
      ii. November: 6.07% of annual yield
      iii. December: 6.09% of annual yield
      iv. January: 6.69% of annual yield
      v. February: 4.5% of annual yield
      vi. March: 6.41% of annual yield
      vii. April: 7.59% of annual yield
      viii. May: 9.55% of annual yield
      ix. June: 10.99 % of annual yield
      x. July: 13.2% of annual yield
      xi. August: 12.04% of annual yield
      xii. September: 9.75% of annual yield

2) Water supply from the Mira Monte well was included in the safe yield estimate:
    a. 300 AF per year
    b. Applied at a constant rate for each month

3) Water supply from Matilija Reservoir was estimated.

4) Safe yield estimates made for four scenarios
    c. 1959 Operating Criteria
        i. With and without Matilija
    d. Robles BO Operating Criteria
        i. With and Without Matilija

## Water Supply Prediction Results

The following Tables and Figures present summary information from the analysis described above.

Table A1. Predicted water supply for the 1945-1965-drought period based on the 1959 operating criteria and with the benefit of Matilija Reservoir.

| Water Year | Predicted Water Supply (AF) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ventura River | | | | | | | Lake Casitas | | | District |
| | Flows Above Robles Diversion | | | Robles Operations | | | | | | | |
| | Matilija Gages | Accretion | Extraction | Inflow | Loss | Bypass | Diversion | Tributaries | Net Loss | Storage Volume | Available Supply |
| 1945 | 19222 | 961 | 2652 | 17531 | 1350 | 8198 | 7984 | 6812 | 4711 | 225510 | 22770 |
| 1946 | 23289 | 1164 | 2611 | 21842 | 1682 | 9339 | 10821 | 3377 | 4529 | 212710 | 22770 |
| 1947 | 12435 | 622 | 2035 | 11021 | 849 | 4932 | 5241 | 2654 | 4255 | 193881 | 22770 |
| 1948 | 2822 | 171 | 1728 | 1264 | 97 | 1167 | 0 | 48 | 3901 | 167559 | 22770 |
| 1949 | 3564 | 392 | 1712 | 2243 | 173 | 1839 | 232 | 131 | 3537 | 141916 | 22770 |
| 1950 | 4785 | 526 | 1722 | 3589 | 276 | 2748 | 565 | 1378 | 3145 | 118244 | 22770 |
| 1951 | 1810 | 199 | 1356 | 652 | 50 | 602 | 0 | 89 | 2682 | 93182 | 22770 |
| 1952 | 58089 | 6390 | 2611 | 61868 | 4764 | 21709 | 35395 | 27231 | 3582 | 129758 | 22770 |
| 1953 | 10343 | 1138 | 2342 | 9139 | 704 | 5838 | 2597 | 2270 | 2940 | 109215 | 22770 |
| 1954 | 9916 | 1091 | 2183 | 8823 | 679 | 4251 | 3892 | 3520 | 2599 | 91559 | 22770 |
| 1955 | 5139 | 565 | 2002 | 3702 | 285 | 3183 | 234 | 703 | 2078 | 67949 | 22770 |
| 1956 | 10412 | 1145 | 2131 | 9426 | 726 | 4835 | 3866 | 5792 | 1773 | 53365 | 22770 |
| 1957 | 6822 | 750 | 1811 | 5761 | 444 | 2867 | 2451 | 1008 | 1260 | 33095 | 22770 |
| 1958 | 93554 | 10291 | 2702 | 101142 | 7788 | 35365 | 57990 | 32125 | 3204 | 97537 | 22770 |
| 1959 | 13670 | 1504 | 2157 | 13016 | 1002 | 6487 | 5527 | 2909 | 2374 | 81130 | 22770 |
| 1960 | 4406 | 485 | 1668 | 3222 | 248 | 2591 | 383 | 936 | 1834 | 58298 | 22770 |
| 1961 | 2243 | 247 | 1189 | 1300 | 100 | 1185 | 16 | 150 | 1307 | 34687 | 22770 |
| 1962 | 57999 | 6380 | 2514 | 61865 | 4764 | 32151 | 24950 | 27154 | 2379 | 61943 | 22770 |
| 1963 | 7323 | 806 | 2317 | 5811 | 447 | 3731 | 1633 | 2338 | 1554 | 41891 | 22770 |
| 1964 | 4432 | 487 | 1702 | 3217 | 248 | 2216 | 753 | 863 | 1029 | 20008 | 22770 |
| 1965 | 8501 | 935 | 1935 | 7500 | 578 | 3544 | 3379 | 4537 | 636 | 4819 | 22770 |
| | | | | | | | | | | | |
| Total | 360775 | 36249 | 43081 | 353943 | 27254 | 158779 | 167911 | 126025 | 55309 | | 478170 |
| | | | | | | | | | | | |
| Mean | 17180 | 1726 | 2051 | 16854 | 1298 | 7561 | 7996 | 6001 | 2634 | 97060 | 22770 |
| | | | | | | | | | | | |

Table A2. Predicted water supply for the 1945-1965-drought period based on the 1959 operating criteria and without the benefit of Matilija Reservoir.

| Water Year | Predicted Water Supply (AF) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ventura River | | | | | | | Lake Casitas | | | District |
| | Flows Above Robles Diversion | | | Robles Operations | | | | | | | |
| | Matilija Gages | Accretion | Extraction | Inflow | Loss | Bypass | Diversion | Tributaries | Net Loss | Storage Volume | Available Supply |
| 1945 | 19179 | 959 | 2652 | 17486 | 1346 | 8245 | 7894 | 6812 | 4711 | 225881 | 22309 |
| 1946 | 23283 | 1164 | 2611 | 21836 | 1681 | 10826 | 9329 | 3377 | 4529 | 212050 | 22309 |
| 1947 | 12552 | 628 | 2035 | 11145 | 858 | 5911 | 4376 | 2654 | 4255 | 192817 | 22309 |
| 1948 | 2830 | 171 | 1728 | 1273 | 98 | 1175 | 0 | 48 | 3901 | 166956 | 22309 |
| 1949 | 3496 | 385 | 1712 | 2169 | 167 | 1874 | 128 | 131 | 3537 | 141670 | 22309 |
| 1950 | 4858 | 534 | 1722 | 3671 | 283 | 2882 | 506 | 1378 | 3145 | 118400 | 22309 |
| 1951 | 1810 | 199 | 1356 | 653 | 50 | 602 | 0 | 89 | 2682 | 93799 | 22309 |
| 1952 | 58270 | 6410 | 2611 | 62068 | 4779 | 23640 | 33649 | 27231 | 3582 | 129089 | 22309 |
| 1953 | 10060 | 1107 | 2342 | 8824 | 679 | 6601 | 1543 | 2270 | 2940 | 107955 | 22309 |
| 1954 | 9941 | 1094 | 2183 | 8852 | 682 | 4810 | 3360 | 3520 | 2599 | 90227 | 22309 |
| 1955 | 5169 | 569 | 2002 | 3736 | 288 | 3319 | 128 | 703 | 2078 | 66973 | 22309 |
| 1956 | 10460 | 1151 | 2131 | 9479 | 730 | 5659 | 3091 | 5792 | 1773 | 52074 | 22309 |
| 1957 | 6732 | 741 | 1811 | 5662 | 436 | 3050 | 2176 | 1008 | 1260 | 31990 | 22309 |
| 1958 | 93605 | 10297 | 2702 | 101200 | 7792 | 35812 | 57595 | 32125 | 3204 | 96498 | 22309 |
| 1959 | 13591 | 1495 | 2157 | 12929 | 995 | 7013 | 4920 | 2909 | 2374 | 79945 | 22309 |
| 1960 | 4424 | 487 | 1668 | 3243 | 250 | 2810 | 183 | 936 | 1834 | 57374 | 22309 |
| 1961 | 2292 | 252 | 1189 | 1355 | 104 | 1190 | 61 | 150 | 1307 | 34269 | 22309 |
| 1962 | 57924 | 6372 | 2514 | 61782 | 4757 | 32798 | 24226 | 27154 | 2379 | 61262 | 22309 |
| 1963 | 7321 | 805 | 2317 | 5809 | 447 | 4014 | 1348 | 2338 | 1554 | 41386 | 22309 |
| 1964 | 4503 | 495 | 1702 | 3296 | 254 | 2263 | 780 | 863 | 1029 | 19991 | 22309 |
| 1965 | 8435 | 928 | 1935 | 7428 | 572 | 3928 | 2928 | 4537 | 636 | 4813 | 22309 |
| | | | | | | | | | | | |
| Total | 360735 | 36240 | 43081 | 353895 | 27250 | 168422 | 158223 | 126025 | 55309 | | 468489 |
| | | | | | | | | | | | |
| Mean | 17178 | 1726 | 2051 | 16852 | 1298 | 8020 | 7534 | 6001 | 2634 | 96449 | 22309 |
| | | | | | | | | | | | |

Table A3. Predicted water supply for the 1945-1965-drought period based on the Robles BO operating criteria and with the benefit of Matilija Reservoir.

| Water Year | Predicted Water Supply (AF) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ventura River | | | | | | | Lake Casitas | | | District |
| | Flows Above Robles Diversion | | | Robles Operations | | | | | | | |
| | Matilija Gages | Accretion | Extraction | Inflow | Loss | Bypass | Diversion | Tributaries | Net Loss | Storage Volume | Available Supply |
| 1945 | 19222 | 961 | 2652 | 17531 | 1350 | 10206 | 5976 | 6812 | 4711 | 224636 | 21635 |
| 1946 | 23289 | 1164 | 2611 | 21842 | 1682 | 10547 | 9614 | 3377 | 4529 | 211763 | 21635 |
| 1947 | 12435 | 622 | 2035 | 11021 | 849 | 4932 | 5241 | 2654 | 4255 | 194068 | 21635 |
| 1948 | 2822 | 171 | 1728 | 1264 | 97 | 1167 | 0 | 48 | 3901 | 168880 | 21635 |
| 1949 | 3564 | 392 | 1712 | 2243 | 173 | 1839 | 232 | 131 | 3537 | 144371 | 21635 |
| 1950 | 4785 | 526 | 1722 | 3589 | 276 | 2748 | 565 | 1378 | 3145 | 121834 | 21635 |
| 1951 | 1810 | 199 | 1356 | 652 | 50 | 602 | 0 | 89 | 2682 | 97906 | 21635 |
| 1952 | 58089 | 6390 | 2611 | 61868 | 4764 | 28626 | 28478 | 27231 | 3582 | 128698 | 21635 |
| 1953 | 10343 | 1138 | 2342 | 9139 | 704 | 5838 | 2597 | 2270 | 2940 | 109290 | 21635 |
| 1954 | 9916 | 1091 | 2183 | 8823 | 679 | 4778 | 3366 | 3520 | 2599 | 92241 | 21635 |
| 1955 | 5139 | 565 | 2002 | 3702 | 285 | 3183 | 234 | 703 | 2078 | 69766 | 21635 |
| 1956 | 10412 | 1145 | 2131 | 9426 | 726 | 5532 | 3168 | 5792 | 1773 | 55618 | 21635 |
| 1957 | 6822 | 750 | 1811 | 5761 | 444 | 3148 | 2169 | 1008 | 1260 | 36201 | 21635 |
| 1958 | 93554 | 10291 | 2702 | 101142 | 7788 | 43667 | 49688 | 32125 | 3204 | 93474 | 21635 |
| 1959 | 13670 | 1504 | 2157 | 13016 | 1002 | 7627 | 4388 | 2909 | 2374 | 77062 | 21635 |
| 1960 | 4406 | 485 | 1668 | 3222 | 248 | 2591 | 383 | 936 | 1834 | 55364 | 21635 |
| 1961 | 2243 | 247 | 1189 | 1300 | 100 | 1185 | 16 | 150 | 1307 | 32888 | 21635 |
| 1962 | 57999 | 6380 | 2514 | 61865 | 4764 | 34519 | 22582 | 27154 | 2379 | 58910 | 21635 |
| 1963 | 7323 | 806 | 2317 | 5811 | 447 | 3985 | 1379 | 2338 | 1554 | 39738 | 21635 |
| 1964 | 4432 | 487 | 1702 | 3217 | 248 | 2335 | 634 | 863 | 1029 | 18871 | 21635 |
| 1965 | 8501 | 935 | 1935 | 7500 | 578 | 3544 | 3379 | 4537 | 636 | 4817 | 21635 |
| | | | | | | | | | | | |
| Total | 360775 | 36249 | 43081 | 353943 | 27254 | 182600 | 144090 | 126025 | 55309 | | 454335 |
| | | | | | | | | | | | |
| Mean | 17180 | 1726 | 2051 | 16854 | 1298 | 8695 | 6861 | 6001 | 2634 | 96971 | 21635 |
| | | | | | | | | | | | |

Table A4. Predicted water supply for the 1945-1965-drought period based on the Robles BO operating criteria and without the benefit of Matilija Reservoir.

| Water Year | Predicted Water Supply (AF) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ventura River | | | | | | | Lake Casitas | | | District |
| | Flows Above Robles Diversion | | | Robles Operations | | | | | | | |
| | Matilija Gages | Accretion | Extraction | Inflow | Loss | Bypass | Diversion | Tributaries | Net Loss | Storage Volume | Available Supply |
| 1945 | 19179 | 959 | 2652 | 17486 | 1346 | 12287 | 3852 | 6812 | 4711 | 223307 | 20840 |
| 1946 | 23283 | 1164 | 2611 | 21836 | 1681 | 12594 | 7560 | 3377 | 4529 | 209175 | 20840 |
| 1947 | 12552 | 628 | 2035 | 11145 | 858 | 5911 | 4376 | 2654 | 4255 | 191410 | 20840 |
| 1948 | 2830 | 171 | 1728 | 1273 | 98 | 1175 | 0 | 48 | 3901 | 167017 | 20840 |
| 1949 | 3496 | 385 | 1712 | 2169 | 167 | 1874 | 128 | 131 | 3537 | 143200 | 20840 |
| 1950 | 4858 | 534 | 1722 | 3671 | 283 | 2882 | 506 | 1378 | 3145 | 121399 | 20840 |
| 1951 | 1810 | 199 | 1356 | 653 | 50 | 602 | 0 | 89 | 2682 | 98266 | 20840 |
| 1952 | 58270 | 6410 | 2611 | 62068 | 4779 | 31687 | 25602 | 27231 | 3582 | 126976 | 20840 |
| 1953 | 10060 | 1107 | 2342 | 8824 | 679 | 6601 | 1543 | 2270 | 2940 | 107310 | 20840 |
| 1954 | 9941 | 1094 | 2183 | 8852 | 682 | 5788 | 2382 | 3520 | 2599 | 90072 | 20840 |
| 1955 | 5169 | 569 | 2002 | 3736 | 288 | 3319 | 128 | 703 | 2078 | 68286 | 20840 |
| 1956 | 10460 | 1151 | 2131 | 9479 | 730 | 6701 | 2049 | 5792 | 1773 | 53813 | 20840 |
| 1957 | 6732 | 741 | 1811 | 5662 | 436 | 3345 | 1881 | 1008 | 1260 | 34902 | 20840 |
| 1958 | 93605 | 10297 | 2702 | 101200 | 7792 | 45349 | 48058 | 32125 | 3204 | 91341 | 20840 |
| 1959 | 13591 | 1495 | 2157 | 12929 | 995 | 8755 | 3178 | 2909 | 2374 | 74515 | 20840 |
| 1960 | 4424 | 487 | 1668 | 3243 | 250 | 2810 | 183 | 936 | 1834 | 53411 | 20840 |
| 1961 | 2292 | 252 | 1189 | 1355 | 104 | 1190 | 61 | 150 | 1307 | 31775 | 20840 |
| 1962 | 57924 | 6372 | 2514 | 61782 | 4757 | 35778 | 21247 | 27154 | 2379 | 57256 | 20840 |
| 1963 | 7321 | 805 | 2317 | 5809 | 447 | 4388 | 974 | 2338 | 1554 | 38475 | 20840 |
| 1964 | 4503 | 495 | 1702 | 3296 | 254 | 2299 | 743 | 863 | 1029 | 18512 | 20840 |
| 1965 | 8435 | 928 | 1935 | 7428 | 572 | 3928 | 2928 | 4537 | 636 | 4801 | 20840 |
| | | | | | | | | | | | |
| Total | 360735 | 36240 | 43081 | 353895 | 27250 | 199265 | 127379 | 126025 | 55309 | | 437640 |
| | | | | | | | | | | | |
| Mean | 17178 | 1726 | 2051 | 16852 | 1298 | 9489 | 6066 | 6001 | 2634 | 95487 | 20840 |
| | | | | | | | | | | | |

Table A5. Predicted water supply for the 1966-1980-recovery period based on the 1959 operating criteria and with the benefit of Matilija Reservoir.

| Water Year | Predicted Water Supply (AF) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ventura River | | | | | | | Lake Casitas | | | District |
| | Flows Above Robles Diversion | | | Robles Operations | | | | | | | |
| | Matilija Gages | Accretion | Extraction | Inflow | Loss | Bypass | Diversion | Tributaries | Net Loss | Storage Volume | Available Supply |
| 1966 | 55445 | 2772 | 2446 | 55771 | 2064 | 18020 | 35687 | 21289 | 1387 | 37926 | 24177 |
| 1967 | 56372 | 2819 | 2767 | 56423 | 2088 | 8722 | 45613 | 27258 | 2437 | 85911 | 24177 |
| 1968 | 8024 | 401 | 2536 | 5889 | 218 | 4450 | 1221 | 2392 | 1765 | 65310 | 24177 |
| 1969 | 171353 | 8568 | 2793 | 177128 | 6554 | 104275 | 66300 | 78737 | 4630 | 183497 | 24177 |
| 1970 | 16807 | 840 | 2725 | 14922 | 552 | 7731 | 6639 | 4662 | 3767 | 168904 | 24177 |
| 1971 | 20184 | 1009 | 2481 | 18712 | 692 | 10504 | 7516 | 7225 | 3640 | 158148 | 24177 |
| 1972 | 10739 | 537 | 2046 | 9230 | 341 | 4269 | 4619 | 5394 | 3345 | 142578 | 24177 |
| 1973 | 58322 | 2916 | 2754 | 58484 | 2164 | 22499 | 33821 | 33070 | 4342 | 184252 | 24177 |
| 1974 | 18424 | 921 | 2426 | 16919 | 626 | 8593 | 7700 | 7417 | 3936 | 173398 | 24177 |
| 1975 | 23671 | 1184 | 2658 | 22197 | 821 | 9419 | 11957 | 10670 | 3940 | 170361 | 24177 |
| 1976 | 9711 | 486 | 2167 | 8029 | 297 | 4278 | 3454 | 3239 | 3584 | 151212 | 24177 |
| 1977 | 4977 | 249 | 1925 | 3301 | 122 | 2590 | 589 | 1056 | 3164 | 127285 | 24177 |
| 1978 | 135760 | 6788 | 2615 | 139933 | 5178 | 66111 | 68645 | 73222 | 5366 | 244222 | 24177 |
| 1979 | 27918 | 1396 | 2800 | 26514 | 981 | 9193 | 16340 | 11740 | 4872 | 246144 | 24177 |
| 1980 | 69835 | 3492 | 2800 | 70527 | 2610 | 51007 | 16911 | 38299 | 4892 | 237956 | 24177 |
| | | | | | | | | | | | |
| Total | 687544 | 34377 | 37939 | 683982 | 25307 | 331662 | 327012 | 325670 | 55067 | 2377102 | 362655 |
| | | | | | | | | | | | |
| Mean | 45836 | 2292 | 2529 | 45599 | 1687 | 22111 | 21801 | 21711 | 3671 | 158473 | 24177 |
| | | | | | | | | | | | |

Table A6. Predicted water supply for the 1966-1980-recovery period based on the 1959 operating criteria and without the benefit of Matilija Reservoir.

| Water Year | Predicted Water Supply (AF) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ventura River | | | | | | | Lake Casitas | | | District |
| | Flows Above Robles Diversion | | | Robles Operations | | | | | | | |
| | Matilija Gages | Accretion | Extraction | Inflow | Loss | Bypass | Diversion | Tributaries | Net Loss | Storage Volume | Available Supply |
| 1966 | 55495 | 2775 | 2437 | 55495 | 4299 | 18672 | 35094 | 21289 | 1387 | 37045 | 23497 |
| 1967 | 56267 | 2813 | 2767 | 56267 | 4336 | 10198 | 44031 | 27258 | 2437 | 82243 | 23497 |
| 1968 | 8040 | 402 | 2536 | 8040 | 455 | 5032 | 655 | 2392 | 1765 | 61768 | 23497 |
| 1969 | 171355 | 8929 | 2793 | 171355 | 13667 | 104284 | 66293 | 78737 | 4630 | 178779 | 23497 |
| 1970 | 16800 | 1848 | 2725 | 16800 | 1226 | 8790 | 5574 | 4662 | 3767 | 163672 | 23497 |
| 1971 | 20191 | 2221 | 2481 | 20191 | 1535 | 10589 | 7437 | 7225 | 3640 | 153137 | 23497 |
| 1972 | 10730 | 1180 | 2046 | 10730 | 760 | 4230 | 4649 | 5394 | 3345 | 138184 | 23497 |
| 1973 | 58322 | 6415 | 2754 | 58322 | 4773 | 23802 | 32518 | 33070 | 4342 | 178101 | 23497 |
| 1974 | 18421 | 2026 | 2426 | 18421 | 1388 | 9739 | 6551 | 7417 | 3936 | 166596 | 23497 |
| 1975 | 23675 | 2604 | 2658 | 23675 | 1819 | 10837 | 10542 | 10670 | 3940 | 162404 | 23497 |
| 1976 | 9930 | 1092 | 2167 | 9930 | 682 | 4935 | 3018 | 3239 | 3584 | 143424 | 23497 |
| 1977 | 4817 | 530 | 1925 | 4817 | 263 | 2683 | 334 | 1056 | 3164 | 119950 | 23497 |
| 1978 | 135694 | 14926 | 2615 | 135694 | 11396 | 67816 | 66872 | 73222 | 5366 | 233727 | 23497 |
| 1979 | 27929 | 3072 | 2800 | 27929 | 2172 | 9567 | 15977 | 11740 | 4872 | 235179 | 23497 |
| 1980 | 69813 | 3491 | 2803 | 69813 | 2609 | 51683 | 16209 | 38299 | 4892 | 237452 | 23497 |
| | | | | | | | | | | | |
| Total | 687478 | 54326 | 37934 | 687478 | 51378 | 342858 | 315755 | 325670 | 55067 | 2291661 | 352455 |
| | | | | | | | | | | | |
| Mean | 45832 | 3622 | 2529 | 45832 | 3425 | 22857 | 21050 | 21711 | 3671 | 152777 | 23497 |
| | | | | | | | | | | | |

Table A7. Predicted water supply for the 1966-1980-recovery period based on the Robles BO operating criteria and with the benefit of Matilija Reservoir.

| Water Year | Predicted Water Supply (AF) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ventura River | | | | | | | Lake Casitas | | | District |
| | Flows Above Robles Diversion | | | Robles Operations | | | | | | | |
| | Matilija Gages | Accretion | Extraction | Inflow | Loss | Bypass | Diversion | Tributaries | Net Loss | Storage Volume | Available Supply |
| 1966 | 55445 | 2772 | 2446 | 55771 | 2064 | 18020 | 35687 | 21289 | 1387 | 36443 | 21184 |
| 1967 | 56372 | 2819 | 2767 | 56423 | 2088 | 16551 | 37784 | 27258 | 2437 | 79612 | 21184 |
| 1968 | 8024 | 401 | 2536 | 5889 | 218 | 4450 | 1221 | 2392 | 1765 | 62024 | 21184 |
| 1969 | 171353 | 8568 | 2793 | 177128 | 6554 | 112021 | 58553 | 78737 | 4630 | 175431 | 21184 |
| 1970 | 16807 | 840 | 2725 | 14922 | 552 | 7850 | 6520 | 4662 | 3767 | 163732 | 21184 |
| 1971 | 20184 | 1009 | 2481 | 18712 | 692 | 10504 | 7516 | 7225 | 3640 | 155997 | 21184 |
| 1972 | 10739 | 537 | 2046 | 9230 | 341 | 4269 | 4619 | 5394 | 3345 | 143441 | 21184 |
| 1973 | 58322 | 2916 | 2754 | 58484 | 2164 | 32221 | 24099 | 33070 | 4342 | 178309 | 21184 |
| 1974 | 18424 | 921 | 2426 | 16919 | 626 | 10153 | 6140 | 7417 | 3936 | 168952 | 21184 |
| 1975 | 23671 | 1184 | 2658 | 22197 | 821 | 11490 | 9885 | 10670 | 3940 | 166838 | 21184 |
| 1976 | 9711 | 486 | 2167 | 8029 | 297 | 4911 | 2821 | 3239 | 3584 | 150121 | 21184 |
| 1977 | 4977 | 249 | 1925 | 3301 | 122 | 2590 | 589 | 1056 | 3164 | 129207 | 21184 |
| 1978 | 135760 | 6788 | 2615 | 139933 | 5178 | 76373 | 58383 | 73222 | 5366 | 239268 | 21184 |
| 1979 | 27918 | 1396 | 2800 | 26514 | 981 | 11264 | 14269 | 11740 | 4872 | 242051 | 21184 |
| 1980 | 69835 | 3492 | 2800 | 70527 | 2610 | 52424 | 15493 | 38299 | 4892 | 239269 | 21184 |
| | | | | | | | | | | | |
| Total | 687544 | 34377 | 37939 | 683982 | 25307 | 375094 | 283581 | 325670 | 55067 | 2330695 | 317760 |
| | | | | | | | | | | | |
| Mean | 45836 | 2292 | 2529 | 45599 | 1687 | 25006 | 18905 | 21711 | 3671 | 155380 | 21184 |
| | | | | | | | | | | | |

Table A8. Predicted water supply for the 1966-1980-recovery period based on the Robles BO operating criteria and without the benefit of Matilija Reservoir.

| Water Year | Predicted Water Supply (AF) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ventura River | | | | | | | Lake Casitas | | | District |
| | Flows Above Robles Diversion | | | Robles Operations | | | | | | | |
| | Matilija Gages | Accretion | Extraction | Inflow | Loss | Bypass | Diversion | Tributaries | Net Loss | Storage Volume | Available Supply |
| 1966 | 55495 | 2775 | 2437 | 55832 | 2066 | 22510 | 31256 | 21289 | 1387 | 37022 | 19775 |
| 1967 | 56267 | 2813 | 2767 | 56313 | 2084 | 18095 | 36135 | 27258 | 2437 | 78056 | 19775 |
| 1968 | 8040 | 402 | 2536 | 5906 | 219 | 5032 | 655 | 2392 | 1765 | 61296 | 19775 |
| 1969 | 171355 | 8929 | 2793 | 177130 | 6554 | 112706 | 57871 | 78737 | 4630 | 173461 | 19775 |
| 1970 | 16800 | 1848 | 2725 | 14915 | 552 | 10129 | 4234 | 4662 | 3767 | 160696 | 19775 |
| 1971 | 20191 | 2221 | 2481 | 18719 | 693 | 10589 | 7437 | 7225 | 3640 | 153876 | 19775 |
| 1972 | 10730 | 1180 | 2046 | 9221 | 341 | 4230 | 4649 | 5394 | 3345 | 142637 | 19775 |
| 1973 | 58322 | 6415 | 2754 | 58484 | 2164 | 32465 | 23855 | 33070 | 4342 | 177592 | 19775 |
| 1974 | 18421 | 2026 | 2426 | 16916 | 626 | 12084 | 4205 | 7417 | 3936 | 167422 | 19775 |
| 1975 | 23675 | 2604 | 2658 | 22201 | 821 | 13301 | 8079 | 10670 | 3940 | 164412 | 19775 |
| 1976 | 9930 | 1092 | 2167 | 8259 | 306 | 5521 | 2433 | 3239 | 3584 | 148531 | 19775 |
| 1977 | 4817 | 530 | 1925 | 3133 | 116 | 2683 | 334 | 1056 | 3164 | 128772 | 19775 |
| 1978 | 135694 | 14926 | 2615 | 139863 | 5175 | 78146 | 56542 | 73222 | 5366 | 236013 | 19775 |
| 1979 | 27929 | 3072 | 2800 | 26526 | 981 | 15573 | 9971 | 11740 | 4872 | 235179 | 19775 |
| 1980 | 69813 | 3491 | 2803 | 70500 | 2609 | 53978 | 13914 | 38299 | 4892 | 238762 | 19775 |
| | | | | | | | | | | | |
| Total | 687478 | 54326 | 37934 | 683918 | 25305 | 397043 | 261570 | 325670 | 55067 | 2303725 | 296625 |
| | | | | | | | | | | | |
| Mean | 45832 | 3622 | 2529 | 45595 | 1687 | 26470 | 17438 | 21711 | 3671 | 153582 | 19775 |
| | | | | | | | | | | | |

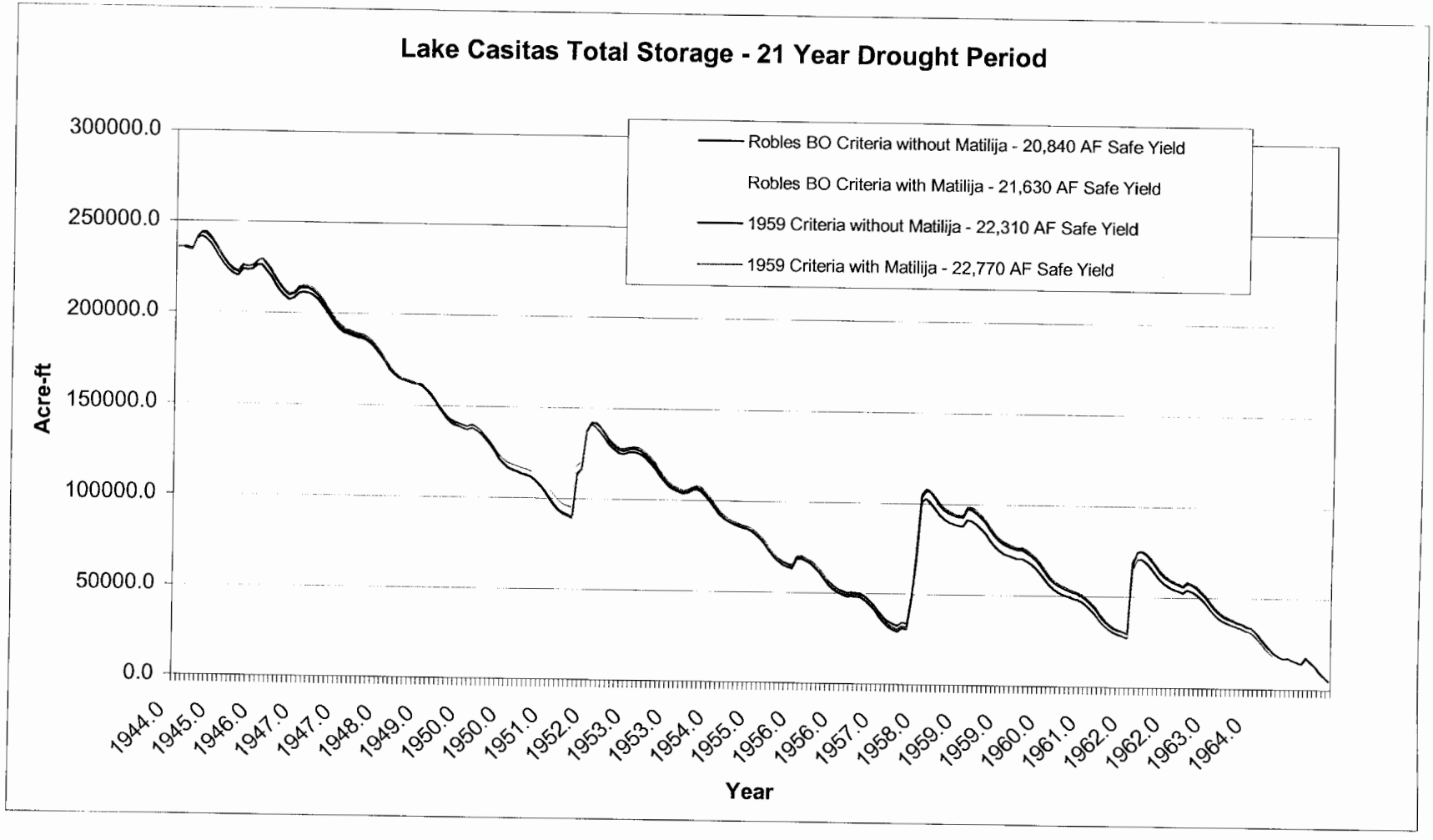



Figure A5. Comparisons of the storage volume in Lake Casitas based on different operating and safe yield scenarios for the longest drought on record.

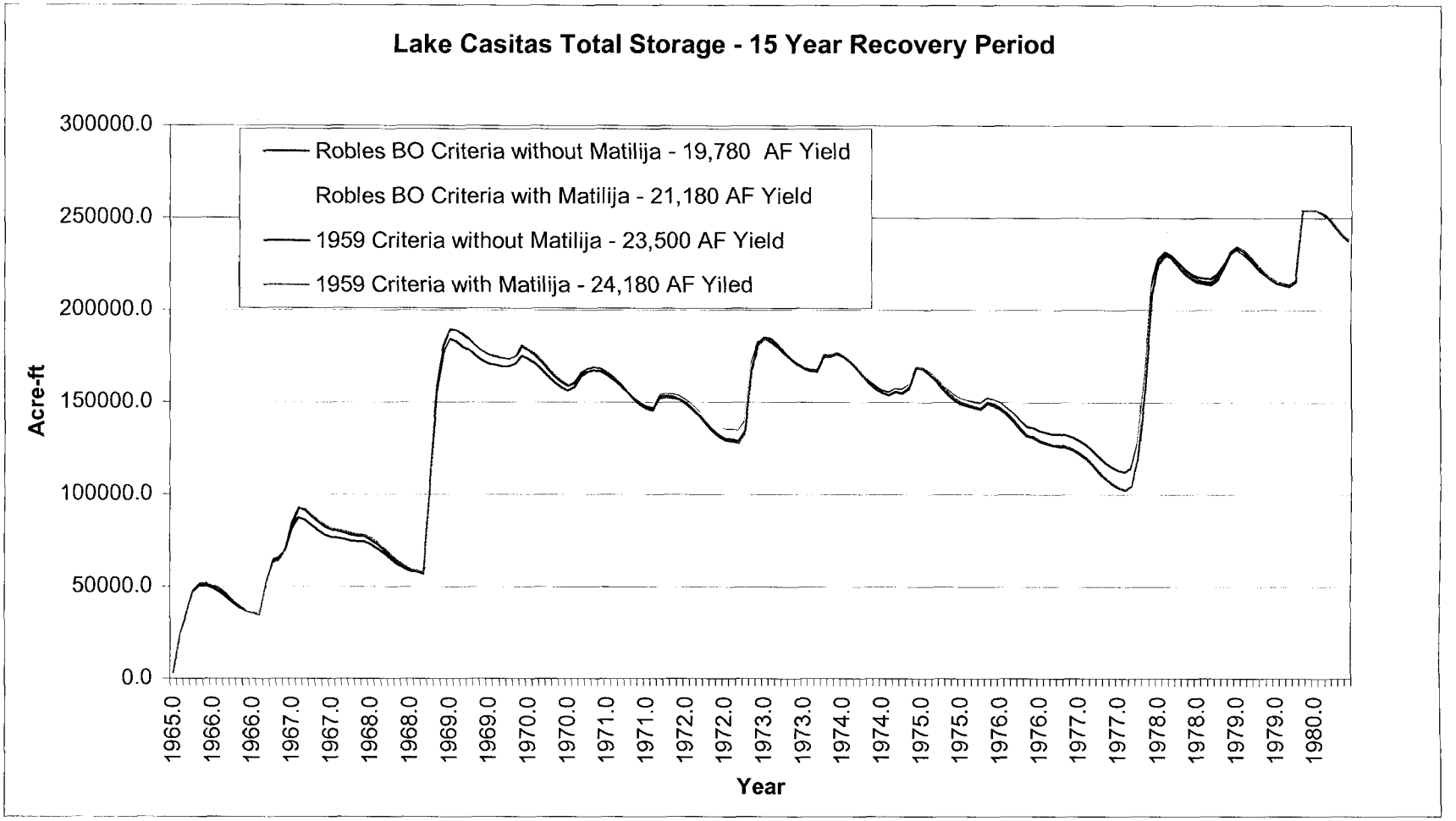



Figure A6. Comparisons of the storage volume in Lake Casitas based on different operating and yield scenarios for the recovery period following the longest drought on record.

# Appendix B - Casitas MWD Water Delivery and Use Predictions

The information that is available for the 1945 through 1965 study period is limited to the rainfall and hydrology occurrences in the Ventura River. The Ventura River Project that brought about Lake Casitas and the District's service facilities did not become operational until 1959. Water deliveries from Lake Casitas and customer use during this study period are not available and would not have been at the same level as today. Therefore, the study must predict water deliveries based on present water use and the study period's hydrology.

The following was considered in the development of the water delivery for the study period:

1. The critical drought period is 1945 through 1965;
2. Each year is based on Water Year hydrology data;
3. Good data source for hydrology and annual rainfall exists for the study period;
4. Rainfall data used in this evaluation has been gathered at the Santa Ana weather station, from 1944 to 1959, and the Lake Casitas Recreation Area weather station from 1959 to present;
5. Limited water delivery data for the study period – the District began delivery of water from Lake Casitas in 1959.
6. Water use data during the study period should reflect current level and trends of water delivery and use.
7. Factors that tend to influence the amount of water deliveries are rainfall patterns, irrigation use, municipal and industrial use, resale use, and groundwater availability.
8. Growth may be a factor in the water deliveries and use. The initial years of District (1959-1977), the trend of water use was primarily based on growth and development. During the last 20 years, slow growth has been more representative of the deliveries and use trends.
9. The District does have detailed data on the hydrology, annual rainfall, water delivery and use for the period 1959 to 2002.
10. The District's data for the annual water delivery is in Calendar year format, need to convert data to a water year format in order to apply deliveries to the Supply model.
11. Consider the adjustment of the deliveries where unusual anomalies exist in the data. (The City of San Buenaventura, period 1991 to 1997, to reflect the current agreement to purchase 6,000 acre-feet on an annual basis. This period's actual deliveries to the City were temporarily reduced to below 6,000 acre-feet due to water quality reasons.)
12. The District deliveries include water delivered from Casitas Dam to the main conveyance system and the deliveries from the Mira Monte Water Well.

## Historical Data

The Casitas Municipal Water District has an extensive collection of water use and hydrology data that can be applied to the water supply and use analysis. The data, in some cases, needed to be converted into a water year calendar time sequence in order be consistent with all other data and the time sequence used in the analysis.

The following is a representation of the historical data that has been assembled from District records for the analysis.

Table B1 - lists the water deliveries from Casitas Dam and the Mira Monte Well are presented in a water year calendar format. Also presented are the rainfall totals for each water year.

Figure B1 - illustrates the relationship between the District's deliveries and annual rainfall. It is noted that there appears to be a direct correlation between rainfall and the level of deliveries made by the District.

Figures B2 through B5 were developed to further define and explain the annual variance in water delivery. The District has compiled water use data for each of its major user types and larger customers. The user trends also illustrate the influence of rainfall and at times, the loss of alternative water supplies (i.e. groundwater supplies) on the use patterns. The review of individual use does validate the delivery-rainfall relationship that is illustrated in Figure B1.

Figure B2 - illustrates the water sales patterns for the District's agricultural customers. There appears to be a direct correlation between rainfall and the amount of water sales made to the District's agricultural customers. The District serves water to approximately 5,600 acres of orchard cropland and supplements agricultural groundwater use during periods of drought. When rainfall does not occur, water sales from the District's distribution system supplement the lack of rainfall. The figure also illustrates the coincidence of agricultural water sales with the deliveries from Casitas Dam.

Figure B3 - illustrates the water sales pattern for direct residential customers of the District. As a comparative illustration, the water sales pattern of the agricultural customers is presented. It appears that the residential water sales do not appear to be influenced by annual rainfall variations. It also appears that the growth pattern has been gradual over the recorded 26-year period.

Figure B4 - illustrates the water sales pattern for the two types of resale customers and any relationship between the sales and annual rainfall. The Resale Pumped customer is primarily to other water agencies, such as Ventura River County Water District and Southern California Water Company, that also rely on groundwater supplies to meet demands within their water service areas. The Resale Pumped customers have demanded Lake Casitas supplies generally when they are not able to meet all demands from their groundwater supplies (Ventura River and Ojai). A specific increase in demands from Lake Casitas is noted in the 1989 to 1991 period. The rise in demand was approximately 1300 acre-feet from the base demand in 1989 to the maximum demand in 1991. This change is primarily due to the depletion of groundwater supplies during the drought period.

Figure B4 - provides an insight to the water sales pattern of Resale Gravity. The primary customer in the Resale Gravity is the City of San Buenaventura (Ventura). The City has alternative groundwater supplies from the Ventura River and the groundwater basins in the eastern section of the City. The City has a series of agreements with the District concerning water service. The City has agreed to annually certify that water delivered from the Casitas

system does not supply customers that are outside of the boundaries of the Casitas Municipal Water District. The district boundaries are not contiguous with the City's boundaries, and therefore, many sections of the City of are not a part of the original financial setting for repayment of contracts for the Ventura River Project (Lake Casitas). This became an issue in 1990, at the height of a drought period. The City decided to become more reliant on its alternative supplies and drastically reduced its demand on Lake Casitas. The District's water sales to the City went from a high of 9,510 acre-feet in 1989 to a minimum purchase 1,370 acre-feet in 1992, and less than 2,000 acre-feet in each of the following years, until 1997. In 1995, the City and the District agreed to guarantee a stable purchase from the District. In this agreement, the City agreed to purchase at a minimum 6,000 acre-feet annually from Lake Casitas. The City began to meet the minimum demand in 1997 and have continued to do so since that time.

Figure B4 illustrates the water demand fluctuations that resulted from the abovementioned series of events. Besides the municipal and industrial use of the water within the City, the City has a sphere of water service influence that includes oil production. The oil production in this area requires water injection to force the oil out of the geologic formations. The period between the mid 1980's to the mid 1990's experienced a reduction in oil production, and thus a reduction in water demand. The City's in-District water use plummeted from a high of 10,886 acre-feet in 1987 to a low of 7,037 acre-feet in 2002. The City also has plans to develop its water well facilities on the Ventura River. It is likely that the City will be able to maintain a balance of deliveries from Lake Casitas with the use within the common City-District boundaries.

Figure B5 illustrates the historical sales to the Business, Industry, and Other customer types of the District. For the Industry customers, the sales patterns do not appear to be influence by rainfall patterns. The Business and Other customers are primarily irrigated golf courses, public and private schools, and recreational areas, and may be influenced by rainfall patterns. There are some Business and Other customers that rely on Lake Casitas supply to supplement rainfall in the irrigation of large turf areas that are associated with these customers. In general, the annual water delivery for each of these customers is generally less than 800 acre-feet and the annual variation of demand is seldom greater than 200 acre-feet. There does not appear to be a growth trend in the annual demands from these three customer types.

## Water Deliveries Adjustment – City of San Buenaventura

Figure B4 illustrates that there may be several factors that have may have influenced the City of Ventura's water use, other than the influence of annual rainfall events. Several of those factors have been resolved by the agreement of a minimum water demand from Lake Casitas. In the recent years, the City has maintained its minimum demand on Lake Casitas at approximately 6,000 acre-feet. To develop a current Lake Casitas demand trend that may be extrapolated to other study periods, there must be an adjustment of the historical water use data to reflect the current level of demand by the City of Ventura. In Table B2, the water sales to the City of Ventura, for the period of 1991 to 1997, were adjusted to reflect the minimum City of Ventura demand on Lake Casitas of 6,000 acre-feet. The adjustment amount for the City of Ventura was also added to the District's deliveries to main conveyance, and further listed under the column entitled "Adjusted WY Deliveries to Main Conveyance." Figure B6 illustrates the adjustment to the annual water deliveries.

The period prior to 1990 has not been adjusted primarily because the city did not exceed its in-District demand by the deliveries from Lake Casitas. It should be noted that given a future extensive dry period, and/or re-emergence of the oil industry, the City of Ventura demands could potentially increase back to the water deliveries recorded in the 1980's.

## Trending Deliveries

From the review of historical data, it appears that the annual rainfall is a key factor that has influenced the District water deliveries. It is also apparent that multiple years of dry conditions cause an escalation of the delivery occurring in any one year. In Table B3, the annual rainfall totals and corresponding water deliveries are ranked from lest rainfall to most recorded rainfall. The rainfall data has been gathered at the Lake Casitas Recreation Area and assumed to be a representative influence for the majority of the District's customers. Table B3 lists the data for the 1976 to 2002 and the 1984 to 2002 periods. The later period being more representative of current water use and growth trends.

The rainfall data is further separated and compared for each 10-inch increment of rainfall. The average of rainfall and deliveries for each 10-inch increment and each period is calculated in Table B3 and illustrated in Figures B7 and B8. A polynomial trend line has developed from the graphical representation of the average deliveries for each period. Table B4 uses the trend line from the 1984 to 2002 period and sequential 10-inch rainfall totals to determine the delivery from each rainfall total. The polynomial trend line equation from the 1984 to 2002 period was selected for the linear trend calculations.

In the study period, there are several consecutive dry years. The rainfall and delivery data in Table B1 and Figure B1, for the period of 1984 to 1990 demonstrates that when the system experiences multiple and consecutive dry rainfall years (less than 20 inches), the delivery for the following year tends to escalate with each consecutive dry year. Table B5 presents the rainfall and deliveries for the 1984 to 1990 period. Figures B9 and B10 illustrate the delivery data and linear trend line for the escalation of multiple consecutive dry years. In Figure B10, a shorter period of time is evaluated, removing the heavy rainfall of 1986 from influence on the trend line. Each year in Table B10 was assigned a consecutive dry year multiplier number, and from the trend lines, the deliveries for each year are calculated and compared to the actual delivery data. The slope of line (1,377) from 1986 to 1990 escalating trend line equation, Figure B10, was selected as a representative equation for application to multiple consecutive dry years found in the study period (1945-1965).

## Modeling Deliveries for the Critical Dry Period

The objective of the close review of rainfall-delivery response and the development of trend line equations and escalation factors is to be able to predict deliveries for a period of time during which no delivery record exists. In Table B6, the annual rainfall at the Lake Casitas Recreation area is listed for each year of the study period. The polynomial trend equation

$$y=1.7488x^2 - 269.1x + 24300$$

is applied to each annual rainfall and the water delivery is calculated and recorded for each year. For each year during which the annual rainfall is less than 20 inches, a consecutive year multiplier and the escalation slope are applied to the linear trend equation in

$$y=1.7488x^2 - 269.1x + 24300 + (\text{Dry Year Multiplier})(1,377).$$

The water deliveries from each equation are shown in Table B6. Figure B11 illustrates the predicted water deliveries for each equation and the annual rainfall for each year of the study period.

The derivation of an equation to predict a finite number has risk in the confidence that the number would be comparable to actual results. In Table B7, the actual water deliveries for the period 1984 to 1990 is compared to the delivery numbers that are generated from the polynomial and escalating trend equations. As expected, the actual deliveries fall between the two equation lines during the period, as shown in Figure B12. The development of trend deliveries for the period of 1966 through 2003, Table B8 and Figure B13, illustrates a higher confidence of following actual use in the last ten years of historical data.

The deliveries that have been derived in Table B6 are accounted against the available Lake Casitas supply to determine the impacts on Lake Casitas.

**Modeling Deliveries the Recovery Period**

The supply and demand study for the critical dry period takes the water surface elevation of Lake Casitas to minimum pool. The modeling needs to demonstrate the ability of the hydrology to recover Lake Casitas storage to full capacity, during the wet trend period and under each of the two diversion operating criteria. There is an importance to restore the full capacity of Lake Casitas prior to the onset of another critical dry period. The actual occurrence following 1965, the end of the critical dry period, Lake Casitas reached full storage capacity in 1978. The modeling of the recovery period should include the hydrology experienced during the 1966 to 1978 period and compare the capacity response of Lake Casitas for each of the diversion operational criteria.

For the recovery period, the deliveries were determined from the same trend equations that were used in the critical dry period study. During this recovery period, 1977 was the only year receiving the additional escalating factor. Table B9 provides the prediction of water deliveries for the 1966 to 1978 period, and the actual deliveries made by the District. It is noted that the actual deliveries are much less than the predicted value, primarily because the actual water uses from Lake Casitas were in development and had not matured to the current level of use. The predicted deliveries are based on the current level of water use. Figure B14 illustrates the predicted deliveries for each year of the recovery period. The deliveries that are derived in Table B9 are accounted against the available supply in Lake Casitas for the recovery period.

**Table B1 - Casitas Water Deliveries to the System and Rainfall at Lake Casitas Recreation Area**

| Water Year | Rainfall at LCRA (in.) | Deliveries to Main Conveyance System @ Casitas Dam (AF) | Deliveries to Main Conveyance System Mira Monte Well (AF) | Total Deliveries (AF) |
|---|---|---|---|---|
| 1975 | 24.05 | 16,156 | | 16,156 |
| 1976 | 17.23 | 18,725 | | 18,725 |
| 1977 | 11.98 | 16,779 | | 16,779 |
| 1978 | 49.66 | 15,080 | | 15,080 |
| 1979 | 25.64 | 12,499 | | 12,499 |
| 1980 | 35.15 | 14,651 | | 14,651 |
| 1981 | 16.99 | 20,012 | | 20,012 |
| 1982 | 20.34 | 16,702 | | 16,702 |
| 1983 | 48.22 | 16,026 | 0 | 16,026 |
| 1984 | 16.63 | 21,832 | 0 | 21,832 |
| 1985 | 15.93 | 20,274 | 0 | 20,274 |
| 1986 | 32.2 | 16,606 | 0 | 16,606 |
| 1987 | 9.83 | 22,339 | 0 | 22,339 |
| 1988 | 18.4 | 21,032 | 0 | 21,032 |
| 1989 | 11.85 | 24,416 | 0 | 24,416 |
| 1990 | 8.86 | 22,454 | 0 | 22,454 |
| 1991 | 23.59 | 17,723 | 0 | 17,723 |
| 1992 | 28.53 | 13,189 | 129 | 13,318 |
| 1993 | 43.31 | 11,694 | 46 | 11,740 |
| 1994 | 14.69 | 15,555 | 85 | 15,640 |
| 1995 | 49.04 | 12,107 | 78 | 12,185 |
| 1996 | 16.91 | 16,135 | 221 | 16,356 |
| 1997 | 25.27 | 18,996 | 305 | 19,301 |
| 1998 | 58.78 | 14,372 | 0 | 14,372 |
| 1999 | 10.67 | 17,942 | 0 | 17,942 |
| 2000 | 21.94 | 23,060 | 169 | 23,229 |
| 2001 | 27.86 | 18,743 | 130 | 18,873 |
| 2002 | 8.77 | 21,066 | 0 | 21,066 |
| 2003 | 23.69 | 16278 | 198 | 16,476 |

**Figure B1 - Casitas Water Deliveries to the System and Rainfall (1975 to 2003)**

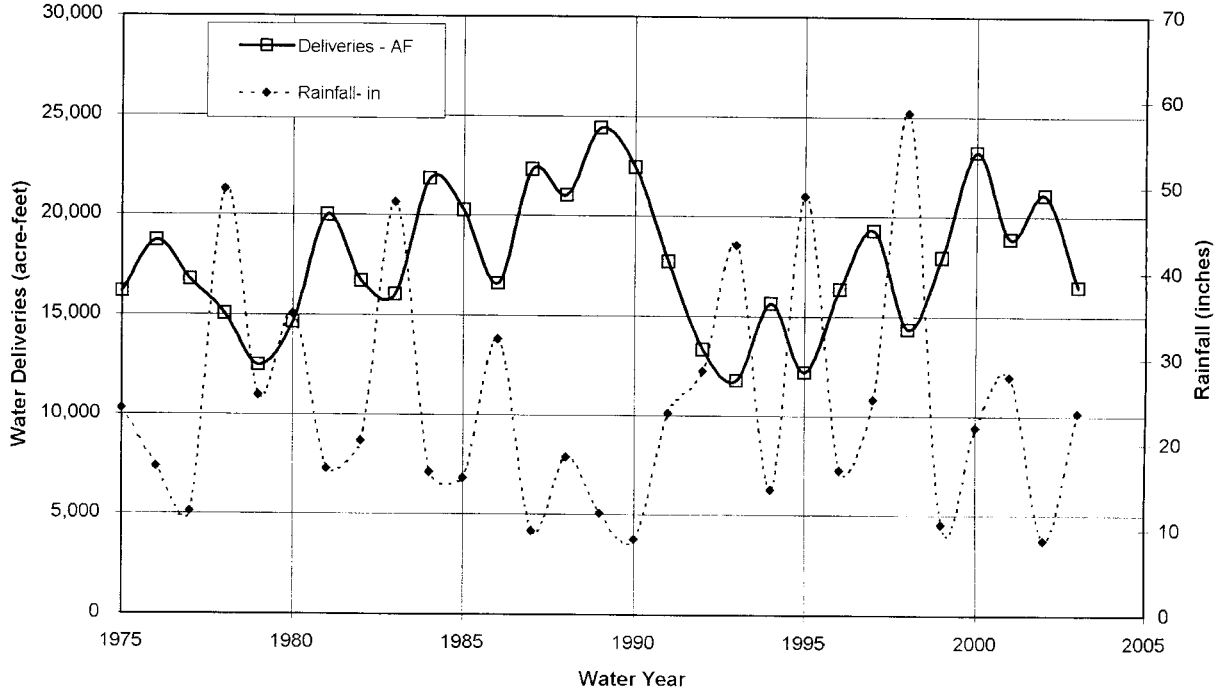


**Figure B2 - Historical Deliveries, Agricultural Water Sales and Rainfall (1976 to 2002 WY)**

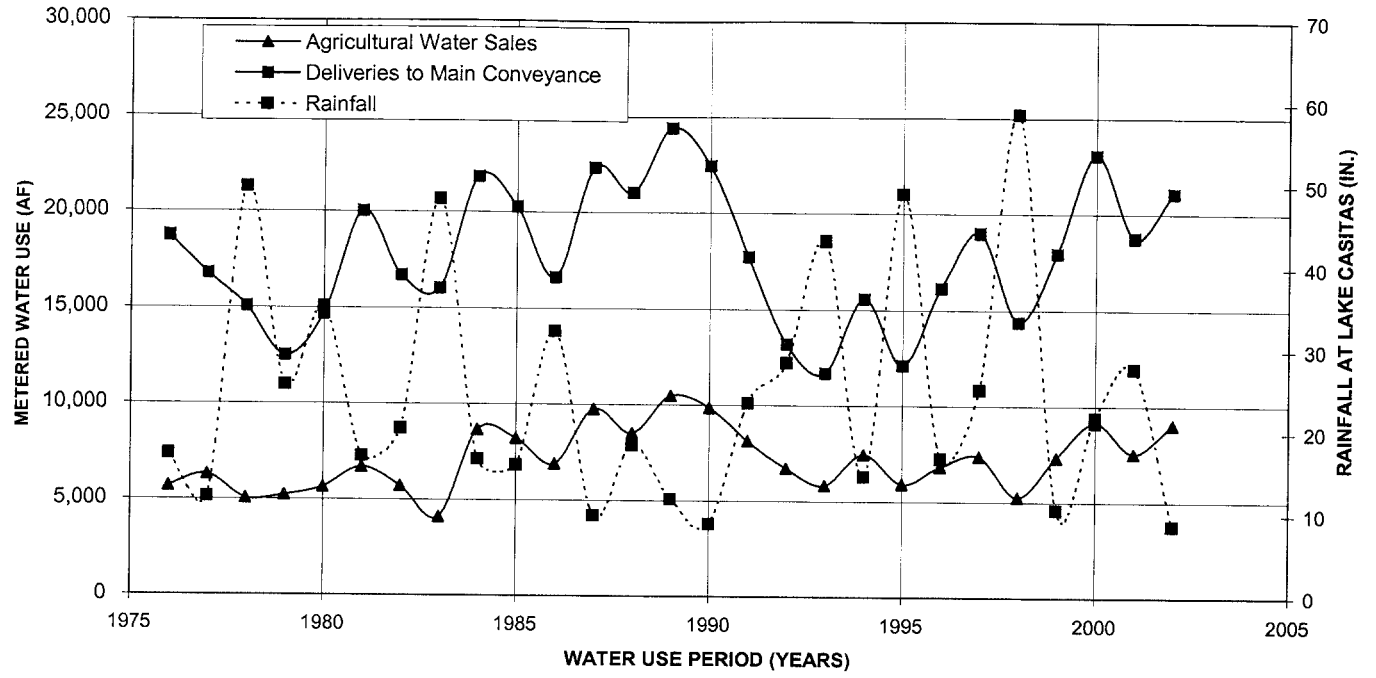



**Figure B3 -Historical Agricultural and Residential Water Sales and Rainfall (WY1976 to 2002)**

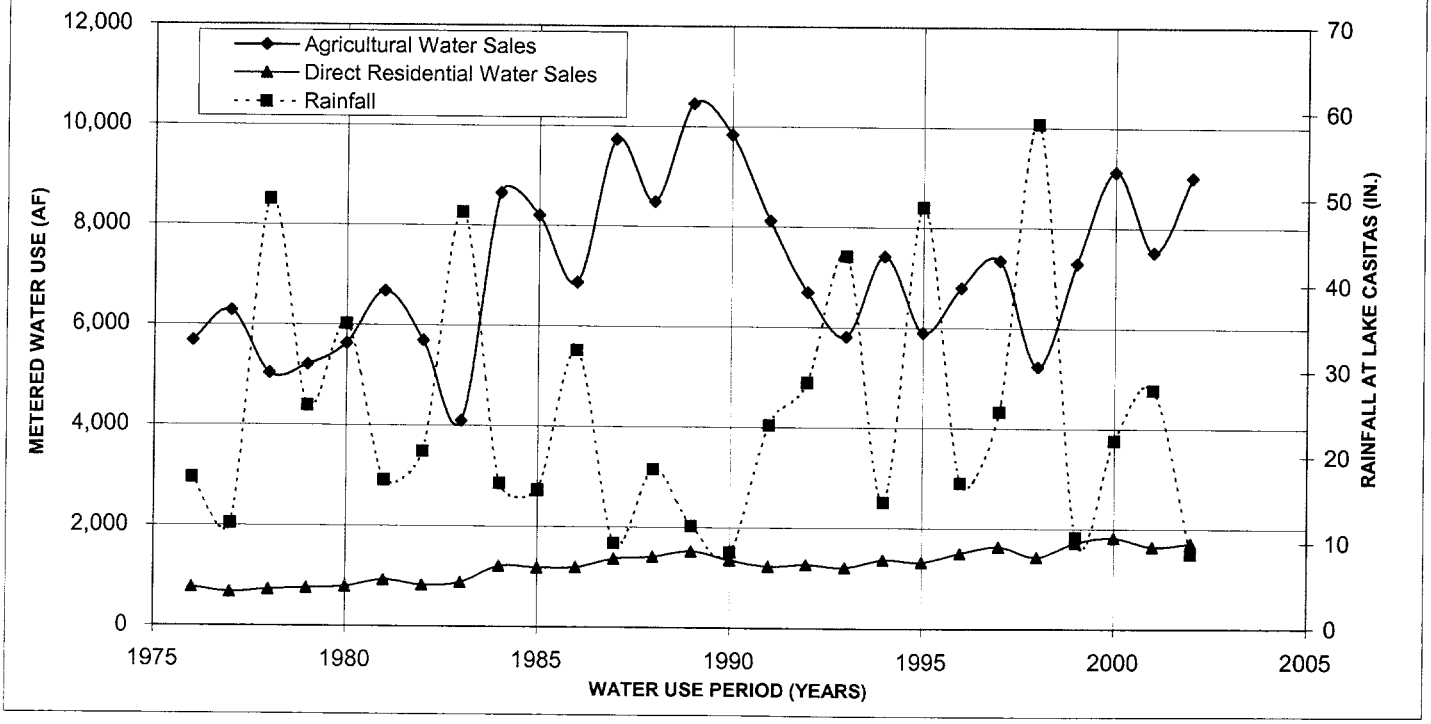


**Figure B4 - Historical Gravity and Pumped Resale Water Sales and Rainfall (WY 1976 to 2002)**

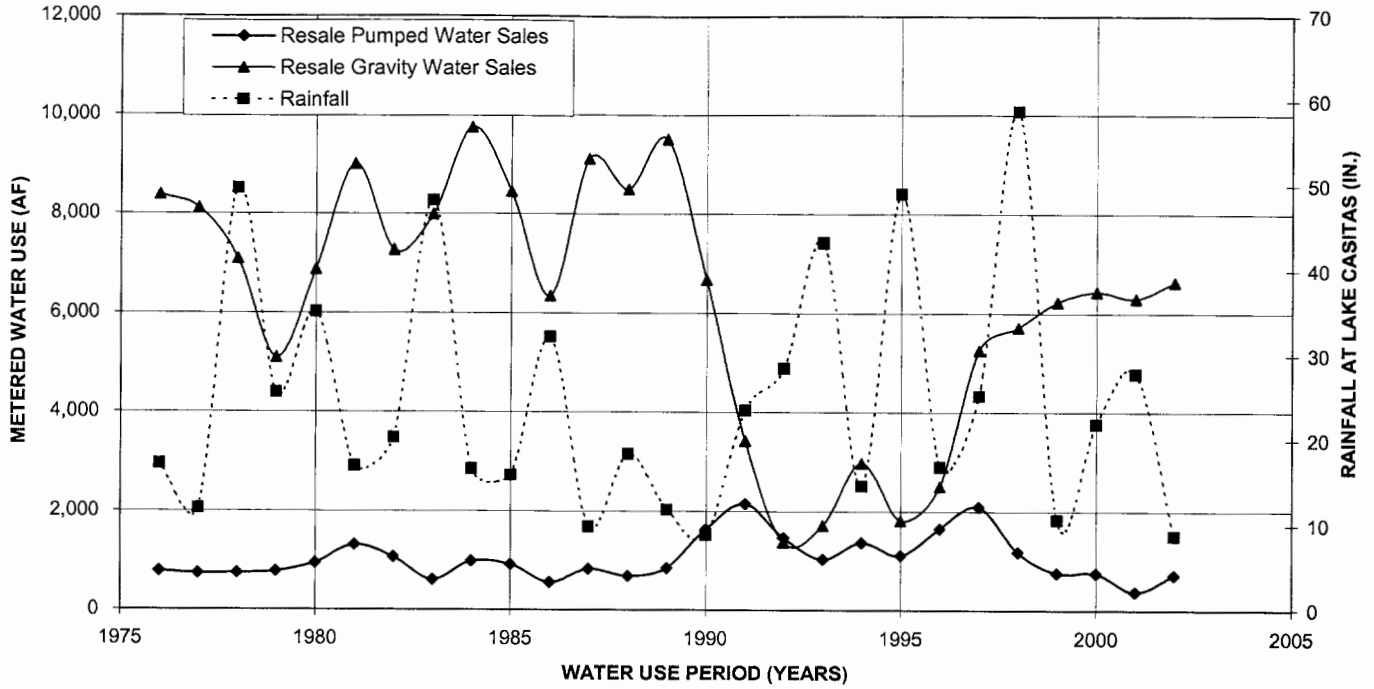



**Figure B5 - Historical Business, Industry and OtherWater Sales and Rainfall (WY 1976 to 2002)**

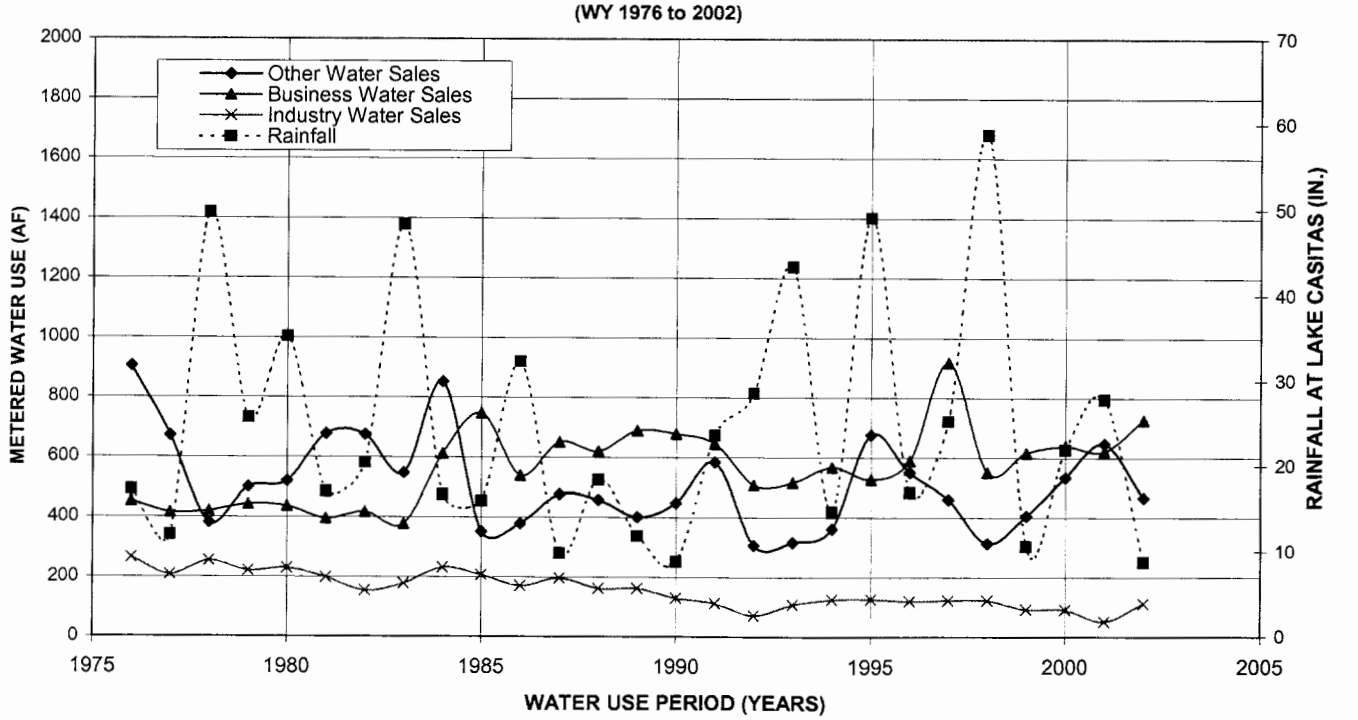
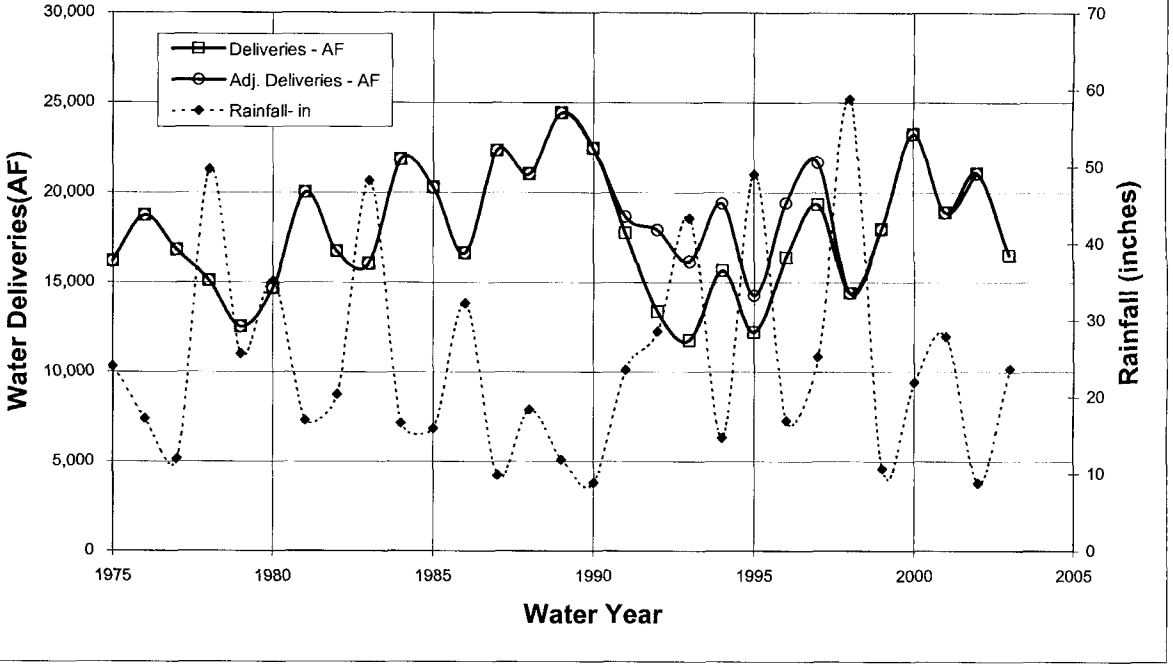


**Table B2 - Water Deliveries Adjustment - City of Ventura Agreement for Minimum 6,000 AF Annual Purchase**

| Water Year | Rainfall at LCRA (in.) | Deliveries to Main Conveyance (AF) | Water Sales to City of Ventura (AF) | Adjusted Deliveries for the City of Ventura (AF) | *Adjusted WY Deliveries to Main Conveyance (AF) |
|---|---|---|---|---|---|
| 1975 | 24.05 | 16,156 | | | 16,156 |
| 1976 | 17.23 | 18,725 | | | 18,725 |
| 1977 | 11.98 | 16,779 | | | 16,779 |
| 1978 | 49.66 | 15,080 | | | 15,080 |
| 1979 | 25.64 | 12,499 | | | 12,499 |
| 1980 | 35.15 | 14,651 | | | 14,651 |
| 1981 | 16.99 | 20,012 | | | 20,012 |
| 1982 | 20.34 | 16,702 | | | 16,702 |
| 1983 | 48.22 | 16,026 | | | 16,026 |
| 1984 | 16.63 | 21,832 | | | 21,832 |
| 1985 | 15.93 | 20,274 | 8,591 | | 20,274 |
| 1986 | 32.2 | 16,606 | 7,737 | | 16,606 |
| 1987 | 9.83 | 22,339 | 7,822 | | 22,339 |
| 1988 | 18.4 | 21,032 | 8,629 | | 21,032 |
| 1989 | 11.85 | 24,416 | 8,875 | | 24,416 |
| 1990 | 8.86 | 22,454 | 8,734 | | 22,454 |
| 1991 | 23.59 | 17,723 | 5,073 | 927 | 18,650 |
| 1992 | 28.53 | 13,318 | 1,408 | 4,592 | 17,910 |
| 1993 | 43.31 | 11,740 | 1,605 | 4,395 | 16,135 |
| 1994 | 14.69 | 15,640 | 2,263 | 3,737 | 19,377 |
| 1995 | 49.04 | 12,185 | 3,943 | 2,057 | 14,242 |
| 1996 | 16.91 | 16,356 | 2953 | 3,047 | 19,403 |
| 1997 | 25.27 | 19,301 | 3622 | 2,378 | 21,679 |
| 1998 | 58.78 | 14,372 | 7,189 | | 14,372 |
| 1999 | 10.67 | 17,942 | 6,030 | | 17,942 |
| 2000 | 21.94 | 23,229 | | | 23,229 |
| 2001 | 27.86 | 18,873 | | | 18,873 |
| 2002 | 8.77 | 21,066 | 6,042 | | 21,066 |
| 2003 | 23.69 | 16,476 | | | |

**Figure B6 - Adjustment to Annual Water Deliveries - City of Ventura Agreement**




*Adjusted deliveries includes the difference between the City of Ventura's actual purchase of Lake Casitas water and the requirement for the annual purchase by the City of 6,000 AF from Casitas. City purchases during the 1990's were reduced due to water treatment deficiencies and other. In those years where 6,000AF were not purchased, the additional purchase to get 6,000 AF was added to the actual deliveries and stated in the "Adjusted Deliveies to Main Conveyance column.

## Table B3 - Casitas Municipal Water District Deliveries - Water Year Ranking
## Rainfal Totals for Periods 1976 to 2002 and 1984 to 2002

| Rainfall Increments | Water Year | Period 1976 to 2002 Rainfall at LCRA (Inches) | Period 1976 to 2002 Deliveries to Main Conveyence System Water Year (AF) | Period 1984 to 2002 Rainfall at LCRA (in.) | Period 1984 to 2002 Deliveries to Main Conveyence System Water Year (AF) |
|---|---|---|---|---|---|
| | 2002 | 8.77 | 21,066 | 8.77 | 21,066 |
| 0-10 inches Rainfall | 1990 | 8.86 | 22,454 | 8.86 | 22,454 |
| | 1987 | 9.83 | 22,339 | 9.83 | 22,339 |
| | 1999 | 10.67 | 17,942 | 10.67 | 17,942 |
| | 1989 | 11.85 | 24,416 | 11.85 | 24,416 |
| | 1977 | 11.98 | 16,779 | | |
| | 1994 | 14.69 | 19,377 | 14.69 | 18,587 |
| | 1985 | 15.93 | 20,274 | 15.93 | 20,274 |
| 10-20 inches Rainfall | 1984 | 16.63 | 21,832 | 16.63 | 21,832 |
| | 1996 | 16.91 | 19,403 | 16.91 | 19,633 |
| | 1981 | 16.99 | 20,012 | | |
| | 1976 | 17.23 | 18,725 | | |
| | 1988 | 18.40 | 21,032 | 18.40 | 21,014 |
| | 1982 | 20.34 | 16,702 | | |
| | 2000 | 21.94 | 23,229 | 21.94 | 23,060 |
| | 1991 | 23.59 | 18,650 | 23.59 | 18,650 |
| | 2003 | 23.69 | 16,476 | 23.69 | 16,476 |
| 20-30 inches Rainfall | 1997 | 25.27 | 21,679 | 25.27 | 21,679 |
| | 1979 | 25.64 | 12,499 | | |
| | 2001 | 27.86 | 18,873 | 27.86 | 18,743 |
| | 1992 | 28.53 | 17,910 | 28.53 | 17,910 |
| | 1986 | 32.20 | 16,606 | 32.20 | 16,606 |
| 30-40 inches Rainfall | 1980 | 35.15 | 14,651 | | |
| | 1993 | 43.31 | 16,135 | 43.31 | 15,986 |
| 40-50 inches Rainfall | 1983 | 48.22 | 16,026 | | |
| | 1995 | 49.04 | 14,242 | 49.04 | 16,294 |
| | 1978 | 49.66 | 15,080 | | |
| > 50 inches Rainfall | 1998 | 58.78 | 14,372 | 58.78 | 14,372 |
| Average for 0-10 inches Rainfall | | 9.15 | 21,953 | 9.15 | 21,953 |
| Average for 10-20 inches Rainfall | | 15.60 | 19,681 | 15.01 | 20,528 |
| Average for 20-30 inches Rainfall | | 25.22 | 18,474 | 25.15 | 19,420 |
| Average for 30-40 inches Rainfall | | 33.68 | 15,629 | 32.20 | 16,606 |
| Average for 40-50 inches Rainfall | | 49.80 | 15,171 | 50.38 | 15,551 |
| Average for greater than 50 inches Rainfall | | 58.78 | 14,372 | 58.78 | 14,372 |

Note the adjustment for the City of Ventura Agreement is included in the deliveries for the period 1990-1997.

**Figure B7 - Average Water Deliveries based on 10-inch Rainfall Increments 1976 to 2002 period**

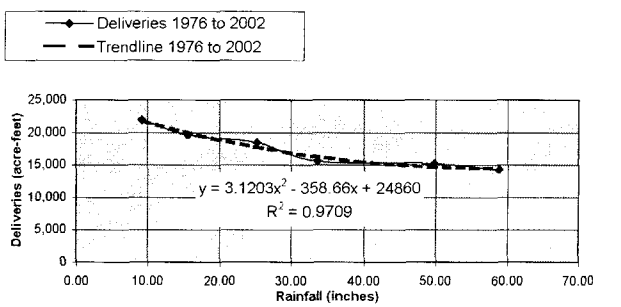
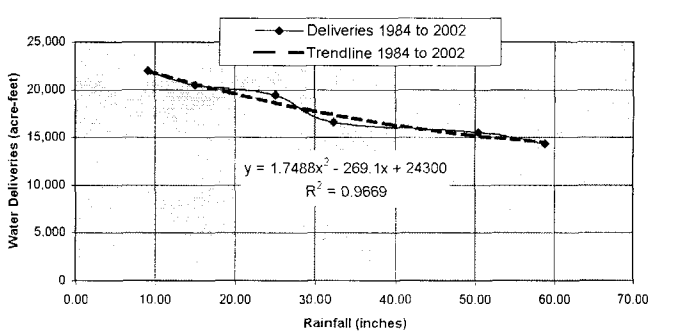



**Figure B8 - Average Water Deliveries based on 10-inch Rainfall Increments 1984 to 2002 Period**




## Table B4 - Trendline Comparison

| Rainfall (in.) | Deliveries 1976-2002 (AF) | Deliveries 1984-2002 (AF) |
|---|---|---|
| 10 | 21,585 | 21,784 |
| 20 | 18,935 | 19,618 |
| 30 | 16,908 | 17,801 |
| 40 | 15,506 | 16,334 |

## Table B5 - Dry Period Escalation of Deliveries

| Water Year | Rainfall at LCRA (Inches) | Deliveries to Main Conveyence System Water Year (AF) | Consec. Dry Year | Fig. 9 Trendline Applied to Rainfall (AF) | Fig. 10 Trendline Applied to Rainfall (AF) |
|---|---|---|---|---|---|
| 1984 | 16.63 | 21,832 | 0 | 20,309 | 20,309 |
| 1985 | 15.93 | 20,274 | 1 | 20,978 | 21,834 |
| 1986 | 32.20 | 16,606 | 0 | 17,448 | 17,448 |
| 1987 | 9.83 | 22,339 | 0 | 21,824 | 21,824 |
| 1988 | 18.40 | 21,032 | 1 | 20,462 | 21,318 |
| 1989 | 11.85 | 24,416 | 2 | 22,399 | 24,111 |
| 1990 | 8.86 | 22,454 | 3 | 23,616 | 26,184 |

**Figure B9 - Escalating Trend for 1984 to 1990 Dry Period**

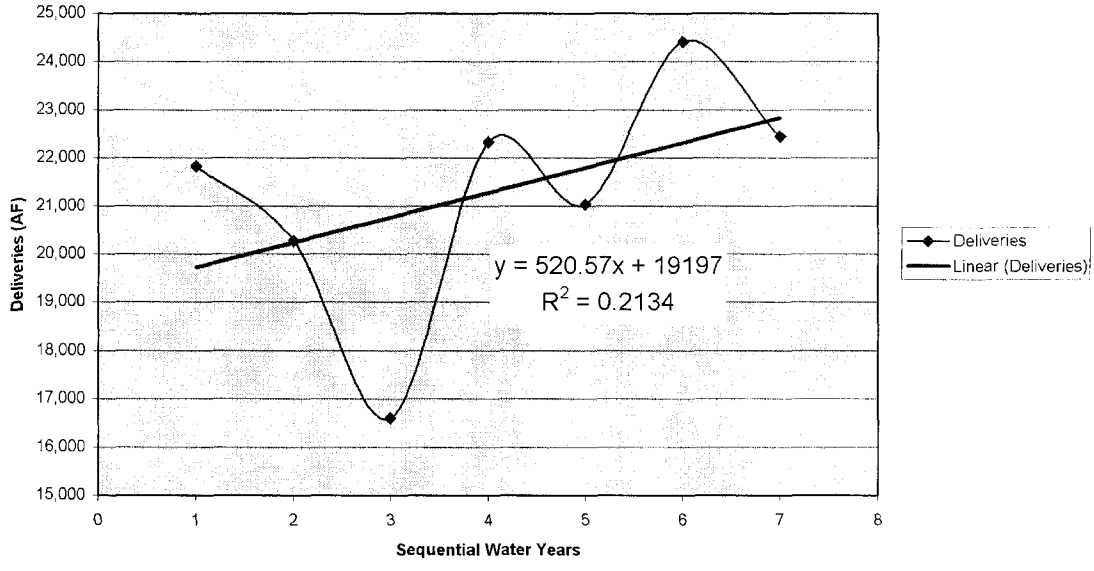



**Figure B10 - Escalating Trend for 1986 to 1990 Dry Period**

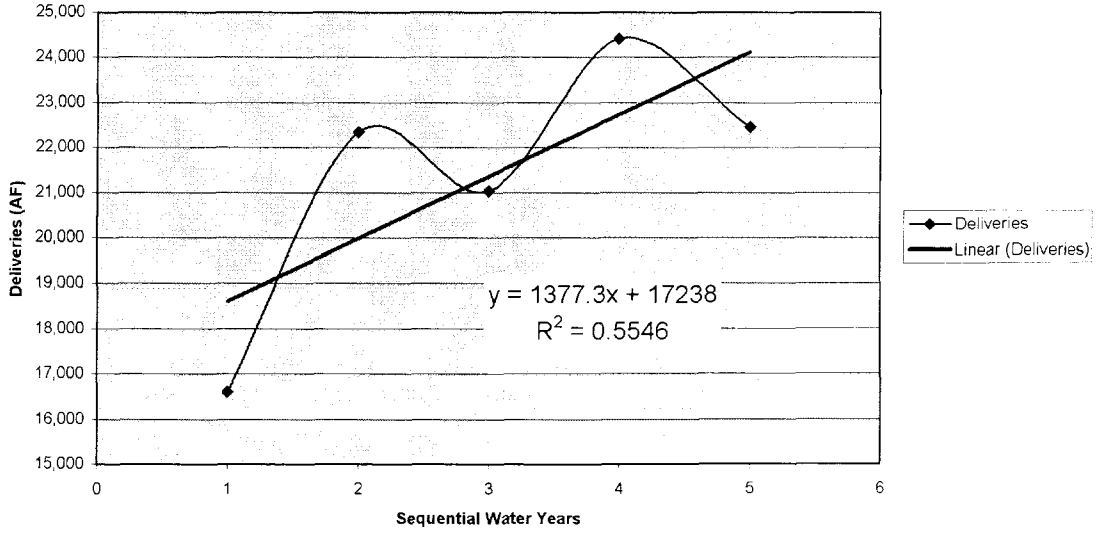
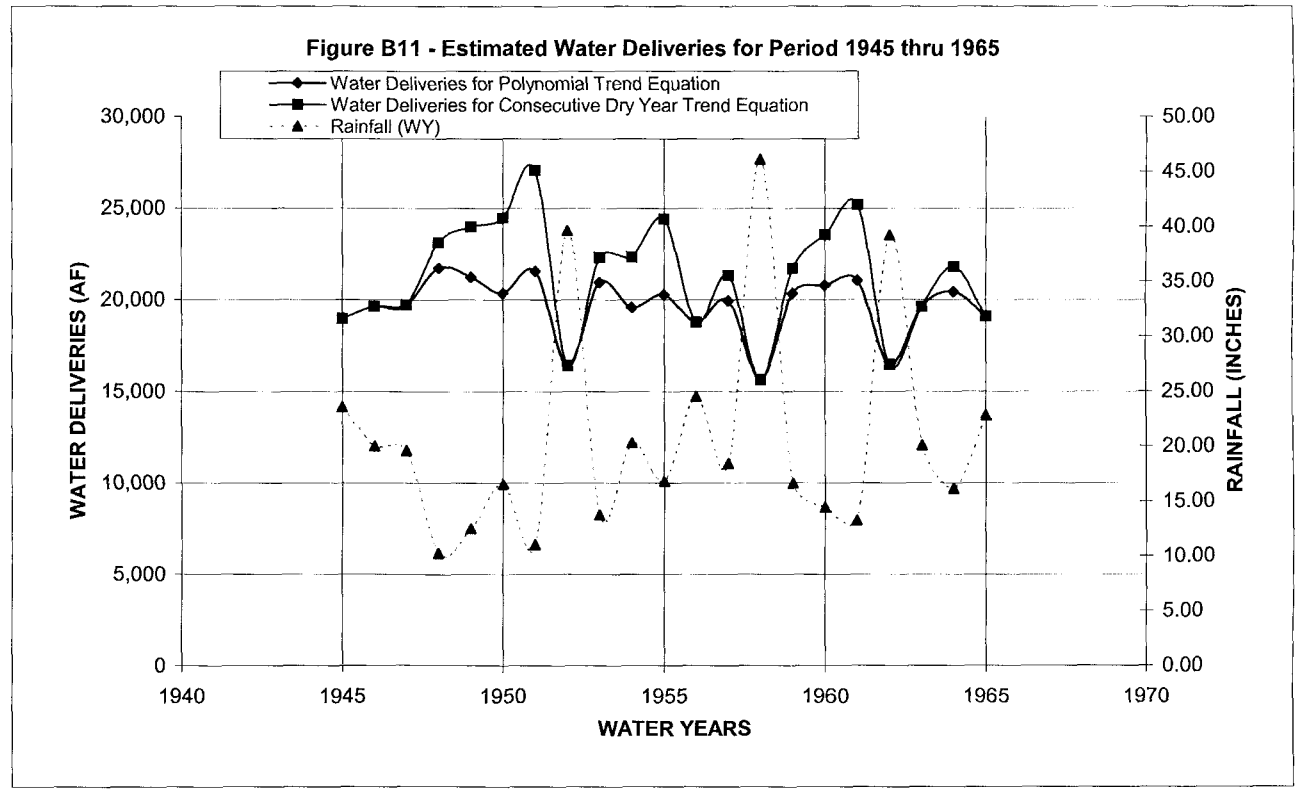


**Table B6 - Estimated Water Delivery Based on Polynomial Trend and Escalating Trend Equations for Period 1945 thru 1965**

| Year | Rainfall at LCRA (inches) | Consec. Dry Year Multiplier | Water Deliveries Polynomial Trend Eqn. (AF) | Water Deliveries Consec. Dry Year Trend Eqn (AF) |
|---|---|---|---|---|
| 1945 | 23.53 | | 18,936 | 18,936 |
| 1946 | 20.01 | | 19,616 | 19,616 |
| 1947 | 19.60 | 0 | 19,697 | 19,697 |
| 1948 | 10.25 | 1 | 21,725 | 23,102 |
| 1949 | 12.49 | 2 | 21,212 | 23,966 |
| 1950 | 16.54 | 3 | 20,328 | 24,459 |
| 1951 | 11.01 | 4 | 21,549 | 27,057 |
| 1952 | 39.63 | | 16,382 | 16,382 |
| 1953 | 13.76 | 1 | 20,928 | 22,305 |
| 1954 | 20.30 | 2 | 19,558 | 22,312 |
| 1955 | 16.81 | 3 | 20,271 | 24,402 |
| 1956 | 24.53 | | 18,751 | 18,751 |
| 1957 | 18.44 | 1 | 19,932 | 21,309 |
| 1958 | 46.11 | | 15,610 | 15,610 |
| 1959 | 16.62 | 1 | 20,311 | 21,688 |
| 1960 | 14.45 | 2 | 20,777 | 23,531 |
| 1961 | 13.24 | 3 | 21,044 | 25,175 |
| 1962 | 39.21 | | 16,437 | 16,437 |
| 1963 | 20.07 | | 19,604 | 19,604 |
| 1964 | 16.13 | 1 | 20,414 | 21,791 |
| 1965 | 22.83 | | 19,068 | 19,068 |
| Total | | | 412,150 | 445,198 |
| Average | 20.74 | | 19,626 | 21,200 |




Notes:

**Polynomial Trend Equation Delivery** - polynomial equation based on rainfall and historical water use data for the period of 1984 through 2002, with the adjustment of Resale Gravity during the 1991 through 1997 period remaining at a constant 6,000 AF demand throughout period of study. City would use alternate well supplies to supplement loss of Ventura River supply during the study period.

**Consecutive Dry Year Trend Equation Delivery** - use of polynomial trend equation to determine annual water demand, upon first year of less than 20 inches of rainfall add 1377 AF demand to the trend water demand. For the second consecutive year under 20 inches of rainfall, add 2 times 1377 AF to polynomial trend, for the third consecutive year, add three times 1377 AF to polynomial trend. Similar escalation applied to each of the following consecutive yuears of less than 20 inches of rainfall. Use of consecutive dry year multiplier to escalate delivery for each water year.

Deliveries Verification - apply the polynomial trend equation and the multiple dry year trend equation to the historical rainfall data for the period WY 1984 through WY 1990.
Compare the application of trend equations to historical water delivery data for the same period.

The multiple dry year trend equation data followed the actual delivery data, except for the 1990 water year. In 1990, extremely dry year, there may have been an additional reduction in deliveries to the City of Ventura (Resale Gravity) because of alternative supply use.
With only 8.86 inches of rainfall in the fourth year of a drought, deliveries would have been expected to rise above the previous year's deliveries.

Table B7 - Deliveries Verification

| WY | Rainfall (in.) | Actual (AF) | Polynomial Trend Eqn. (AF) | Dry Yr. Multiplier | Multiple Dry Year Trend Equation (AF) |
|---|---|---|---|---|---|
| 1984 | 16.63 | 21,823 | 20,309 | 1 | 21,686 |
| 1985 | 15.93 | 20,274 | 20,457 | 2 | 23,211 |
| 1986 | 32.2 | 16,606 | 17,448 | 0 | 17,448 |
| 1987 | 9.83 | 22,339 | 21,824 | 1 | 23,201 |
| 1988 | 18.4 | 21,033 | 19,941 | 2 | 22,695 |
| 1989 | 11.85 | 24,416 | 21,357 | 3 | 25,488 |
| 1990 | 8.86 | 22,454 | 22,053 | 4 | 27,561 |

**Figure B12 - Deliveries Verification - Conparison of Trend Equations and Actual Deliveries**

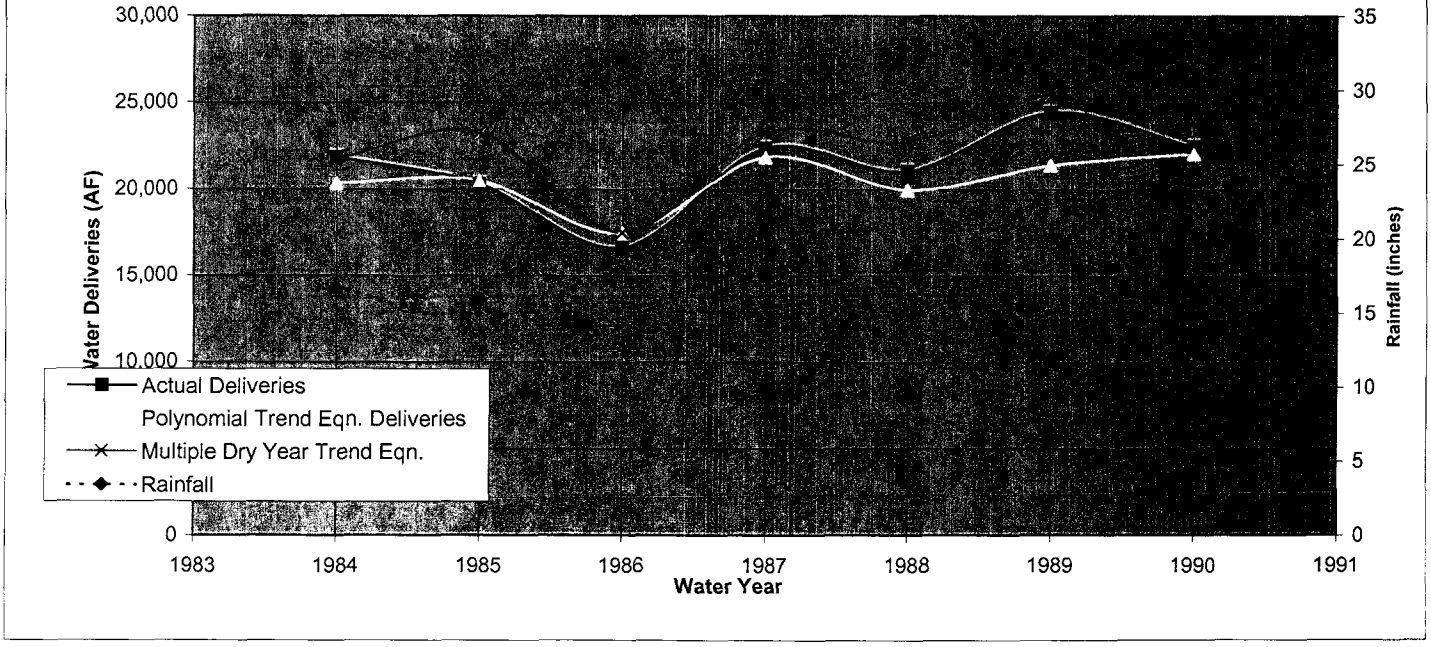
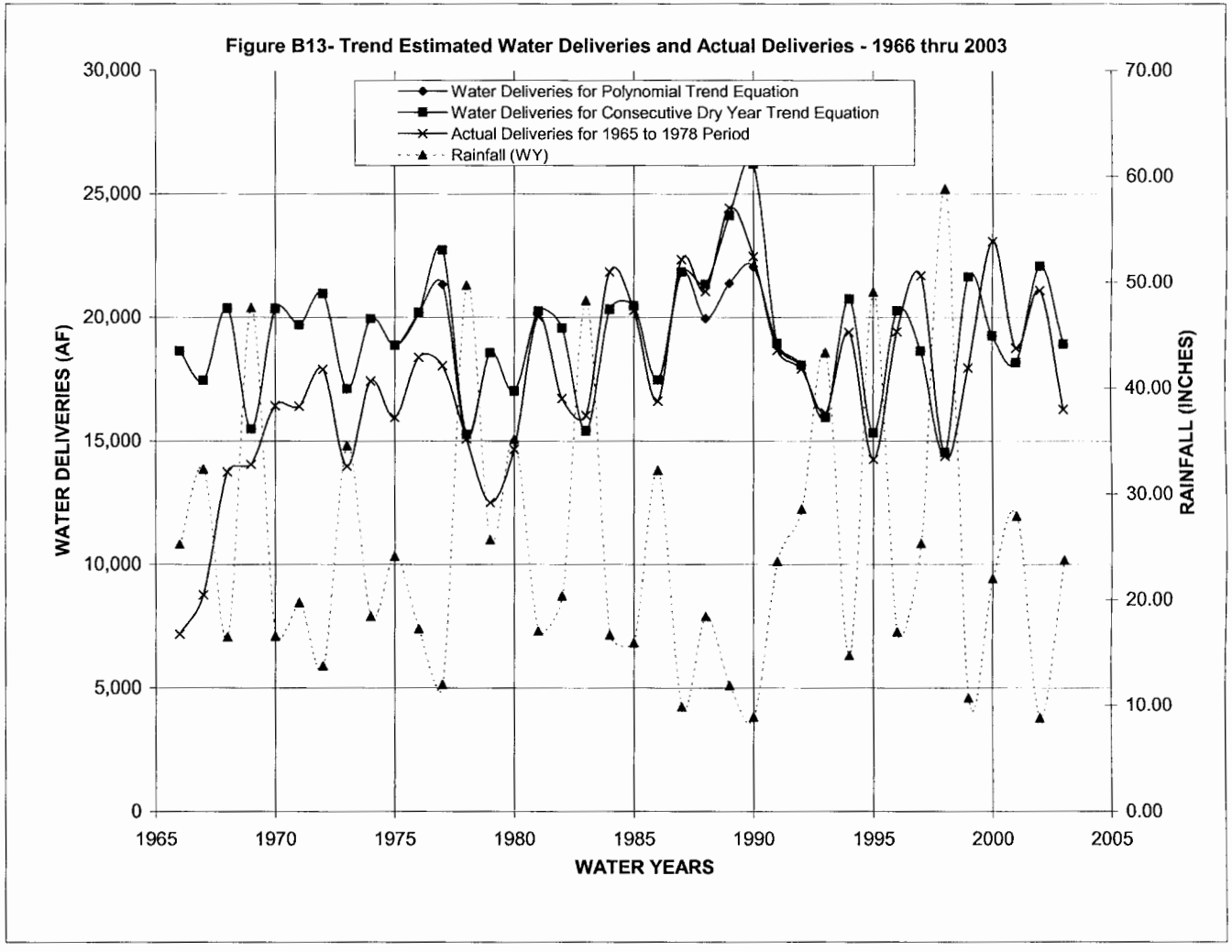


**Table B8 - Trend and Actual Water Delivery Comparison -1966 through 2003**

| Year | Rainfall at LCRA (inches) | Consec. Dry Year Multiplier | Water Deliveries Polynomial Trend Eqn. (AF) | Water Deliveries Consec. Dry Year Trend Eqn (AF) | Water Deliveries Actual (AF) |
|---|---|---|---|---|---|
| 1966 | 25.23 | | 18,624 | 18,624 | 7,162 |
| 1967 | 32.30 | | 17,433 | 17,433 | 8,759 |
| 1968 | 16.44 | | 20,349 | 20,349 | 13,729 |
| 1969 | 47.55 | | 15,458 | 15,458 | 14,040 |
| 1970 | 16.52 | | 20,332 | 20,332 | 16,417 |
| 1971 | 19.71 | | 19,675 | 19,675 | 16,392 |
| 1972 | 13.72 | | 20,937 | 20,937 | 17,878 |
| 1973 | 34.56 | | 17,089 | 17,089 | 13,963 |
| 1974 | 18.43 | | 19,934 | 19,934 | 17,400 |
| 1975 | 24.05 | | 18,840 | 18,840 | 15,937 |
| 1976 | 17.23 | 0 | 20,183 | 20,183 | 18,371 |
| 1977 | 11.98 | 1 | 21,327 | 22,704 | 18,035 |
| 1978 | 49.66 | | 15,249 | 15,249 | 15,080 |
| 1979 | 25.64 | | 18,550 | 18,550 | 12,499 |
| 1980 | 35.15 | | 17,002 | 17,002 | 14,651 |
| 1981 | 16.99 | | 20,233 | 20,233 | 20,012 |
| 1982 | 20.34 | | 19,550 | 19,550 | 16,702 |
| 1983 | 48.22 | | 15,390 | 15,390 | 16,026 |
| 1984 | 16.63 | | 20,309 | 20,309 | 21,832 |
| 1985 | 15.93 | | 20,457 | 20,457 | 20,274 |
| 1986 | 32.2 | | 17,448 | 17,448 | 16,606 |
| 1987 | 9.83 | 0 | 21,824 | 21,824 | 22,339 |
| 1988 | 18.4 | 1 | 19,941 | 21,318 | 21,032 |
| 1989 | 11.85 | 2 | 21,357 | 24,111 | 24,416 |
| 1990 | 8.86 | 3 | 22,053 | 26,184 | 22,454 |
| 1991 | 23.59 | | 18,925 | 18,925 | 18,650 |
| 1992 | 28.53 | | 18,046 | 18,046 | 17,910 |
| 1993 | 43.31 | | 15,926 | 15,926 | 16,135 |
| 1994 | 14.69 | | 20,724 | 20,724 | 19,377 |
| 1995 | 49.04 | | 15,309 | 15,309 | 14,242 |
| 1996 | 16.91 | | 20,250 | 20,250 | 19,403 |
| 1997 | 25.27 | | 18,617 | 18,617 | 21,679 |
| 1998 | 58.78 | | 14,525 | 14,525 | 14,372 |
| 1999 | 10.67 | | 21,628 | 21,628 | 17,942 |
| 2000 | 21.94 | | 19,238 | 19,238 | 23,060 |
| 2001 | 27.86 | | 18,160 | 18,160 | 18,743 |
| 2002 | 8.77 | | 22,074 | 22,074 | 21,066 |
| 2003 | 23.69 | | 18,906 | 18,906 | 16,278 |
| Total | | | 376,920 | 378,297 | 315,159 |
| Average | | | 18,879 | 18,985 | 14,859 |

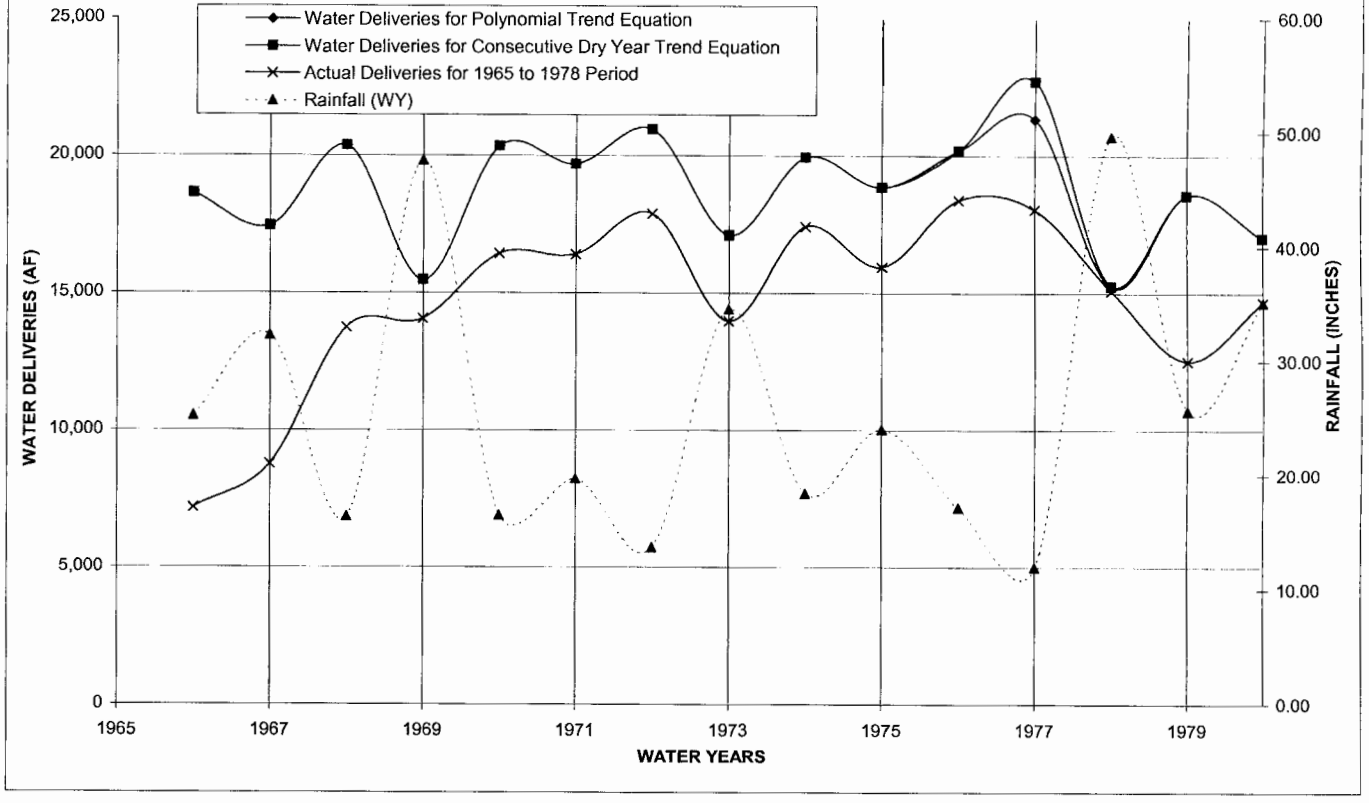



Note that the period 1978 thru 1980 was a rare multiple wet year occurrence that is not reflected in the trend equations. Therefore, the Estimated water deliveries are higher than Actual deliveries.

**Table B9 - Recovery Study Period - 1966 through 1980**

| Year | Rainfall at LCRA (inches) | Consec. Dry Year Multiplier | Water Deliveries Polynomial Trend Eqn. (AF) | Water Deliveries Consec. Dry Year Trend Eqn (AF) | Water Deliveries Actual (AF) |
|---|---|---|---|---|---|
| 1966 | 25.23 | | 18,624 | 18,624 | 7,162 |
| 1967 | 32.30 | | 17,433 | 17,433 | 8,759 |
| 1968 | 16.44 | | 20,349 | 20,349 | 13,729 |
| 1969 | 47.55 | | 15,458 | 15,458 | 14,040 |
| 1970 | 16.52 | | 20,332 | 20,332 | 16,417 |
| 1971 | 19.71 | | 19,675 | 19,675 | 16,392 |
| 1972 | 13.72 | | 20,937 | 20,937 | 17,878 |
| 1973 | 34.56 | | 17,089 | 17,089 | 13,963 |
| 1974 | 18.43 | | 19,934 | 19,934 | 17,400 |
| 1975 | 24.05 | | 18,840 | 18,840 | 15,937 |
| 1976 | 17.23 | 0 | 20,183 | 20,183 | 18,371 |
| 1977 | 11.98 | 1 | 21,327 | 22,704 | 18,035 |
| 1978 | 49.66 | | 15,249 | 15,249 | 15,080 |
| 1979 | 25.64 | | 18,550 | 18,550 | 12,499 |
| 1980 | 35.15 | | 17,002 | 17,002 | 14,651 |
| Total for 1966-80 | | | 280,981 | 282,358 | 220,313 |
| Avg. for 1966-80 | | | 18,732 | 18,824 | 14,688 |

**Figure B14- Estimated Water Deliveries for Recovery Period 1966 thru 1980**




Note that the period 1978 thru 1980 was a rare multiple wet year occurrence that is not reflected in the trend equations. Therefore, the Estimated water deliveries are higher than Actual deliveries.

# Appendix C - Casitas MWD Water Allocation Assignments

In the aftermath of the District's water shortage emergency of 1989, the District developed a method for implementing a reduction of water use during times of drought. The method considered priorities for water service, equality among similar types of customers, water rate incentives to keep water use from overwhelming available water supplies, and the manner in which the District would meet the additional demands for new water service. The concepts contained in the methods emerged as the District's Water Allocation Program.

The allocation program is a price-driven water conservation measure that can provide a base water use at a reasonable cost rate and escalates water cost rates once the base use (allocation) is exceeded by the customer. The application of the allocation program provides the customer the financial decision to pay more for their water use or conserve water. Without the application of the price-driven structure, the allocation has no bearing on limiting the actual water use that is applied by individual customers. It should be noted that, to date, the District has not implemented the price-driven allocation structure.

The District has assigned water allocations to various users types and individual customers. The initial water allocations were based on the water use from 1989, less twenty percent of that 1989 annual metered use. The District assigned individual allocation to each customer in the residential, business, industrial, resale, and interdepartmental classifications of service. The agricultural classification was assigned an overall allocation based on eighty percent of the total agricultural metered use of 1989. A summary of the allocation assignment is presented in the Standard Current Allocation Status, dated November 12, 1991.

In 1992, the District made available 300 acre-feet of water to be allocated in a limited and controlled manner. The additional water came from the reactivation of the Mira Monte Well and the installation of blending pipeline. The well had historically provided approximately 300 acre-feet to the Mira Monte Mutual Water Company, but use had been discontinued in the early 1980's because of elevated nitrate content in the well water. From 1992 to April 23, 2003, the District issued limited water allocations to new and existing customers.

In 2003, the District made 7 acre-feet of allocations available for assignment to new customers. The allocations came from the removal of the last fourteen homes from the Teague Memorial Watershed. Prior to April 2004, the District had assigned the 7 acre-feet.

In this review of the allocation status, it was found that tracking of the allocations is made difficult by the changes that occurred in tracking systems and personnel responsibilities. In comparing the initial 1991 allocation to the District's accounting records for total allocation as of May 3, 2004, there are several discrepancies in the data. This is an area that needs further attention by staff prior to the application of the allocation program stages. The comparison for the individual user types is presented in Table C1. There are

three distinct user types in Table C1 that have extreme changes in allocations from 1991 to present. Also presented in Table C1 is the fiscal year 2002-2003 water use data for each user type. This data provides an indication of the level of use and a comparison to the allocation assignment for each user type.

The first user type is the Agriculture-Domestic (AD). AD accounts are the agricultural accounts that also have a residence on the same property. These customers are billed at the residential rate for the base amount of water use and billed at the agricultural rate for all water use above the base usage. In 1991, this user type was considered a part of the agricultural user type, and included in the 8,880 acre-foot allocation for the agricultural user type. The District's Administration records does separate the AD from the Agricultural (AG) user type, but the listed totals from the combination of the two types does not equal the initial 1991 allocation assignment for AG. The District's Administration records should reflect the 8,880 acre-feet of original allocation assignment and any additional allocation assignments that occurred after1992.

The second noted change is in the Interdepartmental (DI) user type category. This particular category is an accounting of the District's metered water use at the Lake Casitas Recreation Area, flushing points, main office, and other District facilities. The use number for 1989 may have also included drought water transfers to the City of Santa Barbara. A recent review of the accounting of the calendar year 1989 metered use for Interdepartmental is 190.35 acre-feet, not the 354 acre-feet expressed in the 1991 "Standard Current Allocation Status". The allocation assignment appears to need further consideration, given the discrepancy between the 1991 allocation assignment and current District records.

The third change is in the Residential allocation assignment, where allocations have increased by 472 acre-feet since 1991. This change appears to be high and a verification of the change is recommended. The change of 472 acre-feet could mean that as many as 1004 minimum allocation changes would have to been made over that last 12 years. This number appears to be high and should be reviewed further by staff. One specific change that did occurred in the residential allocation block was the change of the Taormina Community's single 0.47 allocation into 73 individual 0.47 allocations. This change occurred when the District took over the Taormina service area and the service moved from a single master water meter, with one 0.47 acre-foot allocation, to 73 single water meters at each residence, each with an individual 0.47 allocation.

In summary, it appears that there is a need for the District to perform a detailed accounting of the allocation assignments.

STANDARD
CURRENT ALLOCATION
STATUS

November 12, 1991

| Customer Type | 1989 | October 1 Allocation | Current Allocation |
|---|---|---|---|
| Agriculture | 11,096 | 10,081 (-9) | 10,081/8,880* |
| Residential | 1,548 | 1,906 (+23)** | 1,238 |
| Business | 718 | 575 (-20) | 575 |
| Industrial | 160 | 130 (-20) | 130 |
| Interdepartmental | 354 | 282 (-20) | 282 |
| Others | 213 | 170 (-20) | 170 |
| RESALE ~~Residential~~ Pumped | 953 | 763 (-20) | 763 |
| Gravity RESALE | 10,066 | 6,610 (-35) | 7,090 |
| Total | 25,110 | 20,518 | 20,330/19,129 |
| Losses | 1,158 | 1,315 | 1,315 |
| Total Releases | 26,268 | 21,833 | 21,645/20,444 |
| Safe Yield | 21,920 | 21,920 | 21,920/21,920 |
| Remaining | <4,348> | 87 | 275/ 1,476 |

Issues:

* Small trees on Agricultural properties
** New Residential growth due to pre-April 11,1990 will serves

All values are in Acre Feet

## Table C1 - District Allocation Assignments

| | | ALLOCATION ASSIGNMENT | | | WATER USE | |
|---|---|---|---|---|---|---|
| | | | District's Records | | | |
| | User Code | 1991 Allocation Assignment (AF) | 5/3/2004 Total Allocation (AF) | Allocation Change 1991-2004 (AF) | CY 1989 (AF) | FY 2002-03 (AF) |
| AD | Agriculture Domestic | 0 | 17 | 17 | | 4,597 |
| AG | Agriculture | 8880 | 604 | -8,276 | 11,096 | 3,378 |
| C | Business | 575 | 605 | 30 | 718 | 681 |
| DI | Interdepartmental | 282 | 46 | -236 | 354 | 173 |
| F | Fire | 0 | 0 | 0 | 0 | 0 |
| HY | Hydrants | 0 | 0 | 0 | 0 | 0 |
| I | Industrial | 130 | 146 | 16 | 160 | 58 |
| OT | Other | 170 | 192 | 22 | 213 | 233 |
| R | Residential | 1238 | 1,710 | 472 | 1,548 | 1,648 |
| RS | Resale | 7853 | 7,717 | -136 | 11,019 | 7,084 |
| TE | Temporary | 0 | 0 | 0 | 0 | 18 |
| | Sub-Total-------> | 19,128 | 11,037 | -8,091 | 25,108 | 17,870 |
| | Mira Monte Well Allocation | 300 | | | | |
| | **Total Allocations** | **19,428** | | | | |

Note the "Water Use" is the summation of all individual metered water uses for each user types served by the District.

**CASITAS** Municipal Water District

INTER-DEPARTMENTAL
MEMORANDUM

DATE: June 6, 1994

TO: General Manager

FROM: Conservation Supervisor

SUBJECT: Allocation Totals - Mira Monte Well

Attached to this memo is a list of customers who have purchased allocations from the water made available by the Mira Monte well project. The first list sorts and totals the allocations by customer classification. The second list sorts and totals the allocations by agency.

# ALLOCATION TOTALS - MIRA MONTE WELL

| Class (Type) | Last Name | A.F. Allocation |
|---|---|---|
| Agriculture | Hudson | 2.50 |
| | Roll | 10.0 |
| Total: | | 12.50 |
| Business | Cuccia | 1.30 |
| | Farmont Corp. | 2.98 |
| | Happy Valley Foundation | 0.99 |
| | Happy Valley School | 4.00 |
| | Ojai Valley School | 6.50 |
| Total: | | 15.77 |
| Residential | Droney | 0.47 |
| | Erickson (John) | 0.47 |
| | Farmont Corp. | 1.98 |
| | | 1.98 |
| | | 1.98 |
| | | 1.98 |
| | | 1.98 |
| | | 1.98 |
| | Fruchey | 0.99 |
| | Gorman | 1.98 |
| | Habitat for humanity | 0.47 |
| | Hart | 0.47 |
| | Humphrey | 0.47 |
| | Klein | 0.99 |
| | Kreitzers | 0.99 |
| | Mangum | 0.99 |
| | Marietta | 0.99 |
| | Miles | 0.47 |
| | Necochea | 0.99 |
| | Oquist | 0.99 |
| | Patterson | 0.47 |
| | Peets | 0.47 |
| | Prain | 0.47 |
| | Reyes | 0.99 |
| | Richardson (Gilbert) | 0.47 |
| | Robinson | 0.47 |
| | Ross (Hamm-J) | 2.00 |
| | Sanders | 0.47 |
| | Sherman | 0.47 |
| | Tenpenny | 0.47 |
| | Vork | 0.47 |
| | Walbridge | 0.99 |
| | Warren | 0.47 |
| | West | 0.47 |
| Total: | | 32.76 |
| Total: | | 61.03 |

| Agency | Last Name | Class (Type) | A.F. Allocation |
|---|---|---|---|
| asitas | Cuccia | Business | 1.30 |
| | Erickson (John) | Residential | 0.47 |
| | Fairmont Corp. | Residential | 1.98 |
| | | Residential | 1.98 |
| | | Business | 2.98 |
| | | Residential | 1.98 |
| | | Residential | 1.98 |
| | | Residential | 1.98 |
| | | Residential | 1.98 |
| | Fruchey | Residential | 0.99 |
| | Gorman | Residential | 1.98 |
| | Habitat for humanity | Residential | 0.47 |
| | Happy Valley Foundation | Business | 0.99 |
| | Happy Valley School | Business | 4.00 |
| | Hart | Residential | 0.47 |
| | Humphrey | Residential | 0.47 |
| | Klein | Residential | 0.99 |
| | Marietta | Residential | 0.99 |
| | Miles | Residential | 0.47 |
| | Necochea | Residential | 0.99 |
| | Ojai Valley School | Business | 6.50 |
| | Patterson | Residential | 0.47 |
| | Peets | Residential | 0.47 |
| | Reyes | Residential | 0.99 |
| | Richardson (Gilbert) | Residential | 0.47 |
| | Robinson | Residential | 0.47 |
| | Roll | Agriculture | 10.0 |
| | Ross (Hamm-J) | Residential | 2.00 |
| | Sanders | Residential | 0.47 |
| | Sherman | Residential | 0.47 |
| | Vork | Residential | 0.47 |
| | Warren | Residential | 0.47 |
| Total: | | | 52.69 |
| Meiners Oaks | Kreitzers | Residential | 0.99 |
| | Mangum | Residential | 0.99 |
| | Oquist | Residential | 0.99 |
| | Prain | Residential | 0.47 |
| | Tenpenny | Residential | 0.47 |
| | Walbridge | Residential | 0.99 |
| Total: | | | 4.90 |
| Rincon Road and Water | Hudson | Agriculture | 2.50 |
| Total: | | | 2.50 |
| Senior Canyon | West | Residential | 0.47 |
| Total: | | | 0.47 |
| Taormina | Droney | Residential | 0.47 |
| Total: | | | 0.47 |
| tal: | | | 61.03 |

Mira Monte Well Allocations
Totals as of June 1994

| Last Name | Class (Type) | APN | A.F. Allocation |
|---|---|---|---|
| Cuccia | Business | 034-0-140-165, 295, 405 | 1.30 |
| Droney | Residential | 017-0-342-045 | 0.47 |
| Erickson (John) | Residential | 060-0-420-295 | 0.47 |
| Farmont Corp. | Business | 011-0-052-170 | 2.98 |
| | Residential | 011-0-052-180 | 1.98 |
| | Residential | 011-0-052-220 | 1.98 |
| | Residential | 011-0-260-010 | 1.98 |
| | Residential | 011-0-260-020 | 1.98 |
| | Residential | 011-0-260-030 | 1.98 |
| | Residential | 011-0-260-040 | 1.98 |
| Fruchey | Residential | 034-0-010-620 | 0.99 |
| Gorman | Residential | 011-0-220-285 | 1.98 |
| Habitat for humanity | Residential | 061-0-034-245 | 0.47 |
| Happy Valley Foundation | Business | 030-0-130-045, 105 | 0.99 |
| Happy Valley School | Business | 030-130-045, 105 | 4.00 |
| Hart | Residential | 060-0-072-325 | 0.47 |
| Hudson | Agriculture | 008-0-180-505 | 2.50 |
| Humphrey | Residential | 061-0-250-095 | 0.47 |
| Klein | Residential | 028-0-112-10, 13 | 0.99 |
| Kreitzers | Residential | 010-0-050-130 | 0.99 |
| langum | Residential | 018-0-150-195 | 0.99 |
| Marietta | Residential | 061-0-150-030, 270 | 0.99 |
| Miles | Residential | 061-0-013-120 | 0.47 |
| Necochea | Residential | 061-0-055-255 | 0.99 |
| Ojai Valley School | Business | 030-0-020-075 | 6.50 |
| Oquist | Residential | ? | 0.99 |
| Patterson | Residential | 061-0-012-225 | 0.47 |
| Peets | Residential | 061-0-042-085 | 0.47 |
| Prain | Residential | 017-0-121-270 | 0.47 |
| Reyes | Residential | 030-0-220-275 | 0.99 |
| Richardson (Gilbert) | Residential | 060-0-390-055 | 0.47 |
| Robinson | Residential | 030-0-070-105 | 0.47 |
| Roll | Agriculture | ? | 10.0 |
| Ross (Hamm-J) | Residential | 035-240-11, 15, 16 | 2.00 |
| Sanders | Residential | 061-0-043-08 | 0.47 |
| Sherman | Residential | 061-0-140-055 | 0.47 |
| Tenpenny | Residential | 017-0-061-250 | 0.47 |

Mira Monte Well Allocations
Totals as of June 1994

| Last Name | Class (Type) | APN | A.F. Allocation |
|---|---|---|---|
| Vork | Residential | 061-0-055-565 | 0.47 |
| Walbridge | Residential | 017-0-180-580 | 0.99 |
| Warren | Residential | 061-0-055-605 | 0.47 |
| West | Residential | 029-0-020-080 | 0.47 |

# Appendix D – System Losses

There have been several terms used in the past to describe the rate of water consumption. The terms most commonly used are "Safe Yield", "Deliveries to Main Conveyance System", and "Metered Water Sales". Quite often, these terms have been used in an interchangeable fashion without the clear understanding of the difference between these terms and their relationships. The following are definitions for each term.

**Safe Yield** – defined by Meinzer (1) as "the rate at which water can be withdrawn from an aquifer for human use without depleting the supply to such an extent that withdrawal at this rate is harmful to the aquifer itself, or to the quality of the water, or is no longer economically feasible." The concept of safe yield has received considerable criticism and there has been suggestion that the term be abandoned because of its frequent interpretation as a permanent limitation on the permissible withdrawal (2).

Safe yield must be recognized as a quantity determined for a set of controlling conditions and subject to change as a result of changing economic or physical conditions (3). The controlling conditions in determining the safe yield may include precipitation, evaporation, water quality, inflows and outflows over the term of a selected period of time.

The safe yield quantity is a theoretical constant value that is derived from stochastic evaluation of the hydrology. The assumption that is made in stochastic hydrology methods is that the time-hydrology sequence for a known period will repeat itself with some degree of reliability.

**Deliveries to Main Conveyance System** – The Casitas Municipal Water District continuously measures the rate of water delivered from Casitas Dam to the start of the distribution system. The delivery measurements are performed through the use of accurate flow tube sensors that are located at the discharge side of each filter vessel. Each flow tube sensor is regularly calibrated for accuracy. The collected flow tube data is transformed to quantities (acre-feet) of water delivered from Lake Casitas, each and every day of the year.

For the purposes of this study, the terms "Water Use" and "Deliveries" are synonymous with the term "deliveries to main conveyance system". The study is referencing the water that is directly taken from the Lake Casitas supply.

**Metered Water Sales** – Metered water sales is the summation of all individual water service meters in the water distribution and piping system. In the Casitas Municipal Water District water distribution system, at each point of connection by the consumer, the District has installed individual water meters to continuously measure each consumer's water use. Each meter in the District is calibrated and read bi-monthly to assure operation of the meters. It should be noted that meters can stop reading flow due to a mechanical malfunction, but rarely do meters record a higher value than the actual usage.

**Differences between Terms**. From the definitions, it is established that the value for safe yield is developed through stochastic hydrology evaluations and it is a theoretical value, and that the

deliveries (or water use) and metered water sales are developed through continuous monitoring of actual annual water consumption.

The difference between deliveries and metered water sales values is commonly referred to as a "system loss". In any water distribution system, there are several factors that can collectively attribute to the loss of water. These factors include, but are not limited to pipeline and service lateral leaks, pump packing leakage, meter failures and/or loss of meter accuracy, accounting errors, and water theft. Even slight errors in meter calibrations or accounting can magnify the losses that are calculated for an entire year.

In Table D1 are the deliveries and metered water sales recorded by the Casitas Municipal Water District for the period of 1976 through 2002, and the system losses that are a result of the difference between the deliveries and metered water sales. It is noted that with the exception of 1992, 1996, and 2000, the loss of water in the Casitas distribution system is generally less than ten percent of the annual deliveries to the system. Given that the higher loss years were not associated with disaster years and loss of pipelines during storm events, the loss is likely attributed to calibration and/or accounting errors.

The District has maintained an annual evaluation of the distribution system to assure that the pipelines are sound and as leak-free as possible. Indeed, the pipelines have been maintained in good condition. There have been occasional pipeline and service line leaks, followed by immediate response to repair by District staff.

1. *Meinzer, O.E.: Outline of Groundwater Hydrology, U.S. Geological Survey Water-Supply Pap. 494, 1923.*
2. *Kazmann, R.G.: "Safe Yield" in Ground-WaterDevelopment, Reality or Illusion?, J. Irrigation Drain. Div. ASCE, vol. 82, November 1956*; see also discussion by *Mcguinness, Ferris, and Kramsky, in ibid., vol 82, May 1957.*
3. *R. K. Linsley, Jr., M. A. Kohler, J.L.H. Paulhus:* Hydrology for Engineer, *3rd ed., McGraw-Hill Book Company, page 195.*

## Table D1 - Water Deliveries, Metered Use and System Losses

| Water Year | Deliveries to Main Conveyance System<br>Water Year (AF) | Water Sales in System<br>Water Year (AF) | System Losses<br>Water Year (AF) | % Loss |
|---|---|---|---|---|
| 1976 | 18,725 | 17,244 | 1,481 | 8% |
| 1977 | 16,779 | 17,096 | (317) | -2% |
| 1978 | 15,060 | 14,661 | 399 | 3% |
| 1979 | 12,499 | 13,005 | (506) | -4% |
| 1980 | 14,651 | 15,434 | (783) | -5% |
| 1981 | 20,012 | 19,184 | 828 | 4% |
| 1982 | 16,702 | 16,106 | 596 | 4% |
| 1983 | 16,026 | 14,664 | 1,362 | 8% |
| 1984 | 21,832 | 22,281 | (449) | -2% |
| 1985 | 20,274 | 20,051 | 223 | 1% |
| 1986 | 16,606 | 16,058 | 548 | 3% |
| 1987 | 22,339 | 22,359 | (20) | 0% |
| 1988 | 21,032 | 20,326 | 706 | 3% |
| 1989 | 24,416 | 23,589 | 827 | 3% |
| 1990 | 22,454 | 20,743 | 1,711 | 8% |
| 1991 | 17,723 | 16,255 | 1,468 | 8% |
| 1992 | 13,318 | 11,687 | 1,631 | 12% |
| 1993 | 11,740 | 10,703 | 1,037 | 9% |
| 1994 | 15,640 | 14,172 | 1,468 | 9% |
| 1995 | 12,185 | 11,467 | 718 | 6% |
| 1996 | 16,356 | 13,715 | 2,641 | 16% |
| 1997 | 19,301 | 17,822 | 1,479 | 8% |
| 1998 | 14,372 | 14,533 | (161) | -1% |
| 1999 | 17,942 | 17,111 | 831 | 5% |
| 2000 | 23,229 | 19,389 | 3,840 | 17% |
| 2001 | 18,873 | 17,152 | 1,721 | 9% |
| 2002 | 21,066 | 19,365 | 1,701 | 8% |
| Average | 17,820 | 16,895 | 925 | |
| Maximum | 24,416 | 23,589 | 3,840 | |
| Minimum | 11,740 | 10,703 | (783) | |

Average losses 1976 to 1990 440
Average losses 1999 to 2002 2,023

Note that (##) is a system gain.

# Appendix E - Peer Reviews

Upon completion of the initial draft of the Casitas Water Supply and Use Report, the District contracted with Entrix and MBK Engineers to perform an independent peer reviews and evaluations of the report. A written peer review has been prepared by each contractor and submitted to the District. Copies of each peer review are included in this section of the report. The District has considered each peer review and provided a written statement regarding the peer review issues. The written statement on each of the review issues is included in this section of the report. In some cases the comments have resulted in changes to the report, while other comments may have been further clarified or discounted by the District.

# District Comment to the Peer Reviews

The District has reviewed each and every recommendation and comment contained in each peer review. The following are the District's actions and responses to each of the issues that were developed from the two peer reviews:

## MBK Engineers

General

1) Monthly depletion factor allows Robles inflow to become a negative number, considering limiting to a minimum of zero.

   *District comment - The negative inflows are a result of the formulas in developing the river hydrology, influenced by the assumptions made for the flow accretion above Robles Diversion Dam. The negative numbers result when no flow conditions are present above Robles Diversion Dam, generally during the months of July thru October. The range from –0.1 to -0.2 cfs, with one maximum one-day negative number of –3.0 cfs noted for the 1966-1980 period. The occurrence of a negative number in the model is infrequent and occurs during periods that do not influence the quantity of water available for diversion to Lake Casitas. Agreed that the minimum flow should be no less than zero, but minor changes to the model suggested by MBK does not impact the resulting numbers for available supply at Lake Casitas. No adjustments to these numbers have been made by the District.*

2) Recommend using monthly evaporation rate applied to end of month lake surface area, more accurately reflect evaporation from Lake Casitas for varying storage levels.

   *District comment - For consistency purposes, the District used the evaporation rates from the D-20 study. Agreed that the evaporation rate from a full reservoir is different than that from a near empty reservoir, but the evaporation rates from the reservoir in the D-20 study and a similar reservoir levels in each of the scenarios should be comparable and very near equal. Minor adjustments as suggested will not result in any significant changes to the trends or lake storage values. No adjustments to these numbers are made by the District.*

Report

1) Recommend adding a table contents to the report.

   *District comment - A Table of Contents will be added to the final report.*

2) Recommend clarifying the synthesis of Matilija Creek hydrology.

   *District comment – the final report shall include the reasoning and logic behind the synthesis of the Matilija Creek hydrology.*

3) Explain more thoroughly the flow accretion methodology, identifying that these factors are multipliers.

   *District comment – The method for accretion is explained in Appendix A. Add to the description of accretion that the water gained is from minor watersheds located between the USGS gaging stations and Robles Diversion Dam. Clarification of many*

*factors in this report is gained by showing the location of the gaging stations on the maps.*

4) Recommend showing locations of each gaging station on the map.
   *District comment – The map will be revised to show the locations of the key gaging stations in the upper Matilija Creek and Ventura River. The description of these locations will also assist in the explanation of the synthesis of Matilija Creek hydrology. The final report will have the locations of the Matilija Creek stations.*

5) Recommend renaming the column heading currently labeled as "Matilija Gages" to the more accurate "Matilija Creek below North Fork Matilija Creek".
   *District comment – Rather than confusing the report with the naming of yet a fourth labeled station (non-existent station) being generated from the synthesis of Matilija Creek hydrology, the report will describe the resulting synthesis of the Matilija Creek hydrology as combining to "Matilija Gages". The use of the term "Matilija Gages" is further clarified by the added discussion regarding the synthesis of the Matilija Creek hydrology. The heading on the tables will remain the same.*

6) On graphs A19 and A20, consider eliminating the symbols on the graph lines. Difficult to differentiate lines.
   *District Comment – the lines in Figures A5 and A6 have been revised, minus the line symbols. The final report will contain the revised figures.*

---

**Entrix**

Overall Approach

1) Need to explain the differences in Tables A1 to A4 start and end points of the drought period and recovery period, and why they differ for each scenario.
   *District Comment – The Peer Reviewer is comparing the start-end points of the D-20 study with the start-end points used in the present analysis. The approach taken in the report was to start the hydrology with the beginning of a water year, October 1945 as in the start of the drought cycle, and end the drought cycle at the end of a water year, September 30, 1965. The D-20 report hydrology sequence started in May 1944 with a full level of storage in Lake Casitas. During the period of May 1944 to October 1944 there were no diversion or rainfall events that would have, under the different scenarios of Robles operating criteria and/or loss of Matilija Dam, caused a change in the rate of decline in Lake Casitas storage levels. The initial starting level of Lake Casitas storage begins with the same storage for October 1, 1994 contained in the D-20 study.*

   *The storage volumes for Lake Casitas stated in each of the tables is a water year-end value. So by varying the scenario with Robles Operating criteria and with without*

*Matilija Dam), the water year-end value will vary. The District believes that the period assignment made in the present analysis is appropriate and does not skew the resultant safe yield estimates.*

2) Include more information on how he Mira Monte well supply was applied to the supply numbers.

*District comment – Under the sections "Safe Yield: Drought Period" and "Yield: Recovery Period", the application of the Mira Monte Well supply is described as having been included in the safe yield estimate. The rate of application is stated as being 300 acre-feet per year, constant rate for each month. No further explanation is provided in the final report.*

3) Recovery period, if a shorter recovery period occurs, a lower safe yield value than presented would be required to recover the lake in the shorter time. The effect of the length of the recovery period on predicted safe yield could be addressed in a sensitivity analysis.

*District Comment – The analysis performed by the District considered the hydrology and water use patterns that are likely to occur during the recovery period under each scenario for Robles and Matilija Dam and by these occurrences, running the sequence out until full storage capacity is reached at Casitas Dam. The risk is in the event that the recovery cycle is not prolonged to the full term necessary to restore Lake Casitas storage capacity, i.e. the drought cycle restarts in year 8 of the recovery period instead of starting in year 15. This should be a key point for further consideration, but not a part of this analysis.*

Water Supply

1) Useful to provide a description of the methods used to derive the factors and assumptions used in both the D20 study and this analysis.

*District Comment – The methods for each of the factors is outlined in Appendix A. The description of development of the factors would detract from the actual purpose of the analysis, therefore the District has provided the factors and assumptions without the description of the factor development.*

Other

2) Minimum Pool – District should monitor conditions at various stages in lake Casitas and use this data to assist in managing potential effects in the future should concerns arise.

*District Comment – So noted. As later discussed with the reviewer, a definite outcome of this analysis should be the heightened awareness of the impacts of lowering lake storage and the need to monitor and plan for the eventuality of these occurrence and minimize the impacts to the water users.*

3) Water Loss at Robles associated with the fish screens – sediment at base of screens is most likely problem that will reduce efficiency of the screens. Loss of max. 1,000 AF/day if diversions through fish screens are completely impaired. District should monitor conditions in the channel and after each storm to determine potential impact.

*District Comment – So noted. The value of this assessment stresses the importance of good operation and maintenance practices at Robles Diversion Dam and how other factors (i.e. incoming water impurities such as plant material or sediment) could impact the ability to divert water to Lake Casitas, and thereby impact available water supply in Lake Casitas.*

4) Increased groundwater extraction – largest impact to the District's supply would likely occur during early storm events prior to recharge of the unconfined aquifer upstream of Robles. Not likely to have significant impact.

*District Comment – So noted. Present water rights are limited at this time and recharge of the upper groundwater basin is not likely to differ much given the flashy nature of the upper Ventura River/Matilija Creek system.*

Water Demand

1) Over-prediction of water use for the period of 1970 to 2003, in comparing the actual water use with the predictive equation. Provides a factor of safety in evaluating water use versus supply.

*District Comment – The reference to over-estimation is evident in Table B8. One of the primary objectives in the development of the water use patterns for each cycle was to adequately predict water use based on the present-day levels of demand. It was recognized very early on that from 1959 through the mid-1980s the water use from Lake Casitas was in a development stage. Therefore, the actual water use data from this development period could not be relied upon to make an estimate the of present day water use applied to the model scenarios. In comparing the predicted water use to the actual water use for the period of 1984 to 2003, there is an over-estimation of 6,168 acre feet for the twenty-year period, an annual average of 294 acre-feet. Given the correlations and variability of water use based on the high variability of rainfall events, and their influence on the agricultural water use within the District, the District feels that the methods applied to predict water use, and the resulting data, provide a sound basis for this study.*

2) Recommend a discussion of the maximum obligation to the City of Ventura and oil industry, that may add to the water use at a future date.

*District Comment – The City of San Buenaventura and the Casitas Municipal Water District do have a contract that requires the City to annually purchase a minimum of 6,000 acre-feet of Lake Casitas water. The City must also certify that the amount of water purchased from Casitas matches, or is less than, the water consumption within the joint Casitas-City boundaries. This limits the City purchase to no more than this area's annual water consumption. The water use trends considered the City's water use escalation that occurred during the drought of the late 1980's, so this type of escalation related to weather factors is considered in the model. The placement of long-term and permanent demands, such as an insurgence of oil production, may require additional consideration because it was not predicted by the current model and not included in this final report.*

Water Conservation

1) The report should explain the objective of these measures and indicate the intent of these measures is not provide a comprehensive evaluation of potential water conservation and reduction measures for the District.

*District Comment – It was not the intent of this study to develop and present detailed and focused water conservation measures. Rather, in Table 3, the report presents four concepts on the level of reduction needed to balance water supply and demand during the critical drought period, given the scenario of the BO criteria and without the benefit of Matilija Dam. It is likely that detailed and focus water conservation measures and water use planning will result from the details of this report.*

MBK ENGINEERS
Water Resources • Flood Control • Water Rights

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November 1, 2004

Mr. Steve Wickstrum
Casitas Municipal Water District
11311 Santa Ana Road
Ventura, CA 93001

**Subject: Review of "Casitas Municipal Water District Water Supply and Use Status Report"**

Dear Steve:

We have completed our review of the report entitled "Casitas Municipal Water District Water Supply and Use Status Report" (report). Based on our review, we believe overall the report is well done and technically accurate. There are a few relatively minor items which we suggest correcting before finalizing the report. However, applying these suggested corrections is not anticipated to greatly affect the results or findings of the report.

The remainder of this correspondence details the findings of our review. We have divided our review into two components. The first part of our review focuses on the analysis performed (modeling) to support the findings in the report. The second portion of our review focuses on the report itself and the presentation of the findings from the analysis.

Analysis

Overall, the analysis supporting this report was appropriately applied and is technically accurate. We commend the preparers on the systematic approach taken in modeling the different scenarios. As a reviewer, this made the methods, approach, and quality of the work easier to verify. This clarity is also important for the eventual acceptance of this work by others.

Particularly noteworthy is the methodology utilized for predicting the water deliveries. With this innovative methodology, not only are the predicted deliveries based on rainfall patterns, but also the longer-term hydrology (drought sequence). It is one thing to recognize this trend, but this analysis incorporates these trends into a predictive tool. This level of sophistication is uncommon, even in tools developed by professional full-time modeling personnel.

We had some questions and concerns of a relatively minor nature regarding the technical analysis supporting the report. These are as follows:

- The monthly depletion factor allows the Robles inflow to become a small negative number during some periods. Please consider limiting the Robles inflow to a minimum of zero, since negative inflows do not physically make sense.

- The Lake Casitas net water loss (evaporation minus rainfall) should not be the same for all scenarios, since the storage levels in Lake Casitas are different for each of these scenarios and evaporation depends upon surface area, and thus storage. We recommend using a monthly evaporation rate (in inches) that can be applied to the end-of-month surface area of Lake Casitas. This will more accurately reflect the expected evaporation from the Lake and will shows the differences in evaporative losses between the different scenarios. We would be happy to provide guidance with the evaporation rates, if this path is pursued.

Report

We conclude that, overall, this is a concise, clearly written report that identifies the key issues of the water supply and its use by the District. The report provides the main methodology and primary results without adding unnecessary details of the analysis to the main body of the report. The appendices are properly organized and presented, so the reader can review the additional details of the analysis, if desired.

There are a few areas of the report which we believe require clarification. As such, we have recommended clarification or corrective action to these sections. These are detailed, as follows:

- A table of contents in the front of the report would allow portions of the report to be quickly accessed as a reference. We recommend adding a table of contents to the report.

- It is not entirely clear how the Matilija Creek hydrology was synthesized for the period of time without an operable Matilija Creek gage (i.e., when neither USGS #4500 nor #5500 were operable). The report mentions that USGS #5500 was prorated by the annual volume of USGS #4500. Shouldn't this reference to USGS #4500 actually be to USGS #6000, the North Fork Matilija Creek gage? It is also not clear how the annual volumes could be prorated when one of the gages was not operable. The ratio changes from water year to water year, so we assume that these are not long-term average volumes used in prorating. We recommend that this section be clarified in the analysis and report.

- We recommend that the flow accretion methodology used in this study be explained more thoroughly. There are two factors applied depending upon which Matilija Creek gage was operable. We assume this is due to geographical differences between the two gages. Judging from the accretion multipliers applied, USGS #4500 must be further upstream. We recommend showing the locations of all three USGS gages used in this study on a map. Identifying that these factors are multipliers should also be explained in the report.

- In the summary tables A1-A8, we recommend renaming the column heading currently labeled as "Matilija Gages" to the more accurate "Matilija Creek below North Fork Matilija Creek".

- For the graphs on page A19-A20, please consider eliminating the symbols on the graph lines. It is very difficult to differentiate between the plotting lines with the relative density of these symbols and the closeness of the lines themselves

As mentioned in our review, we believe this is a well written and organized report that can be completed with the minor modifications we have suggested. We hope this review allows you to proceed with your analysis, results, and report in their desired capacities. If you have any questions regarding our review or its findings, please contact me at your convenience.

Sincerely,
MBK ENGINEERS

Marc Van Camp

BT/bt
2400/STEVE WICKSTRUM 11.01.2004.DOC

E N T R I X

Since 1984 - Environmental Excellence

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November 18, 2004



Mr. Steve Wickstrum
Principal Civil Engineer
Casitas Municipal Water District
1055 North Ventura Avenue
Oakview, CA 93022

**Re: Peer Review of the Casitas Water Supply and Use Report**

Dear Mr. Wickstrum,

ENTRIX, Inc. (ENTRIX) has prepared this letter report to present the results of the peer review of the preliminary draft *Casitas Water Supply and Use Report* (Report) dated June 11, 2004. The Report's objective is to assess the Casitas Municipal Water District's (District) water supply given recent and future changes in water supply and demand including water releases associated with the Robles BO and the potential decommissioning of Matilija Dam. The Report is to be used by the District's governing body to assist in making decisions regarding future water management.

The objective of this peer review is to determine whether the Report accurately projects future water supply and water demand conditions and to evaluate the applicability and appropriateness of the methods utilized to make these projections.

This review presents a brief overview of the Report, a description of the methods used in the review, and the review results. The results of the review are organized into four primary categories: 1) the overall approach of the analysis; 2) the water supply analysis; 3) the water demand analysis; and, 4) the conservation and reduction measures required to balance water supply and use.

## Overview of the Draft *Casitas Water Supply and Use Report*

The Report was developed to assess the potential impacts to the District's water supply associated with the recently adopted operating criteria specified in the Biological Opinion for the Robles Fish Ladder and with the potential removal of Matilija Dam. The Report also evaluates the effect of predicted water use on the District water supply, and conservation and reduction measures required to balance water supply and use. The study evaluated four separate operating scenarios:

- Water supply and use during the critical drought period, defined as between water years 1945 through 1965, with Matilija Dam;

- Water supply and use during the same critical drought period without Matilija Dam;

- Water supply and use during the reservoir recovery period, defined as between water years 1966 through 1980, with Matilija Dam; and,

- Water supply and use during the same reservoir recovery period without Matilija Dam.

The results of the Report indicate that the predicted water supply exceeds the estimated water demand for all modeled scenarios, with the exception of critical drought period under the Robles BO operating criteria without the benefit of Matilija Dam. This scenario, which is the most likely, could result in a deficit of approximately 360 acre-feet per year.

**Review Methods**

The review considered the draft Report, supporting documentation such as spreadsheets used to develop the water supply and bypass estimates, and the *Water Supply and Demand Status Report* prepared by the District's Engineering Department Manager on June 7, 1989. The review consisted of an evaluation of the overall approach used to determine safe yield and the methods, assumptions, and results used in developing the water supply and water demand estimates. The project team involved in the review consisted of the following personnel:

- David Blankenhorn, R.G. – Mr. Blankenhorn served as the project manager and was responsible for reviewing all aspects of the Report. He is a State of California Registered Geologist with over 9 years of experience working on various hydrology projects. Mr. Blankenhorn has significant experience in conducting hydrologic studies in Southern California including the Ventura River Watershed. He was the lead hydrologist in the preparation of the Ventura River HCP for which he evaluated surface water and groundwater hydrology within the lower Ventura River basin and the effects of water diversions and groundwater withdrawl on surface water flows. In addition, Mr. Blankenhorn conducted an evaluation of surface water flows and guidelines for water releases at the Robles Diversion in support of the Biological Assessment prepared by ENTRIX.

- Dr. Daniel Tormey, R.G. – Dr. Tormey assisted in the overall review and evaluation of the Report. He has analyzed water supply issues for withdrawal from the San Joaquin-Sacramento River delta, and locally in the Ventura County area. He has extensive experience analyzing hydrology and sediment transport in California coastal streams and the Sierra Nevada. Dr. Tormey has also conducted a water supply and water demand study in support of a wellfield design for a proposed golf course in the Sacramento area.

- Woody Trihey - Mr. Trihey assisted in the review of the design for the fish screen and evaluated potential impacts to the District water diversions following installation of the screen. He is a hydraulic engineer with significant hydrology and fish passage enhancement experience including the evaluation of fish screens.

- Dr. Gretchen Greene – Dr. Greene reviewed and evaluated the overall approach of the Report and the methodology used in the water demand analysis. She is a Senior Economist with significant experience in evaluating future water demand.

The review focused on four primary areas: 1) the overall approach of the analysis; 2) the water supply analysis; 3) the water demand analysis; and, 4) the conservation and reduction measures required to balance water supply and use. The Report was evaluated to determine the applicability and appropriateness of the methods and assumptions utilized in its preparation. The review of the water supply analysis included an evaluation of the mean daily flow data used in the water supply analysis, flow losses and additions between the existing stream gauges and the Robles Diversion, estimates of storage and release from Matilija Dam, bypass flows at Robles Diversion associated with the 1959 and BO operating criteria, losses in the Robles Diversion canal, losses at Lake Casitas, and input from tributaries to Lake Casitas. The evaluation of the water demand analysis included a review of the methodology used to predict future water use and a comparison to historic demand data. In addition, the water supply reduction/conservation measures required to balance water supply and use were reviewed to determine the level of reduction associated with each method.

**Review Results**

The results of the review are described below. The discussion is organized into the four primary review areas: 1) the overall approach of the analysis; 2) the water supply analysis; 3) the water demand analysis; and, 4) the conservation and reduction measures required to balance water supply and use. The comments do not include details such as spelling and typographical errors as it is assumed that the document will be edited prior to the final draft.

Overall Approach

The overall approach of the study is sound. The study uses a planning scenario the longest drought on record in the Ventura River Basin which was between 1944 and 1965. The safe yield for this period is determined using empirical stream gage data in conjunction with the recent and potential changes in operating conditions associated with the Robles BO and the potential decommissioning of Matilija Dam. The water demand is predicted based on recent use data. The study also evaluates the recovery period following the drought between 1966 and 1980 to determine the safe yield until the reservoir recovers to full storage capacity.

Several issues, however, need to be clarified in the document as follows:

- In the drought period analysis (Tables A1 to A4), the starting storage in Lake Casitas in year 1945 ranges between approximately 223,000 to 226,000 acre-feet (AF) and the minimum storage is fixed at approximately 4,800 AF. Based on discussions with the District, the starting and ending volumes for each scenario were derived using the storage values utilized in the D20 study at the beginning (October 1, 1944) and ending (September 30, 1965) of the analysis in order to be consistent with that study. Since these values effect the safe yield estimates for each scenario, the document should explain the basis for these values since they differ from the maximum usable storage capacity of 250,000 AF specified in the 1989 memo and the minimum storage capacity of 100 AF used in the D20 study which reportedly corresponds to the estimated storage volume in December 1965 rather than September 1965. In addition, the document should explain why these values vary between each modeled scenario.

- In the recovery period analysis (Tables A5 to A8), the starting storage in Lake Casitas in year 1966 ranges between approximately 36,000 to 38,000 AF and the maximum storage ranges between approximately 237,000 and 239,000 AF. As with the drought period analysis, the District indicated that the starting and ending volumes for each scenario were derived using the storage values utilized in the D20 study at the beginning (October 1, 1965) and ending (September 30, 1980) of the analysis in order to be consistent with that study. Since these values effect the safe yield estimates for each scenario, the document should explain the basis for these values since they differ from the maximum usable storage capacity of 250,000 AF specified in the 1989 memo and the minimum storage capacity of 100 AF used in the D20 study. In addition, the document should explain why these values vary between each modeled scenario.

- Based on discussions with the District, the water supply/safe yield estimates provided in Tables A1 through A8 include the supply provided by the Mira Monte well. However, the Report does not clearly specify that the supply from this well is included in the analysis. Accordingly, a column should be included in these tables to account for the supply from this well or a note should be added to the tables to indicate that the supply from this well is included in the analysis.

- The study results indicate that the lowest safe yield values occur during the recovery periods under the Robles BO operating criteria (21,180 AF with Matilija and 19,780 AF without Matilija). Although the predicted water demand for this period is less than the estimated safe yield, the predicted safe yield for this period would appear to be the limiting factor on water use allocation. The lower safe yield values for the recovery period appear to be caused by increased bypass flows associated with the Robles BO operating criteria and the constraint of the modeling approach which limits the number of

years (15 years) to achieve full capacity. If a shorter time is allowed for recovery, corresponding to a shorter period between droughts, the safe yield value would be lower than presented in the Report. The effect of the length of the recovery period on predicted safe yield could be addressed in a sensitivity analysis.

The issues described above affect the principal objective of the Report which is to predict safe yield and future water use allocation. Accordingly, these areas should be clearly explained to assist in planning efforts.

Water Supply

The water supply assumptions and methodology appear sound and empirical data is used where available to model or validate the water supply under the different operating scenarios. However, the analysis relies heavily on the assumptions and factors developed as part of the D20 study. The basis for these assumptions was not available for review; therefore, it was not possible to verify their accuracy/applicability of these factors. It would be useful to provide a description of the methods used to derive these factors.

The assumptions and methodology used for the supply model need to be described in greater detail to allow for easier understanding and comprehension of the analysis. Following an initial review of the document, a meeting was held on September 29, 2004 to clarify the methods and assumptions used to develop the water supply estimates. The meeting was attended by Steve Wickstrum, Leo Lentsch, and Chip Blankenhorn. A copy of the issues discussed in the meeting is provided in Attachment A.

The Report also describes several concerns that could affect water supply which were not quantitatively captured in the analysis. These concerns include the following:

- Impacts associated with operations near minimum pool in Lake Casitas. Operations under these conditions could affect water quality, water delivery, and recreation.

- Water loss at Robles Dam associated with decreased efficiency of water transfer through the fish screens and plugging of the fish screens with fine sediment.

- Increased groundwater extraction above Robles Diversion Dam which may result in increased flow of surface water to groundwater, thereby reducing inflow to Lake Casitas.

A brief discussion of these issues is provided below.

**Minimum pool impacts**. It seems that the most important planning issue is related to the water delivery and distribution infrastructure. If not previously addressed by the District, the District should determine the stages at which the infrastructure could be affected and develop

a contingency plan in the event that this occurs. With regards to water quality and recreation, the District should monitor conditions at various stages in Lake Casitas and use this data to assist in managing potential affects in the future should the concerns arise.

**Water loss at Robles associated with the fish screens**. ENTRIX reviewed the fish screen design and contacted the design engineer (Tim Buller at Wood-Rogers) to evaluate this issue. Based on a review of the design and discussions with the design engineer, it appears that the existing trash rack should be sufficient to trap large debris moving into the diversion canal. The fish screens include a traveling brush cleaning system which should prevent clogging due to brush. The design engineer indicated that the screen was designed to maintain an approach velocity of approximately 0.4 ft/s and a minimum sweeping velocity of approximately 0.8 ft/s in accordance with California Department of Fish and Game requirements. However, the design engineer indicated that the sweeping velocity would likely be greater than 0.8 ft/s and could be up to 1.5 ft/s. Based on the existing information, the flow velocities appear to be sufficient to transport silts and clays in suspension, but may not be sufficient to transport sands, if present. A thorough analysis of potential impacts would need to consider the suspended sediment concentration and particle sizes in suspension. The slot spacing of the fish screen is 1.75 mm which is within the coarse sand range and is likely greater than the particle sizes that would be in suspension. If an impact were to occur, it would likely be due to sediment deposition at the base of the fish screen and the existing design accommodates for approximately 1 foot of deposition by offsetting the base of the screen 1 foot from the bottom of the canal. There is a potential for this area to be filled during the seasonal operation period which could impact the diversion efficiency and/or the diversion operation if sediment removal is required. The maximum impact on water diversions would be the loss of approximately 1,000 AF/day which is the equivalent to a water diversion rate of 500 cfs (the maximum capacity of the diversion canal) over a 24-hour period. This situation could occur if the entire screen is clogged with sediment and/or debris or the diversion needs to shut-down for maintenance to remove sediment/debris. The District should monitor conditions in the channel during and after each storm event to determine any potential impact.

**Increased groundwater extraction above Robles diversion dam.** Increased groundwater extraction would result in a decrease of the water table elevation and would result in greater infiltration to the subsurface. The greatest use of groundwater would likely occur during the dry season when the diversion is not typically in operation. Assuming that the water table is lowest at the end of the dry season, the largest impact to the District's supply would likely occur during early storm events prior to recharge of the unconfined aquifer situated upstream of Robles. The aquifer in this portion of the basin typically fills relatively quickly, so increased losses would not likely have a significant impact on water supply at Robles.

Water Demand

The water demand analysis utilizes a correlation between water use and precipitation to develop a polynomial equation to predict future water demand. The basis for this correlation is sound in that historic data indicates that water use varies significantly with precipitation, primarily because agricultural use is the dominant water user and crops require less irrigation when there is high precipitation. The goodness of fit ($R^2$ value) for the water demand-precipitation correlation is approximately 0.97, which indicates a strong correlation between these variables.

The predicted water demand equation also includes a dry year multiplier to account for increased water demand associated with consecutive years with less than 20-inches of rainfall. Such a factor makes intuitive sense, since one would expect increasing water demand as a drought advances. The dry year multiplier was developed using the slope of a best fit line correlating recorded water use during the 1986 to 1990 drought. The multiplier is applied by multiplying the number of years with less than 20-inches of rainfall following an initial year with less than 20-inches of rainfall. The goodness of fit ($R^2$ value) for the dry year multiplier correlation is approximately 0.56, which indicates a relatively poor correlation between variables. The use of the dry year multiplier is good in that it adds a factor of safety to the water use-precipitation equation, but the relatively poor correlation indicates that other factors may be controlling the variation in water demand. In addition, the data used to develop the dry year multiplier includes the actual water use by the City of Ventura (City) between 1986 and 1990 which ranged between 7,737 and 8,875 AF. The dry year multiplier could be refined by adjusting the water use data to include only the minimum requirement to the City of 6,000 AF/year. However, this adjustment is unlikely to improve the correlation.

An evaluation of the predicted water demand and actual demand between 1970 and 2003 indicates that in general this equation overpredicts the actual annual demand by an average of approximately 1,300 AF. The data also indicates that actual water use exceeded the predicted demand in eight years over this period. Although water use is sometimes underpredicted by the equation, the total surplus between the predicted and actual demand between 1970 and 2003 is approximately 44,750 AF.

The predicted water demand for each model scenario utilizes the average water use for the drought period (21,200 AF) and for the recovery period (18,820 AF). The model water demand for each year is derived from the annual precipitation data for these periods. Based on the comparison of the predicted versus actual water demand, these values likely overestimate the water use for these periods which provides a factor of safety in evaluating water use versus supply.

One of the issues that was discussed in the meeting held on September 29, 2004 was the supply obligation to the City of Ventura. As discussed in the report, the minimum obligation to the City is 6,000 AF per year; however, the maximum obligation is not specified. The Report states that water use by the City could increase significantly if oil production increases and/or if there is an extensive dry-period. A discussion of the maximum obligation to the City should be included in the document to assist in determining the potential affects on water supply and demand in the future.

Water Conservation and Reduction Measures

The Report discusses several water conservation and reduction measures that could be implemented to balance safe yield with predicted water use. However, the focus of these measures is not clearly described. Based on discussions with the District, the objective of these measures is to evaluate options which could be implemented to balance the predicted safe yield with the predicted water use for the critical drought period under the Robles BO operating criteria without the benefit of Matilija Dam. This scenario, which is the most likely, could result in a deficit of approximately 360 acre-feet per year. Accordingly, the Report evaluates options which would provide a reduction of approximately 360 AF/year. The Report should explain the objective of these measures and indicate that the intent of these measures is not to provide a comprehensive evaluation of potential water conservation and reduction measures for the District.

## Closure

ENTRIX appreciates the opportunity to perform this work for the District. Please call Dan Tormey or Chip Blankenhorn at (805) 644-5948 with any questions or comments.

Sincerely,

**ENTRIX, Inc.**

David B. Blankenhorn, R.G.
Senior Project Engineer/Geologist

Daniel Tormey, Ph.D., R.G.
Principal

**ATTACHMENT A**
**SEPTEMBER 29, 2004 MEETING MEMO**

E N T R I X

**MEMO**

**ENTRIX, Inc.**
2140 Eastman Avenue, Suite 200
Ventura, CA 93003
(805) 644-5948

---

**To:** Steve Wickstrum, Casitas Municipal Water District

**From:** Chip Blankenhorn, ENTRIX

**Date:** September 29, 2004

**Re:** **Initial Questions/Comments**

---

The purpose of this memo is to outline initial questions/comments on the *Water Supply and Use Status Report* dated June 11, 2004. After your review, I would like to discuss these with you prior to preparing our draft peer review report. The questions/comments are separated water supply and water demand/use as follows:

## I. Water Supply

In general, the water supply estimates utilize factors developed as part of the Kienlen D20 study, but the report does not discuss the derivation of these factors. Accordingly, it is difficult to evaluate the applicability of these factors. These factors include the following:

- Reservoir Recovery Period Hydrology:
  - Item 1b is described as "daily flows predicted from NF Matilija daily USGS records". I am presuming that this is a typo since the header is for Matilija Creek hydrology and gages #4500 and #5500 are situated on Matilija Creek.
  - Item 1b*i* (loss factor at Matilija Reservoir) – how was this factor derived?
  - Item 1b*ii* - estimation of daily flows for #5500 are calculated by adjusting the flows at #4500 by a ratio of the annual water supply at each gage. Does this ratio represent the average over the overlapping period of record?
  - Item 2b*i* – how was the equation for #6000 derived?
- Matilija Reservoir Operations – how were the max. and min. storage capacity estimates derived?
- Flow Accretion – how were these factors derived?
- Flow depletion/extraction – how were these factors derived?
- Robles Diversion Operations – how were the facility losses derived and is there more recent data to assist in this estimation?

- Volume of water bypassed – how were these factors derived and how were they utilized in the study? If we are accounting for inflow from gage data, diversions at Robles, and bypass flows associated with the fish releases, then it seems like we can directly calculate annual bypass flows.

- Lake Casitas:

  - How were the estimates from the tributaries derived and what are the estimates from the D20 study (not provided)?

  - Also, with regards to net evaporation, the USBR study utilized an estimate of 3.08 feet/year and the D20 study used 1.9 feet/year. Is more recent data available to update this factor? Also, does the surface area that this factor is applied to vary annually based on storage levels or is an average value used?

  - It does not appear that sedimentation in Lake Casitas was addressed with regards to impacts on storage? Is there data available to estimate the approximate rate of sedimentation which can be used to evaluate potential impacts?

## II. Water Use/Demand

- In general, it appears that it is primarily agricultural water use that changes in response to precipitation. Also, there appears to be a slight increasing trend in residential water demand between 1976 and 2002 and a relatively steep demand in gravity water sales between 1997 and 2002. Accordingly, it might be more useful to model these variables separately and sum them to assist in predicting future demand.

- Water sales to the City seem to be a wildcard as future use may revert to pre-1990 if the oil production increases and/or there is an extensive dry-period. What are the obligations to the city beyond the 6000 AF/year minimum?

# Appendix I

## Ojai Basin Groundwater Management Plan

# Ojai Basin Groundwater Management Agency

# Management Plan 2007 Update

Prepared by: Daniel B. Stephens & Associates


Ojai Basin Groundwater Management Agency
A Special District of Ventura County

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# Ojai Basin Groundwater Management Agency
# Groundwater Management Plan Update

## 1. Background

Two critical facts underline the importance of the Ojai Basin Groundwater Management Agency (OBGMA) and this management plan update.

- Chronic drought is a climatic reality. Over the last 100 years there have been several serious droughts, and climate change may likely bring an increase in the number and intensity of years with below average rainfall. Local precipitation, the only source of water in the Ventura River watershed, is predicted by several models to decrease in annual averages. Extended periods of drought are likely.

- The Ventura River watershed is depended on by numerous competing interests. Most water allocated to the various water purveyors in the watershed is accounted for; it has been predicted that, in a long- term drought, Lake Casitas could go dry. Existing wells already in the Ojai Basin are producing groundwater at a rate that is considered to be at or near the safe yield of the basin, and it is predicted (with historical precedence) that in a long-term drought a significant number of the existing wells will go dry. Stakeholders in the Ojai Basin cannot depend on any economically reasonable new source of water.

The OBGMA is responsible for managing the Ojai groundwater basin and, working with the well operators in the basin, for conserving that groundwater. The intent of this plan update is to avoid (where possible) and minimize the adverse economic and social impacts facing our valuable but limited water supply.

### *1.1 Mission Statement*

The Ojai Basin Groundwater Management Agency's mission is to preserve the quantity and quality of groundwater in the Ojai Basin so that the long-term water supply is protected and maintained for the common benefit of the water users in the basin.

The mission of the OBGMA is derived from its enabling legislation, the Ojai Basin Groundwater Management Agency Act, which became law in 1991. The Act was approved as a response to the needs and concerns of local water agencies, water users, and well owners of the Ojai Basin. OBGMA was established in the fifth year of a drought, amidst concerns for potential Ojai Basin overdraft. The mission is in keeping with the history of the Ojai Basin and the circumstances existing when the OBGMA was formed. Since that time, although there have been some good water years and the Ojai Basin has continued to provide sufficient water for its well owners, competition for scarce water resources in Southern California and Ventura County is ever expanding, water resource planning is intensifying, and the importance of OBGMA's mission is even greater today.

Based upon the studies conducted by and for OBGMA, and due to a relatively wet period over the past 15 years, the water and demand in the Ojai Basin is largely in balance and capable of meeting the annual demands of overlying landowners and in-basin water users under present conditions. However, after a series of dry years, water in some wells drop to the point where an alternative water source must be used. In part, that is why water users presently import some 3,750 (1981 to 2005 average) acre-feet of Casitas Municipal Water District (Casitas) water into the Ojai Basin annually, mostly for irrigation. If Casitas water was not available or not used during a series of dry years, considering the present understanding of the hydrology of the basin and the existing water uses, some shallower and peripheral wells would probably not produce water. As a result, pumping lift costs to pump groundwater would be excessive, some wells would produce excessive amounts of sand, water quality of pumped groundwater would likely be compromised, and other detrimental effects of a reduced amount of groundwater storage in the Ojai Basin could occur.

Therefore, the focus of the OBGMA's efforts is on protecting and preserving the Ojai Basin groundwater resource for in-basin use and guarding against harmful export of water from the basin.

### *1.2 Current Fiscal Situation*

The OBGMA is funded by extraction charges levied on pumpers in the Ojai Basin. The present legislative ceiling on extraction charges of $7.50 per acre-foot limits the capacity of OBGMA to

meet its obligations and goals. The OBGMA is attempting to amend the Ojai Basin Groundwater Management Agency Act in the 2007 legislative session to increase the extraction charge ceiling, but any actual extraction charge change must be voted upon by the board, which consists of representatives of the stakeholders. Further fiscal details are presented in Section 3.5.

With adequate funding OBGMA will meet its responsibilities as required by law, will be able to carry out its mission to protect Ojai Basin groundwater in the interests of its water users, and will be able to achieve the goals of this management plan update.

## 2. General Approach

The OBGMA is required by law to have a Groundwater Management Plan (Plan) to guide its operations. The initial Plan was prepared and published in 1995. This 2007 update provides additional information and has been developed based on studies done for the OBGMA by its hydrogeologists and engineering contractors, input from well owners and water users, and recommendations made by the OBGMA's advisory committee and the State of California Department of Water Resources. Figure 1 provides a map of the OBGMA area of purview and service areas of other local agencies.

Since the Plan publication in 1995, numerous studies and projects have been conducted in the Ojai Basin within the jurisdiction of the OBGMA and have led to a better understanding of basin hydrogeology, water demands, and hydrologic fluctuations that affect the stakeholders. Continually improved understanding provides an additional level of detail to the goals and objectives of the Plan update. As understanding of the Ojai Basin improves over the years, updates to the Plan will be incorporated. It is anticipated that the Plan will be updated every five years.

This Plan update describes five broad goals. Each goal includes a number of action elements. Tables for each goal indicate when various action elements were completed or are planned for completion. While the five broad goals will provide the structure to the OBGMA's management efforts for several years, the OBGMA anticipates that the detailed action elements will evolve as the OBGMA's efforts continue to progress. Elements approved with this Plan update will be

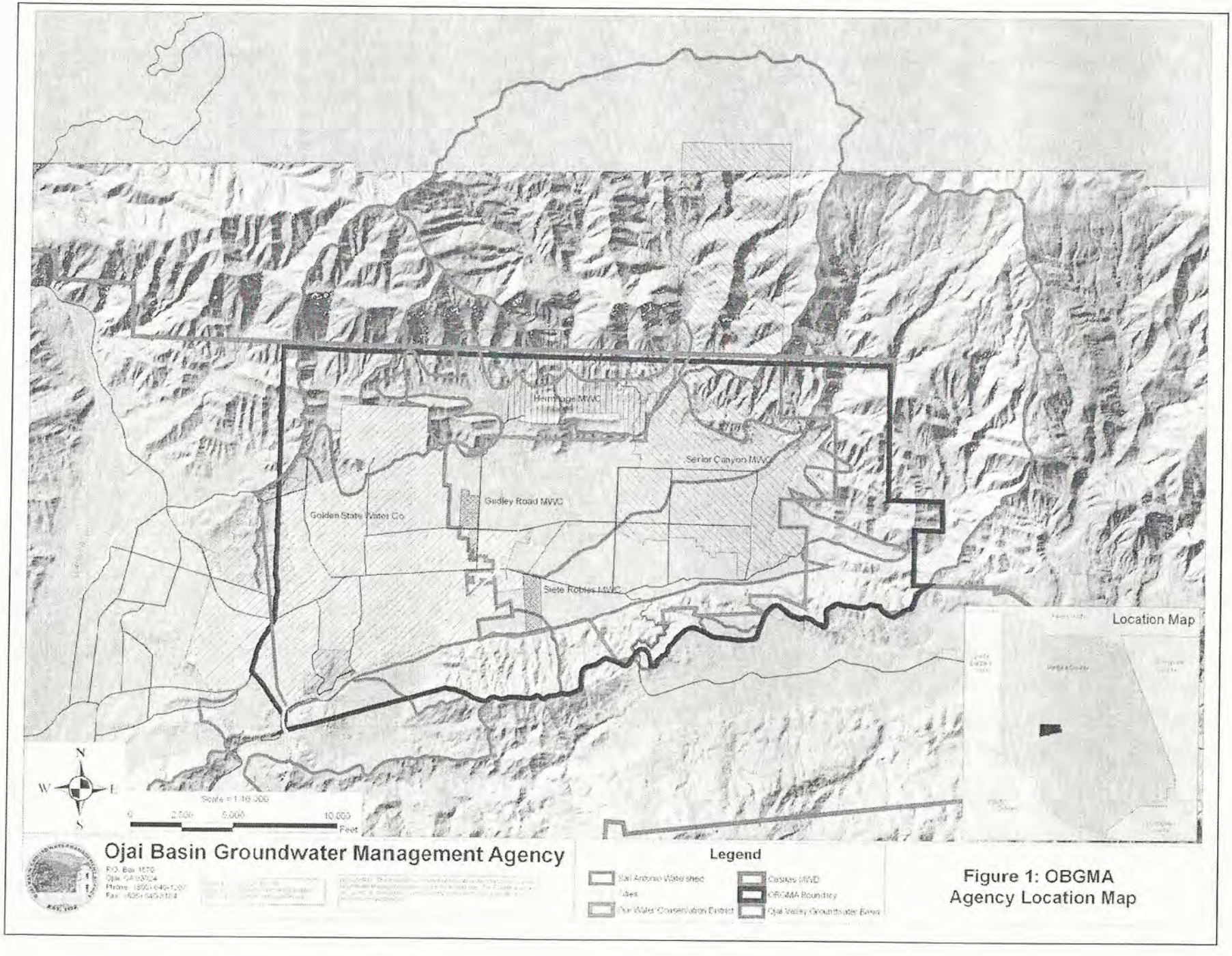



**Figure 1: OBGMA Agency Location Map**

implemented in the form of rules, regulations, or ordinances. Prior to implementation, additional criteria to guide these actions will be developed in a public process by the OBGMA Board of Directors (OBGMA board) and added to this management plan update. Some elements as noted herein require more study and public review before specific implementation actions are approved. Additions will be made to this Plan update as actions to implement these elements are reviewed by the water users and well owners in the basin and approved by the OBGMA board. Amendments to the approved Plan update will be made only after full review, consideration of any advisory recommendation, and formal approval by the OBGMA board.

## 3. Groundwater Management Plan--Detailed Action Plan

### *3.1 Goal 1. Understanding the Basin*

OBGMA must have a comprehensive understanding of the hydrology of the basin under its jurisdiction in order to carry out its mission. This understanding will continue to evolve as additional goal elements are implemented. Table 1 describes selected Goal 1 elements that have been completed, are scheduled, or are planned.

#### *3.1.1 Monitoring*

OBGMA has at its disposal several studies of the basin hydrology, including conceptual models. These models must be tested and updated regularly under a continuing monitoring program to serve as a basis for informed decision making. Monitoring will also be conducted to identify changing conditions and implement management programs when needed. Monitoring will include:

- Surface water entering the basin
- Recharge of the basin from rainfall
- Streamflow seepage
- Evapotranspiration
- Discharge from the basin as surface flow from San Antonio Creek and subsurface flow
- Extractions from the basin via public and private wells

**Table 1. Selected Completed, Scheduled, and Planned Future Elements**
**Goal 1, Understanding the Basin**

| Element | Description | Completion Date (Actual or Anticipated) |
|---|---|---|
| *Completed Element* | | |
| Basin studies | Study of basin water records developed by county technicians to monitor basin water quantity and quality, well permits, stream flows, and precipitation | 1996 |
| Monitoring | Conducted ongoing meetings and monitoring with county hydrologists | 2000 |
| Jim Capito, basin study | Located wells of record, obtained GPS coordinates of each, plotted surface altitudes of wells, determined conditions of abandoned wells, performed hazard screening, recorded well data sheets, provided QA/QC of county well records with OBGMA records | September 2001 to Spring 2002 |
| Database creation | Established database | 2004 |
| Kear, 2005, Masters Thesis | Hydrogeology of the Ojai Groundwater Basin: Storativity and Confinement, Ventura County, California | December 2005 |
| Daniel B. Stephens & Associates, Inc. | Hydrologic assessment, San Antonio Creek Sub-watershed, Ventura County, California | June 2006 |
| Extraction reporting | Reporting of basin groundwater extractions | Twice annually |
| *Scheduled Element* | | |
| Extraction reporting | Reporting of basin groundwater extractions | Twice annually |
| Basin studies | Depth discrete monitoring well construction and monitoring | 2007-2010 |
| Basin studies | Monitoring San Antonio Creek flow into basin | 2007-2010 |
| Monitoring | Key wells for water quality | Annually |
| Monitoring | Key wells for groundwater levels | Every other month |
| *Future Element* | | |
| Extraction reporting | Reporting of basin groundwater extractions | Twice annually |
| Monitoring | Conversion of inactive production wells into depth-discrete monitoring wells | 2008 |
| Groundwater model | Generation of a MODFLOW type of groundwater model for the basin | 2009 |
| Basin studies | Evaluate and augment recharge along creek channels | 2008 |
| Basin studies | Geophysical survey of the basin to identify aquifer and bedrock morphology | 2010 |

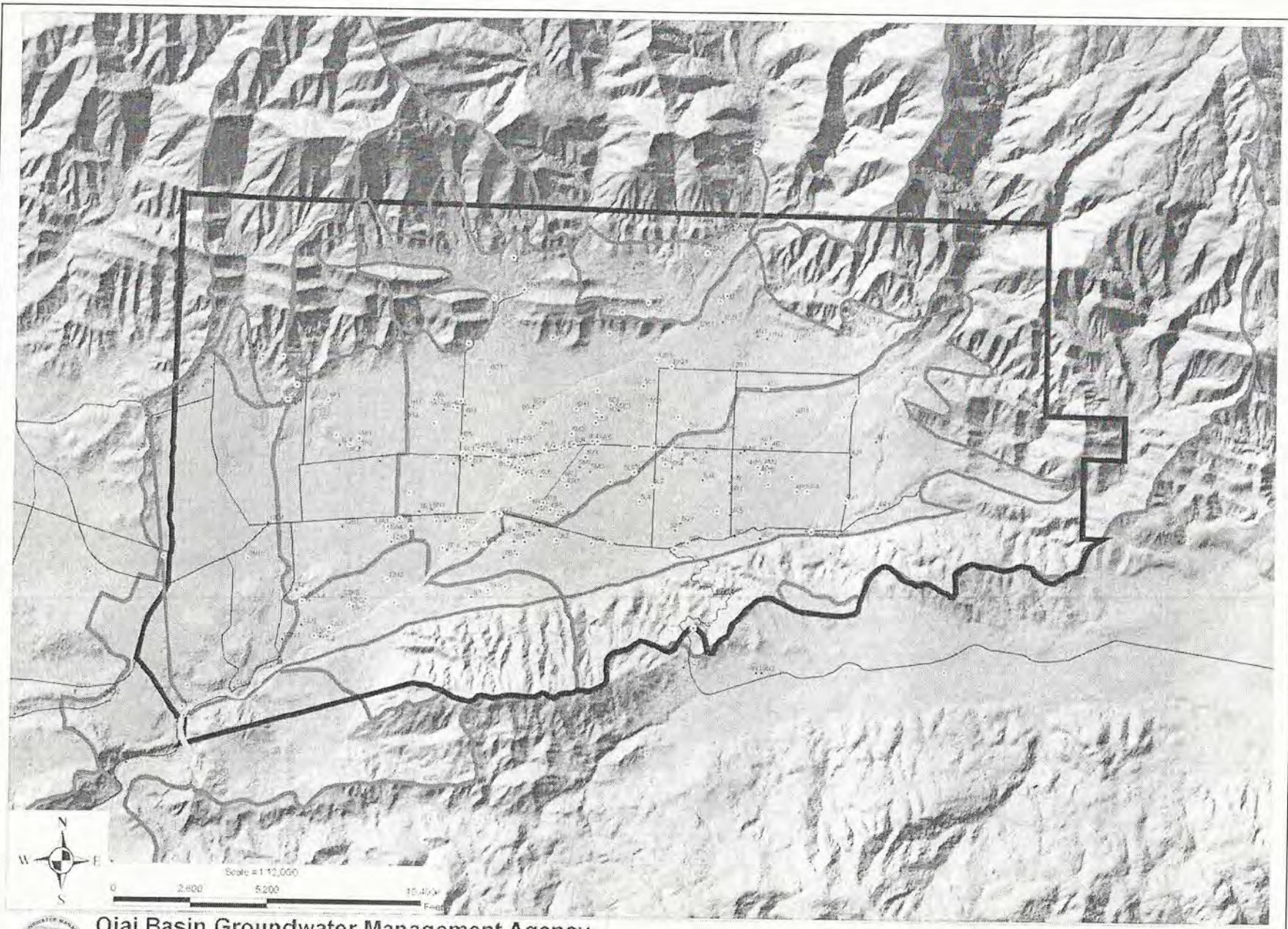
Monitoring results will be shared annually by the OBGMA with owners, water users, and the public.

### *3.1.2 Data Collection*

Previous studies identified significant gaps in the current monitoring activities in the Ojai Basin. Specific areas identified for increased data collection are basin water level, water quality monitoring in stratified aquifers known to be present in the basin based on aquifer testing, and geophysical log correlations. In cooperation with the OBGMA, the Ventura County Watershed Protection District (VCWPD) may measure key wells routinely for water levels and water quality. OBGMA will obtain permission from the well owners prior to conducting monitoring not already being conducted by Ventura County. This data will be analyzed and reported annually by OBGMA to stakeholders via annual reports, the website, or other publications. Additional data collection actions, including surface water discharged from San Antonio Creek and surface water inflow into the basin, have been assessed and will be considered in greater detail in the future. This data will be analyzed and reported annually by the OBGMA. All results from each well measurement are to be shared with the respective well owner either through direct communication and/or provision of any OBGMA publication that contains such data.

### *3.1.3 Well Registration*

The OBGMA adopted Ordinance No. 1, April 29, 1993 which required all wells in the basin be registered with the OBGMA. There are currently 145 registered wells in the Ojai basin, of which 125 are reported to be active and the remaining 20 are inactive. Approximately 60 additional wells are reported to have been destroyed, bringing the total number of historically known wells in the basin to over 200. OBGMA will continue seeking to have all wells in the basin registered under a formal agreement with Ventura County to ensure that their well records are made available to the OBGMA and that any new well permits are registered with the OBGMA. Such an agreement ensures that well permits in the OBGMA area of jurisdiction will not be issued by Ventura County without proof that the applicant has properly notified OBGMA and been advised of the requirements for well operators in the Ojai basin. Figure 2 presents a map of active wells and Figure 3 depicts wells that are registered as inactive and destroyed. The OBGMA is also planning to obtain delegated authority from the State Water Resources Control Board, Water Rights Division to handle groundwater production recordation within OBGMA area of jurisdiction.




**Ojai Basin Groundwater Management Agency**

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Phone: (805) 646-1297
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Legend

- San Antonio Watershed
- Ojai Valley Groundwater Basin
- OBGMA Boundary
- Active Wells

**Figure 2: Active Well Location Map**

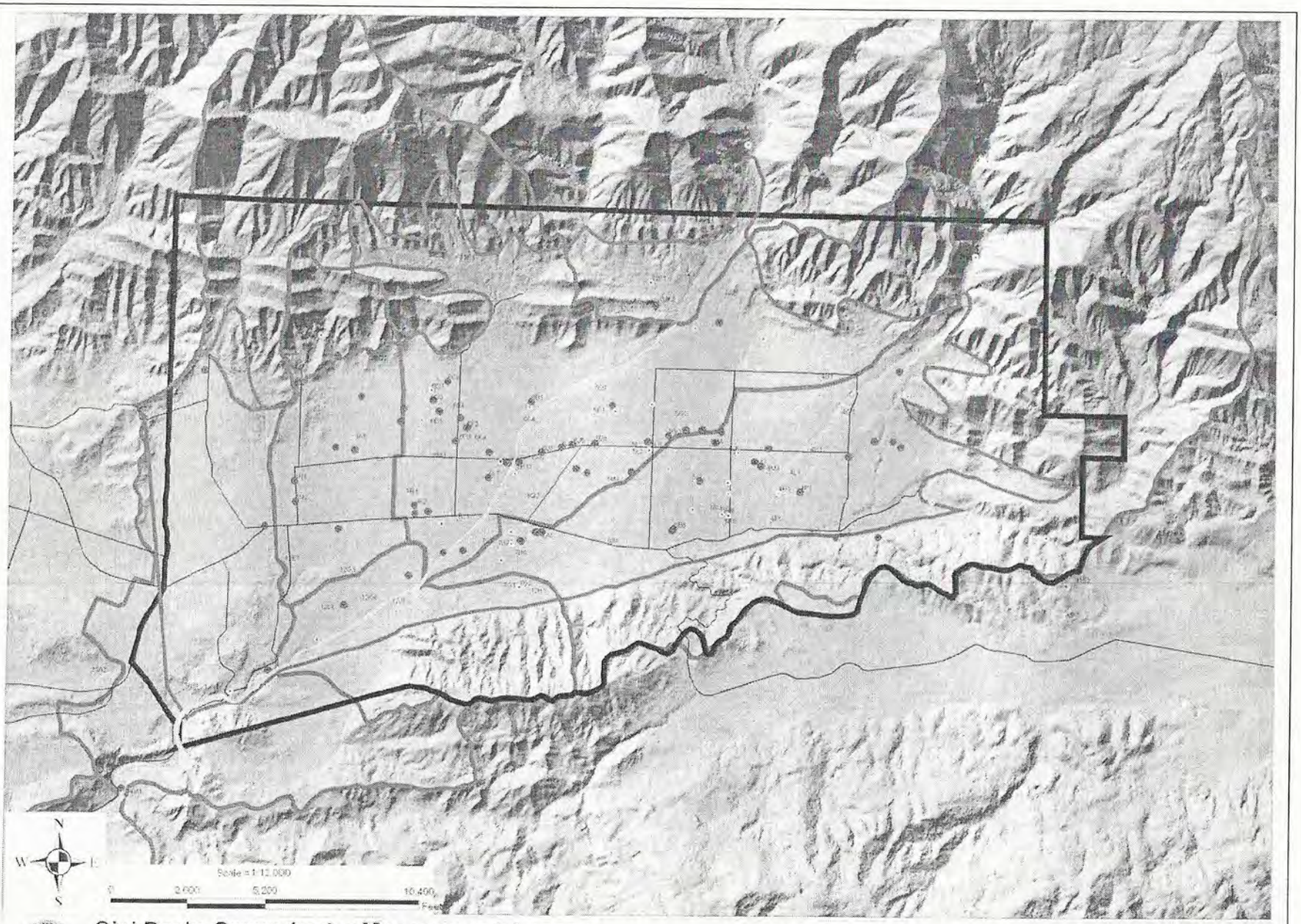


Figure 3: Inactive and Destroyed Well Location Map

### 3.1.4 Extraction Measurement

The OBGMA is mandated by its enabling Act to monitor groundwater extractions. Key parameters that allow the OBGMA to manage basin balance, prevent overdraft, and evaluate the amount of groundwater in storage include the amount of water extracted from the basin, precipitation, recharge data, and water level monitoring. OBGMA is also committed to implementing an effective, reliable method of monitoring well extractions. Currently, well owners are required to report, as precisely as possible, using meters or a variety of methods such as electrical power usage or crop factor, their annual water extractions. OBGMA will consider requiring metering of new wells and metering of all wells within a 3-year time frame. OBGMA will conduct an internal audit of its groundwater extraction reports to determine whether those reports accurately reflect actual extractions. In addition, OBGMA will institute steps, including assisting well operators with accurate reporting, to ensure the most efficient and effective ways to determine the actual withdrawals of water from the basin semi-annually.

## 3.2 Goal 2. Controlling Exports: Protecting and Managing the Basin

In order to preserve the groundwater in the Ojai Basin OBGMA will take direct management actions based on factual knowledge of the basin and the needs and concerns of water users and well owners in the basin. Table 2 describes selected Goal 2 elements that have been completed, are scheduled, or are planned.

### 3.2.1 Exports of Water from the Basin

OBGMA's enabling legislation mandates that no groundwater shall be exported from the basin except under permit issued by the OBGMA in full compliance with the policy and intent of the law. The law mandates the preservation of the groundwater for the common benefit of water users within the basin. Based on present hydrologic facts and circumstances, the OBGMA finds that there is no surplus water available for export. Under natural conditions, when surplus water is present in the basin, water flows under artesian pressure from wells and from exposed aquifers into San Antonio Creek along gaining reaches of the stream. Because this surplus has value to downstream stakeholders, and the surplus conditions are ephemeral (occurring only during years of heavy rainfall such as 1993, 1995, 1998, and 2005) and can change rapidly to conditions of deficiency, it is likely that surplus conditions will not exist in the foreseeable future.

**Table 2. Selected Completed, Scheduled, and Planned Future Elements Goal 2, Controlling Exports: Protecting and Managing the Basin**

| Element | Description | Completion Date (Actual or Anticipated) |
|---|---|---|
| *Completed Element* | | |
| Export controls | Reviewed Matilija Dam removal issues, attended stakeholder meetings and EIR certification | 2005 |
| Database creation | Established database | 2004 |
| *Scheduled Element* | | |
| Establish triggers | Establish basin triggers such as the relationship between groundwater levels and drought conditions to generate and adopt a water conservation plan | 2008 |
| Managing the basin | Update Groundwater Management Plan | 2012 (every five years) |
| *Future Element* | | |
| Maintain thresholds | Quantify relationship between basin storage and outflow into San Antonio Creek | 2009 |

Nevertheless, OBGMA will review the existence of surplus from time to time, as dictated by the receipt and review of its annual report or as new, reliable information becomes available. OBGMA will establish the conditions and criteria under which it would contemplate granting a permit for export, should a surplus be determined to exist. These conditions and criteria will include at least the following:

- The applicant for a permit will bear the full financial, regulatory, and legal burden of demonstrating that a surplus of water exists, which, if exported, would not cause harm to any existing groundwater user in the basin, now or in the future.

- The export permit will be suspended in the event of a declared water shortage, basin storage threshold level, or other pre-established condition.

- All export permits will contain conditions and criteria that will otherwise protect the in-basin users to the fullest extent allowable under the law.

### 3.2.2 *Establishment of Thresholds and Triggers*

Water levels in the basin fluctuate considerably in response to pumping and recharge from seasonal rainfall. The Ojai Basin is considered largely in balance. Review of precipitation, accumulative departure curves, and water level responses over time indicate that the basin has the hydrologic characteristics of quick discharge and quick recharge when precipitation occurs. Also, based on aquifer testing, there is a significant amount of overlap of cones of depression created in the potentiometric surface by pumping wells. These features must be considered when establishing action levels of groundwater elevations or streamflow.

Groundwater use between 1981 and 2005 averaged approximately 5,170 acre-feet, of which some 1,820 acre-feet was pumped by Golden State Water Company for municipal and domestic supply (35 percent). In addition, three mutual water companies and approximately 100 active private wells supply both agricultural and domestic water in the basin. There is a great variation in location and depth of the wells in the basin, and their relative access to groundwater at low points in the hydrologic cycle. There is also variation in water quality in different parts of the basin. Taking into account the needs of the water users in the basin, overlying landowners and well operators, and the existing conjunctive relationship between the groundwater used in the basin and the Casitas water imported into the basin, OBGMA will establish basin storage thresholds which will trigger special action by the OBGMA to ensure protection of groundwater supplies in the basin.

OBGMA will develop triggers and the conservation measures that must be implemented at those points, and will also develop the procedures and pass the ordinances needed to put the conservation measures into effect. This will be done with full communication with, involvement, and understanding of the basin well operators.

## 3.3 Goal 3. Encouraging Supporting Activities

With its limited resources, OBGMA must strive to achieve its goals in cooperation with and through the supporting activities of other agencies, and through the encouragement of supportive actions by water users. Table 3 describes selected Goal 3 elements that have been completed, are scheduled, or are planned.

**Table 3. Selected Completed, Scheduled, and Planned Future Elements Goal 3, Encouraging Supporting Activities**

| Element | Description | Completion Date (Actual or Anticipated) |
|---|---|---|
| *Completed Element* | | |
| Well inventories | Worked with well owners to increase number of Ventura County key wells in Ojai | 1994 |
| Joint meetings | Casitas, Ojai Water Conservation District (OWCD), and Ojai Basin Groundwater Management Agency explore interests in common | 1995 |
| Meetings | Participated with and followed progress of Ventura countywide Stormwater Quality Management Program | 1996 |
| Integrated regional watershed management planning (IRWMP) efforts | Participated in IRWMP, pursuit of Proposition 50 water bond funding | 2006 |
| *Scheduled Element* | | |
| San Antonio Creek Spreading Grounds Rehabilitation Project | Rehabilitate abandoned spreading grounds in cooperation with OWCD, Ventura County Watershed Protection District (VCWPD) | 2007-2010 |
| Ventura River watershed planning | Study Ventura River watershed in cooperation with VCWPD | 2007-2010 |
| *Future Element* | | |
| Grant funding pursuit | As available and targeted to basin issues | Annually |

### *3.3.1 Data Collection and Storage*

Ventura County already routinely collects information on water levels and quality from wells in the basin. In cooperation with OBGMA, this effort is planned to continue to meet the monitoring needs of the basin.

### *3.3.2 Water Conservation*

OBGMA encourages water conservation practices by both agricultural users and urban users. Market forces, as well as good management practices, are moving most agricultural users in the basin toward implementation of water conservation measures. Likewise, Golden State Water Company, the largest municipal supplier in the basin, has initiated a conservation plan approved by the Public Utilities Commission and supported by the City of Ojai. OBGMA will encourage the development, publication, and sharing of information with these users that will encourage

the optimum use of water resources in the basin. Further, OBGMA will seek the assistance of various local, state, federal and private organizations to provide water conservation services and education programs for in-basin water users, including the pursuit of grant funds as available. OBGMA will encourage in-basin water users to incorporate conservation practices and will consider development of a conservation plan in anticipation of drought conditions. Water meters on all wells will be needed to effectively measure sharing of conservation efforts.

### *3.3.3 Abandoned Wells*

Ventura County has a program to address abandoned wells as part of the water well ordinance. OBGMA encourages implementing a program in the Ojai Basin to identify all abandoned wells, to determine if they pose any hazard to the quantity or quality of groundwater in the basin, to identify the actions needed, and to help obtain the resources to rectify any problems. OBGMA supports evaluation of abandoned or idle wells to determine whether they can be converted to monitoring wells, rehabilitated, or properly destroyed in accordance with Ventura County standards. OBGMA will also seek to obtain grant funds to assist well owners in proper destruction of abandoned wells, or in conversion to monitoring wells if appropriate.

### *3.3.4 Artificial Recharge*

The Ojai Water Conservation District (OWCD) was involved in importing water from Matilija Reservoir via gravity flow pipeline and a program of enhanced percolation of streamflow on San Antonio Creek until 1985. This involved the diversion of surface flows into a series of percolation basins and was highly successful. The program was discontinued after the emergency construction of a debris basin on San Antonio Creek by Ventura County using FEMA funds, following a major fire in the watershed. The result of that construction was the destruction of most of the percolation basins, which were never restored.

The artificial recharge of the basin from San Antonio Creek by the Ojai Water Conservation District is endorsed by the OBGMA. To rehabilitate these spreading grounds, the OBGMA supports the San Antonio Creek Spreading Grounds Rehabilitation Project (SASGRP), one of the key projects of the Watersheds Coalition of Ventura County (WCVC) suite of applications. Under its enabling legislation, OBGMA must regulate any groundwater storage, recapture, and/or replenishment project in the Ojai Basin, and, accordingly, will be processing a permit for the SACSGRP. Other partners in the SASGRP endeavor include the OWCD, the VCWPD,

Casitas Municipal Water District, and Golden State Water Company. This project will strive to augment basin storage by restoring the percolation basins and diversion and intake structures that were destroyed by the emergency construction. This was a key goal element on the OBGMA 1995 Plan.

The SASGRP may offset some of the losses associated with the proposed Matilija Dam decommissioning, known as the Matilija Dam Ecosystem Restoration Project (MDERP). The MDERP proposes to replace the water supply loss resulting from the dam's removal prior to its obsolescence date. The SASGRP, if successful, can only partially mitigate the loss of water supply resulting from the MDERP. Other measures should be evaluated and implemented to more completely mitigate the removal of the Matilija Dam and the elimination of its storage volume.

#### *3.3.5 Watershed Management*

OBGMA will work with other stakeholders in the Ventura River Watershed to effectively understand and manage the drainage area that includes Ojai. Such a project is also included in the suite of tasks applied for by the WCVC, under the Ventura River Watershed Protection Plan. OBGMA supports this endeavor and the understanding of the basin will be enhanced with additional monitoring wells in the basin provided under the project.

### *3.4 Goal 4. Effective Communication*

The effectiveness of OBGMA will depend upon its ability, within its limited means, to meet the needs of the water users and well owners of the basin. This will depend on effective, two-way communication between OBGMA and the users it serves. Table 4 describes selected Goal 4 elements that have been completed, are scheduled, or are planned.

#### *3.4.1 Advisory Committee*

Ad hoc advisory committees with representatives of the well owners and water users in the basin have been periodically created by the OBGMA board and have been a means of developing a dialogue between users and OBGMA. The advisory committees are used by OBGMA board as a nucleus of interested and affected users to consider and develop the details of actions proposed under this groundwater management plan update.

**Table 4. Selected Completed, Scheduled, and Planned Future Elements**
**Goal 4, Effective Communication**

| Element | Description | Completion Date (Actual or Anticipated) |
|---|---|---|
| *Completed Element* | | |
| Public workshops | Two workshops to hear and record well owner concerns | 1994 |
| Advisory committee | Explored basin issues | 1994 |
| Public workshop | Sponsored "Well Maintenance and Rehabilitation" Seminar | 1998 |
| Outreach | Displayed "Pollution Prevention House" on Ojai Day and at local elementary schools | 1999 |
| Website | To inform stakeholders of Agency operations and Basin issues | 2007 |
| *Scheduled Element* | | |
| Maintain and update website | To inform stakeholders of Ojai Basin Groundwater Management Agency operations and basin issues | Ongoing |
| *Future Element* | | |
| Awareness campaign | Increase public awareness of water issues in the basin through workshops, forums, newsletters, etc. | 2008 and ongoing |

### *3.4.2 Annual Report*

OBGMA will prepare an annual report as required by law that it will self-publish at minimum expense. Technical contractors will only be used if required to perform technical analysis of data collected during the year.

### *3.4.3 Information Sharing*

Information learned about the basin and water use in the basin will be shared by OBGMA with all well owners directly and with water users in the basin through the general news media and the publications of local water purveyors. Actions or items of special interest will be shared with well owners by direct mail newsletters, which will also include notice of OBGMA meetings and agendas. OBGMA board members will be available to meet with basin water users to address issues of concern and the ongoing management activities of OBGMA. OBGMA has established a website through which information is shared freely with the public. OBGMA's web address is www.obgma.com.

### 3.5 Goal 5. Efficient Administration

The resources available to OBGMA to carry out its mission and serve the water users of the basin are limited. Therefore, cost containment measures are essential. These measures will be developed and made part of this Plan update. Table 5 describes selected Goal 5 elements that have been completed, are scheduled, or are planned.

**Table 5. Selected Completed, Scheduled, and Planned Future Elements Goal 1, Efficient Administration**

| Element | Description | Completion Date (Actual or Anticipated) |
|---|---|---|
| *Completed Element* | | |
| Finance committee | Formed finance committee of board members and well owners, prepare fiscal budget | 1994 (annually thereafter) |
| User fees | Established a system to fund Ojai Basin Groundwater Management Agency (OBGMA) based on well user fees | 1995 |
| Revenue evaluation | Evaluated expenses and revenue, to reach goal of operating on revenue from extraction fees only, grants of $3,500 from Casitas, Southern California Water Co. and the City of Ojai were encumbered as seed monies for OBGMA advancement. | 1996 |
| *Scheduled Element* | | |
| Funding increase | Increase extraction charge ceiling to a reasonable amount through legislation. | 2007 |
| Administration | Hire a professional, qualified manager, on a part-time basis, to efficiently and effectively provide staff support for the agency. | 2008 |
| *Future Element* | | |
| Donations | Solicitations of donations from stakeholders and other benefactors | Ongoing |

#### 3.5.1 *Funding*

OBGMA is funded by extraction charges levied on pumpers in the Ojai Basin. The present legislative ceiling on extraction charges is $7.50 per acre-foot. In a typical year with 5,000 acre-feet extracted, the OBGMA budget is roughly $37,500 per year. OBGMA operates from a one-room office, with one part-time office assistant who also acts in the capacity of secretary and treasurer. These expenses, along with regular audits and required insurance, consume the

majority of the funding. OBGMA should have one professional, technically qualified staff person as a manager at least part time. OBGMA should also participate in funding projects that are within its purview (such as the proposed SACSGRP, operation and maintenance, matching funds for grants, hiring consultants). OBGMA is seeking legislation in the 2007 session to amend its enabling Act to increase the extraction charge ceiling to $25. Any change in actual extraction charge will be voted upon by the OBGMA board, which consists of representatives of the stakeholders. The OBGMA board has estimated that an actual extraction charge of $15 per acre-foot would provide the funding needed to carry out their basic responsibilities and that an additional charge of $4 per acre-foot would be need to pay the OBGMA share of the operation and maintenance of the proposed SACSGRP.

With adequate funding, OBGMA will meet its responsibilities as required by law, will be able to carry out its mission to protect Ojai Basin groundwater in the interests of the water users in the basin, and will be able to achieve the goals of this management plan update.

### *3.5.2 Minimum Requirements*

The OBGMA's enabling legislation requires the Plan to establish a minimum amount of extraction below which the requirements of the Act will not be applied. The OBGMA will establish these criteria.

# Appendix J

## CMWD Consumer Confidence Report

# 2015 Annual Drinking Water Quality Report

## 2014 Data

## Casitas Keeps Your Water Safe

Casitas strives to provide you with water that meets or exceeds all federal and state standards for safe water. To ensure that you receive the highest quality drinking water, we test beyond what state and federal regulations mandate. This report shows the results of our monitoring for the period of January 1 through December 31, 2014 or the most recent testing period required.

Este informe contiene informacion muy importante sobre su agua beber. Traduzcalo 6 hable con alguien que lo entienda bien. Para la informacion llame por favor 805-649-2251.

Board meetings are open to the public and are held on the second and fourth Wednesdays of each month at 3:00 p.m. at the district main office, 1055 Ventura Ave., Oak View, CA, 93022. For additional details on the subjects outlined here and for more information about Casitas Municipal Water District, visit us at our Web site:

www.casitaswater.org, or call Susan McMahon, Water Quality Supervisor, at 805-649-2251 extension 120.

*A new aeration system will be installed in Lake Casitas during summer of 2015.*

## Your Tap Water Is Safe to Drink

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the State Water Resources Control Board (SWRCB) Division of Drinking Water prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. SWRCB Division of Drinking Water regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Drinking water, including bottled water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

## Do You Know the Source of Your Water?

The Casitas Municipal Water District is supplied by a blend of ground water and surface water that is treated before it is distributed to the public. The surface water comes from Lake Casitas, located near the junction of Highway 150 and Santa Ana Road, and the ground water is drawn from the Mira Monte Well. Most of the watershed is federally protected to limit contamination of the lake. For additional protection we inspect the watershed on a regular basis.

For more information, you may review the 1995 Watershed Sanitary Survey and the 2011 update, which are available at our main office in Oak View.

Lake Casitas is considered to be most vulnerable to the following activities not associated with any detected contaminants: boat services (repair and refinishing), petroleum pipelines and recreation. There have been no contaminants detected in the water supply, although the lake is still vulnerable to activities located near this major source of our drinking water. The potential sources of contaminants include private sewage disposal systems; livestock and wildlife grazing; limited pesticide and herbicide use; activities in the surrounding recreation area; unauthorized dumping; limited growth of new homes or urban areas; traffic accidents; and spills.

The 2002 Drinking Water Source Assessment for the Mira Monte Well is also available to the public at our office. This well is considered to be most vulnerable to the use of fertilizers and animal grazing, which raise nitrate levels in the water. In addition, the Mira Monte Well may be vulnerable to activities associated with an urban environment. However, these activities have not resulted in contamination of the well.

## Nature and Man Influence Your Water Quality

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or human activity.

Contaminants that may be present in source water include:

1. Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

2. Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff; industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

3. Pesticides and herbicides that may come from a variety

*Continued on page 6 ➢*



of sources such as agriculture, urban storm water runoff, and residential uses.

4. Organic chemical contaminants, including synthetic and volatile organic chemicals, that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, agricultural application and septic systems.

5. Radioactive contaminants, that can be naturally-occurring or be the result of oil and gas production and mining activities.

Lake Casitas has no urban or industrial water runoff and very few residents still live in the watershed. There is no oil, gas or mining production in our watershed.

## Chloramine Disinfection

All public drinking water must be disinfected to prevent water-borne diseases. Casitas disinfects the water by adding chlorine and a small amount of ammonia to the water to form chloramines. Chloramine disinfection is approved by the SWRCB Division of Drinking Water and the US Environmental Protection Agency. Many United States and Canadian cities have used chloramines for decades to disinfect water. The Metropolitan Water District of Southern California supplies water to nearly 18 million people and has been successfully using chloramines for disinfection since 1984. Chloramines reduce the level of unwanted disinfection by-products in our water. Disinfection by-products are formed when chlorine mixes with naturally occurring organic material in water. Currently, regulated disinfection by-products include trihalomethanes and haloacetic acids. Chloramines stop the formation of these by-products and the chloraminated water has less of a chlorine taste and odor than chlorinated water. Chloramines do not pose a health hazard to the general population. Chloraminated water is safe for drinking, bathing, cooking and other normal uses. Two specific groups of people, however, do need to take special care with chloraminated water - kidney dialysis patients and tropical fish hobbyists.

## Dialysis Patients Have Special Needs

Kidney patients are not harmed from drinking, cooking or bathing in chloraminated water. However, there is a problem that needs to be addressed for individuals who are undergoing dialysis treatment on artificial kidney machines. Chloramines must not be present in the water used in dialysis machines. Chloramines can be removed through a filtration system. We have worked with the SWRCB Division of Drinking Water to ensure that everyone involved with treatment of dialysis patients is alerted to the facts about chloraminated water.

## Chloramines and Your Aquarium or Fishpond

Chloramines are toxic to fish or animals that use gills to breath. While chlorine will evaporate rather quickly from standing water, it may take weeks for chloramines to disappear. Thus it is necessary to dechlorinate water used for aquariums and fishponds. We suggest using a filter system or a dechlorinating agent sold at most pet stores for fresh and saltwater aquariums and fishponds. Another option is to install a high-quality granular activated carbon (GAC) filter in your home. The chloramine residual in water used for fish should be kept below 0.1 parts per million. Contact your local pet store or fish shop for additional assistance.

## Chloramines Are Safe for Plants and Swimming Pools

Chloramines will not affect the chlorine balance in your backyard swimming pool. You still need to add chlorine to retard algae and bacterial growth. Chloramines have no affect on plants, vegetables or fruit trees. For more information on chloramines call 805-649-2251, ext. 120.

## Fluoride

Casitas does not add fluoride, but there is some fluoride in the water that is naturally occurring. This level was tested at 0.4 mg/L in the lake source during 2014. For more information on fluoride check the Division of Drinking Water's Fluoridation website for more information on fluoridation, oral health and current issues: http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Fluoridation.shtml

## Lead and Copper

The latest results from Casitas' lead and copper testing were below the action levels. If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Casitas is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead. Elevated levels of copper can occur when corrosive water causes leaching of copper plumbing. To prevent this Casitas has implemented a corrosion-control plan by adding a small amount of phosphate to the water to lower the corrosivity and reduce copper levels.

## Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

## Unregulated Contaminant Monitoring

Unregulated contaminant monitoring helps USEPA and the SWRCB Division of Drinking Water to determine where certain contaminants occur and whether the contaminants need to be regulated. Casitas sampled for unregulated contaminants during 2013; see the table for sampling results.

## New Aeration System Planned for 2015

A new aeration system will be installed in Lake Casitas during summer of 2015. The new system will inject oxygen into the deeper portions of the lake near the dam. It is expected that the new system will improve water quality and help prevent some of the taste and odor problems that customers have been experiencing during summer and fall.

# Casitas Water Quality Table 2015 (2014 Data)

## Primary Health Standards

| CONSTITUENTS | MCL (MRDL) | PHG, (MCLG) (MRDLG) | LAKE CASITAS TREATED WATER LEVEL/AVERAGE | LAKE CASITAS TREATED WATER RANGE | MIRA MONTE WELL AVERAGE | MIRA MONTE WELL RANGE | DISTRIBUTION SYSTEM AVERAGE | DISTRIBUTION SYSTEM RANGE | Year Tested[a] Lake or Distribution System | Year Tested[a] Well | Source of Contamination |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Turbidity** | **Treatment technique (TT)[b]** | | | | | | | | | | |
| Filter Effluent Turbidity (NTU)[b] | 1 NTU | NA | highest value = 0.40 | NA | NA | NA | NA | NA | 2014 | NA | Soil runoff |
| | | | | | | | | | | | |
| | 95% < 0.2 NTU | | 99.6% of turbidity measurements < 0.2 | | | | | | | | |
| **MICROBIOLOGICAL[c]** | | | | | | | | | | | |
| Total Coliform Bacteria | > 1 positive sample/month | (0) | | | | | 0 | 0 | 2014 | NA | Naturally present in the environment |
| E. Coli Bacteria | > 1 positive sample/month | (0) | | | | | 0 | 0 | 2014 | NA | Human and animal fecal waste |
| **INORGANIC CHEMICALS** | | | | | | | | | | | |
| Barium (ppm) | 1 | 2 | ND | NA | 0.1 | NA | NA | NA | 2014 | 2013 | Discharges of oil drilling wastes and from metal refineries; erosion of natural deposits |
| Fluoride (ppm) | 2.0 | 1 | 0.4 | NA | 0.4 | NA | NA | NA | 2014 | 2013 | Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories |
| Nickel (ppb) | 100 | 12 | ND | NA | 28 | NA | NA | NA | 2014 | 2013 | Erosion of natural deposits; discharge from metal factories |
| Nitrate as N03 (ppm)[d] | 45 | 45 | 1.0 | NA | 44.0 | 41.3-45.9 | ND | ND-2.6 | 2014 | 2014 | Runoff and leaching from fertilizer use; leaching from tanks and sewerage; erosion from natural products |
| **DISINFECTION BY-PRODUCTS AND DISINFECTANT RESIDUALS** | | | | | | | | | | | |
| Chloramines (ppm) | [4.0] | [4.0] | | | | | 2.6 | 1.0-3.9 | 2014 | NA | Drinking water disinfectant added for treatment |
| Trihalomethanes (ppb) | 80 | NA | | | | | 36.9 | 24.8-52.2 | 2014 | NA | By-product of drinking water disinfection |
| Haloacetic acids (ppb) | 60 | NA | | | | | 22 | 8-33 | 2014 | NA | By-product of drinking water disinfection |
| **INDIVIDUAL TAP MONITORING FOR: LEAD AND COPPER** | **Regulatory Action Level** | **PHG** | **# of samples collected** | **Homes above AL** | **Level detected at 90th percentile** | **Year Tested[a]** | | | | | |
| Lead (ppb) | 15 | 0.2 | 23 | 0 | ND | | | | 2014 | NA | Internal corrosion of household plumbing systems; discharges from industrial manufacturers; erosion of natural products |
| Copper (ppm)[e] | 1.3 | 0.3 | 23 | 0 | 1.0 | | | | 2014 | NA | Internal corrosion of household water plumbing systems; erosion of natural deposits; leaching from wood preservatives |

## Secondary Aesthetic Standards[f]

| CONSTITUENTS | State MCL | PHG/NL | LAKE CASITAS TREATED WATER LEVEL/AVERAGE | LAKE CASITAS TREATED WATER RANGE | MIRA MONTE WELL AVERAGE | MIRA MONTE WELL RANGE | DISTRIBUTION SYSTEM AVERAGE | DISTRIBUTION SYSTEM RANGE | Year Tested[a] Lake | Year Tested[a] Well | Source of Contamination |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Turbidity(NTU) | 5 | NA | 2.0 | NA | 0.4 | NA | | | 2014 | 2013 | Soil run-off |
| Total Dissolved Solids (ppm) | 1000 | NA | 380 | NA | 420 | NA | | | 2014 | 2013 | Run-off/leaching from natural deposits |
| Specific Conductance (uS/cm) | 1600 | NA | 563 | NA | 679 | NA | | | 2014 | 2013 | Substances that form ions in water; seawater influence |
| Chloride (ppm) | 500 | NA | 19 | NA | 66 | NA | | | 2014 | 2013 | Run-off/leaching from natural deposits; seawater influence |
| Sulfate (ppm) | 500 | NA | 141 | NA | 40 | NA | | | 2014 | 2013 | Run-off /leaching from natural deposits; industrial wastes |
| **Additional Monitoring** | | | | | | | | | | | |
| **UCMR 3 Monitoring** | | | | | | | | | | | |
| Chlorate (ppb) | 800 | NA | ND | ND | 176 | 65-290 | ND | ND | 2013 | 2013 | A disinfection by-product |
| Molybdenum (ppb) | NA | NA | 3.3 | 3.1-3.4 | | ND-1.9 | 3.4 | 3.2-3.5 | 2013 | 2013 | A naturally-occuring element found in ores and present in plants, animals and bacteria |
| Strontium (ppb) | NA | NA | 703 | 660-750 | 520 | 470-570 | 723 | 670-770 | 2013 | 2013 | A naturally-occuring element |
| Vanadium (ppb)[g] | 50 | NA | See footnote g | | See footnote g | | See footnote g | | 2013 | 2013 | A naturally-occuring elemental metal |
| **ADDITIONAL CONSTITUENTS (UNREGULATED)** | | **PHG/NL** | | | | | | | | | |
| Alkalinity (Total as CaCO3 ppm) | NA | NA | 120 | NA | 160 | NA | | | 2014 | 2013 | A measure of the capacity to neutralize acid |
| Boron (ppb) | NA | (1000) | 200 | NA | 100 | NA | | | 2014 | 2013 | A naturally-occurring element |
| Calcium (ppm) | NA | NA | 49 | NA | 52 | NA | | | 2014 | 2013 | A naturally-occurring element |
| Magnesium (ppm) | NA | NA | 22 | NA | 15 | NA | | | 2014 | 2013 | A naturally-occurring element |
| Potassium (ppm) | NA | NA | 3 | NA | ND | NA | | | 2014 | 2013 | A naturally-occurring element |
| Total Hardness (ppm) | NA | NA | 273 (13.1 grains/gal) | NA | 191 | NA | | | 2014 | 2013 | "Hardness" is the sum of polyvalent cations present in the water, generally magnesium and calcium. The cations are usually naturally occuring. |
| Sodium (ppm) | NA | NA | 26 | NA | 54 | NA | | | 2014 | 2013 | "Sodium" refers to the salt present in the water and is generally naturally occurring. |

## TERMS USED IN THIS REPORT:

**Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

**Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

**Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**Notification Level:** Health based advisory levels established by The State Board* for chemicals in drinking water that lack MCLs.

**Primary Drinking Water Standards (PDWS):** MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

**Public Health Goal (PHG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

**Regulatory Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

**Secondary Drinking Water Standards (SDWS):** MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

**Treatment Technique:** A required process intended to reduce the level of a contaminant in drinking water.

**UCMR 3:** Unregulated Monitoring Contaminant Rule (Third round). This monitoring helps the EPA and The State Board* determine where certain contaminants occur and whether the contaminants need to be regulated.

## Key To Table (ACRONYMS)

**NA** = Not Applicable
**ND** = None Detected
**NL** = Notification Level
**NS** = No Sample
**NTU** = Nephelometric Turbidity Units (a measure of turbidity)
**ppt** = Parts per trillion, or nanograms per liter (ng/L)
**pCi/L** = Picocuries per liter (a measure of radiation)
**ppm** = Parts per million, or milligrams per liter (mg/L)
**ppb** = Parts per billion, or micrograms per liter (ug/L)
**TT** = Treatment Technique
**uS/cm** = Micro Siemens per Centimeter (a measure of specific conductance)

## Water Quality Table Footnotes:

a) The State allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

b) 99.6 % of the samples tested for turbidity were below the required TT level of 0.2 NTU. Turbidity is a measure of the cloudiness of water and is a good measure of water quality and filtration performance.

c) During 2014 Casitas collected 159 samples for total coliform bacteria testing according to the Total Coliform Rule. Total Coliform bacteria were not detected in any of these samples.

d) Mira Monte Well is above the MCL for nitrates, however the well water is blended with lake Casitas water with the resulting nitrate level averaging 1.9 ppm.

e) Casitas has implemented a corrosion control plan by adding a small amount of phosphate to the water to lower corrosivity and reduce copper levels.

f) Elevated manganese levels created taste/odor issues during the fall season of 2014; the problem was caused by low levels of dissolved oxygen in the lake.

g) These results are below the detection limits for reporting and can only be used as an estimate. For vanadium sampling the highest level (in ppb) for the lake was 1.2 (ND for 2014), the well was 0.78 and the distribution system was 1.2.

* CA State Water Resources Control Board

# Appendix K

## CMWD Water Conservation Resolutions

**CASITAS MUNICIPAL WATER DISTRICT**

**RESOLUTION NO. 16-**

**A RESOLUTION DECLARING AND IMPLEMENTING A STAGE 3 WATER SUPPLY CONDITION FOR ALL CASITAS CUSTOMERS**

WHEREAS, during the drought experienced in the Ventura River watershed during the period of 1987 through 1990, the annual water demands from Lake Casitas escalated and temporarily exceeded the safe yield of the Lake Casitas water supply and water stored in Lake Casitas diminished from a full condition to approximately 50.2 percent of full lake capacity; and

WHEREAS, in 1990, the Casitas Municipal Water District ("Casitas") concluded that the long-term demand upon Lake Casitas shall not exceed the safe yield of Lake Casitas and other Casitas sources of water supply; and

WHEREAS, in 1992, Casitas adopted Ordinance 92-7, the Water Efficiency and Allocation Program (WEAP), and Resolution 92-11, the Water Shortage Contingency Plan, which was implemented in the Casitas Rates and Regulations for Water Service for all Casitas customers; and

WHEREAS, the application of water allocations, water conservation measures and progressive restrictions on water use set forth by the adopted Ordinance 92-7, the Water Efficiency and Allocation Program (WEAP), and Resolution 92-11, the Water Shortage Contingency Plan, are intended to provide to the water consumer an effective and immediately available means of conserving water in a manner that is essential to ensure a reliable and sustainable minimum supply of water for the public health, safety, and welfare and to preserve valuable limited water supply, avoid depleting water storage to an unacceptably low level, and thereby lessen the possibility of experiencing severe critical water shortages if dry conditions continue or worsen; and

WHEREAS, in 2004, Casitas evaluated the safe yield of the Ventura River Project under the changed conditions imposed by the 2003 Biological Opinion, pursuant to the Federal Endangered Species Act, for the operations of the Robles Diversion and the inclusion of the change in water supply with the eventual removal of Matilija Dam, concluding that the safe yield of the Ventura River Project is significantly reduced as a result of these changing conditions and that alternative demand reduction measures may be required to balance long-term water supplies and water demands while meeting the needs of the environment; and

WHEREAS, in 2005, Casitas prepared and adopted the 2005 Urban Water Management Plan that summarized information on present and future water resources and demands, provided water supply planning, provided water shortage contingency planning, and described

Casitas efforts to implement water conservation and efficient water uses for all Casitas' water customers; and

WHEREAS, in 2006, Casitas implemented operational measures at the Robles Diversion and Fish Passage Facility to comply with the 2003 Biological Opinion for the restoration of the endangered steelhead trout in the Ventura River, and that the implementation of said operational measures lessened the quantities of water that could be diverted to and stored in Lake Casitas for beneficial uses, and thereby reducing the safe yield of the Ventura River Project; and

WHEREAS, in 2009, the State of California enacted the Urban Water Management Planning Act (SB7X X) that legislated requirements for long-term water resources planning to ensure adequate water supplies to meet existing and future demands for water; and

WHEREAS, on June 22, 2011, in accordance with California Water Code §10620–10656, Casitas adopted the 2010 Urban Water Management Plan that further defined stages of action to achieve the balance between water supplies and demand through an equitable distribution of the existing water supplies, and to establish consumption limits in its water shortage contingency plan that would reduce water use; and

WHEREAS, the Casitas 2010 Urban Water Management Plan established that a Level Two Alert may result with conditions that cause a lowering of water stored in Lake Casitas to be at or near the 50% full; and

WHEREAS, on January 17, 2014, the Governor of California proclaimed a State of Emergency to exist throughout California due to severe drought conditions that have persisted since 2012 and further proclaimed on April 25, 2014 that a Continued State of Emergency exists throughout California due to the ongoing drought; and

WHEREAS, the Governor's proclamation called upon all Californians to reduce their water usage by 20 percent; and

WHEREAS, the Governor's proclamation called upon local urban water suppliers and municipalities to implement any local water shortage contingency plans immediately in order to avoid or forestall outright restrictions that could become necessary later in the drought season; and

WHEREAS, on July 9, 2014, the Casitas Board proclaimed by Resolution 14-14 that drought conditions are stressing the groundwater and surface water supplies in western Ventura County to levels not seen in decades, and reaffirmed the Casitas 1992 Water Shortage Contingency Plan that sets a goal of a 20 percent voluntary reduction in water use; and

WHEREAS, on July 15, 2014, the State Water Resources Control Board adopted Resolution No. 2014-0038 that implemented emergency regulations and actions to further reduce water demands of urban customers by the implementation of specific water waste prohibitions and required the implementation of water supplier's approved Water Shortage Contingency Plan at a stage that requires mandatory water use restrictions on outdoor irrigation of ornamental landscapes or turf with potable water; and

WHEREAS, on August 13, 2014, Casitas adopted modifications to the Water Waste Prohibition Ordinance and the Casitas Water Shortage Contingency Plan to comply with the directives of the State Water Resources Control Board Resolution No. 2014-0038; and

WHEREAS, on April 1, 2015, the Governor of California issued Executive Order B-29-15, ordering that the State Water Resources Control Board impose restrictions to achieve a statewide 25% reduction in potable urban water usage through February 28, 2016, to lead a statewide initiative to collectively replace 50 million square feet of lawns and ornamental turf with drought tolerant landscapes, impose restrictions to require that commercial, industrial, and institutional properties immediately implement water efficiency measures to reduce potable water usage in an amount consistent with the statewide 25% reduction in water use, prohibit irrigation with potable water of ornamental turf on public street medians, and prohibit irrigation with potable water outside of newly constructed homes and buildings that is not delivered by drip or microspray systems, and direct urban water suppliers to develop rate structures and other pricing mechanisms, including but not limited to surcharges, fees, and penalties, to maximize water conservation consistent with statewide water restrictions; and

WHEREAS, on April 11, 2015, the volume of water stored in Lake Casitas had declined to 50 percent of total storage capacity and the Board of Directors declared that a Stage 2 condition exists at Lake Casitas; and

WHEREAS, on June 10, 2015, the Casitas Board of Directors adopted revisions to the Water Efficiency and Allocation Program and directed staff to implement the Program that sets a goal of a 20 percent mandatory reduction in water use during the Stage 2 water supply condition at Lake ; and

WHEREAS, the General Manager has reported to the Board of Directors by memorandum dated April 4, 2016, that during the winter months of 2016 the Ventura River watershed continued to experience below normal rainfall that is a continuation of drought conditions that are likely to extend through the remainder of calendar year 2016, and possibly into future years; and

WHEREAS, the releases of water from Lake Casitas to the Casitas main conveyance system totaled 17,246 acre-feet, which is less than the annual safe yield of Lake Casitas (20,850

Acre-feet per year), such that on April 22, 2016, the storage level of water in Lake Casitas has declined to 41.7 percent and will continue to decline to less than 40 percent during the summer of 2016, until adequate rainfall and runoff reoccur in the local watersheds; and

WHEREAS, as the drought continues, groundwater sources will become depleted and the remaining Lake Casitas water supply will become a primary source of water to supplement uses that otherwise rely on local groundwater sources; and

WHEREAS, the Casitas Water Efficiency and Allocation Program identifies a decline to forty (40) percent of storage available in Lake Casitas as the Stage 3 condition and subject to water demand reduction measures to preserve the Lake Casitas water supply during a continuation of the drought; and

WHEREAS, Article X, Section 2 of the California Constitution declares that the general welfare requires that water resources be put to beneficial use, that waste or unreasonable use or unreasonable method of use of water be prevented and that conservation of water be fully exercised with a view to the reasonable and beneficial use thereof; and

WHEREAS, California Water Code, Section 375, authorizes a water supplier to adopt and enforce a comprehensive water conservation program to reduce water consumption and conserve water supplies; and

WHEREAS, California Water Code, Section 71611 provides that a district may sell water under its control, without preference, to cities, other public corporations and agencies, and persons, within the district for use within the district.

WHEREAS, California Water Code Section 71640 authorizes the governing body of a municipal water district to restrict the use of district water during any emergency caused by drought, or other threatened or existing water shortage, and may prohibit the wastage of district water or the use of district water during such periods for any purpose other than household uses or such other restricted uses as the district determines to be necessary, and may prohibit use of district water during such periods for specific uses which it finds to be nonessential; and

WHEREAS, California Water Code Section 71642 authorizes the governing body of a municipal water district to find the existence or threat of a drought emergency or other threatened or existing water shortage, and that finding is prima facie evidence of the fact or matter so found, and such fact or matter shall be presumed to continue unchanged unless and until a contrary finding is made by the board by resolution or ordinance; and

WHEREAS, pursuant to Water Code section 71641 and Government Code section 6061, the [District] must publish in a newspaper of general circulation any ordinance setting forth the restrictions, prohibitions, and exclusions determined to be necessary under Water Code section 71640 within 10 days after its adoption; and

NOW, THEREFORE, BE IT RESOLVED that: by of the Casitas Municipal Water District as follows:

1) Pursuant to Water Code section 71642, and for the reasons set forth herein, the Board continues with the determination of the existence or threat of a drought emergency or other water shortage condition; and

2) Pursuant to California Water Code Section 71611 and under the authority of Water Code Section 71640, any water that is delivered from Lake Casitas and the Casitas distribution system that is used outside the District boundaries is considered an unreasonable use and an unreasonable method of use; and

3) Casitas hereby declares that a Stage 3 water supply condition exists within the service area of the Casitas Municipal Water District; and

4) The Board of Directors hereby directs staff to take the following actions that are described in the 2015 Water Efficiency and Allocation Program for a Stage 3 condition in Lake Casitas, in the specified time, that include:
    a) Effective upon adoption of this Resolution:
        i. Continue with the Stage 1 and Stage 2 measures; and
        ii. Expand and intensify the public information campaign within Casitas Municipal Water District that a mandatory reduction in water use is required during Stage 3 water supply conditions.
        iii. Implement measures to inform and educate all water users within Casitas Municipal Water District as to methods for achieving the reduction in water use.
        iv. Increase the current level of public outreach.
        v. Develop a budget to support water conservation and Public outreach efforts.

    b) Prior to July 1, 2016, bring forward to the Board of Directors recommendations to consider a moratorium or controlled issuance of new water service connection and allocations.

c) Effective July 1, 2016, implement the following Stage 3 actions and measures:
    i. Reduce the initial allocation of every customer by an additional ten (10) percent; and
    ii. Maintain the same conservation penalties as adopted by the Board of Directors on July 22, 2015; and
    iii. Restrict landscape irrigation watering to one day a week, such day to be specified by Casitas.

5) The Stage 3 water supply condition shall be presumed to continue unchanged unless and until a contrary finding is made by the Board by resolution or ordinance.

ADOPTED this 27th day of April, 2016

_____
Peter Kaiser, President
Casitas Municipal Water District

ATTEST:

_____
Jim Word, Secretary
Casitas Municipal Water District

# CASITAS MUNICIPAL WATER DISTRICT

## ORDINANCE NO. 15-02

## AN ORDINANCE OF THE CASITAS MUNICIPAL WATER DISTRICT ESTABLISHING WATER WASTE PROHIBITIONS

THIS ORDINANCE is adopted in light of the following facts and circumstances, which are hereby found and declared by the Casitas Municipal Water District (Casitas) Board of Directors:

WHEREAS, Article X, Section 2 of the California Constitution and Section 100 of the California Water Code declare that the general welfare requires water resources be put to beneficial use, therefore, waste or unreasonable use or unreasonable method of use of water be prevented, and conservation of water be fully exercised with a view to the reasonable and beneficial use thereof.

WHEREAS, the adoption and enforcement of this Ordinance is necessary to help manage Casitas' potable water supply and to avoid or minimize the effects of drought within the Casitas service area.

WHEREAS, Casitas has the power to perform all acts necessary to fully carry out the provisions of this Ordinance consistent with Section 71640 and Sections 10608 through 10656 of the California Water Code.

WHEREAS, this Ordinance rescinds and replaces Casitas Municipal Water District Resolution No. 08-09, Resolution Approving a Water Waste Prohibition Regulation.

BE IT ORDAINED by the Board of Directors of the Casitas Municipal Water District as follows:

**1. TITLE.**

This Ordinance shall be known as the Water Waste Prohibition Ordinance.

**2. APPLICABILITY.**

The 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 Municipal Water District. The water customers of other water purveyors shall be governed by the prohibitions that are adopted by the other water purveyors.

**3. PROHIBITED USES.**

A. The following uses of water are permanently prohibited and are in effect year round:

a. **General Waste:** Indiscriminate running of water or washing with water which is wasteful and without reason or purpose.

b. **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.

c. **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.
d. **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.
e. **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. (Does not apply to irrigation systems that use drip-irrigation and weather-based controllers or stream rotor sprinklers that meet a 70% efficiency standard. Exceptions may be authorized by the General Manager where there is no ability to not water between 10:00 a.m. to 6:00 p.m.).
f. **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.
g. **Drought Restrictions:** Watering/irrigating during publicly declared curtailment period in a manner that is not compliant with drought restrictions.
h. **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.
i. **Fountains and Decorative Water Features:** The operation of any ornamental fountain using water from the District's domestic water system unless water for such use is re-circulated.
j. **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.
k. **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.
l. **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.
m. **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.

n. **Commercial Car Wash Systems:** Installation of non-recirculating water systems is prohibited in new or renovations of commercial conveyor car washes systems.
o. **Turf Irrigation Restrictions:** Irrigating turf or ornamental landscapes during and 48 hours following measurable precipitation.

**4. EXEMPTED WATER USES.**

A. All water use associated with the operation and maintenance of fire suppression equipment or employed by the District for water quality flushing and sanitation purposes shall be exempt from the provisions of this Ordinance.
B. 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.
C. Supervised testing, adjusting, or repairing of irrigation systems is allowed any time for no more than five (5) minutes per station.

**5. VIOLATIONS AND PENALTIES.**

A. 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.

B. **Enforcement of Violation**. Complaints of water waste will be investigated and enforced by the District in the form of a notice of violation. The following officers and employees of the Casitas Municipal Water district are hereby designated and authorized to issue citations for enforcement of this Ordinance:

Operations and Maintenance Manager
Public Affairs/Resource Manager
Water Conservation Coordinator
Utility Workers
Water employees designated by the General Manager

C. **Notice of Violation.** The notice to the District 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 District 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. District staff may use discretion when determining the correction time.

D. **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:

1. **Penalties:** Penalties for failure to comply with any provision of the ordinance are as follows:

a. **First Violation:** The District will issue a written notice to the water customer and attach a copy of this Ordinance.

b. **Second Violation:** If the first violation is not corrected within the time frame specified by the District, 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.

c. **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).

d. **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:
   1. 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 District material purchases per the District's Rates and Regulations for Water Service in effect at the time.

   2. 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.

e. **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 Rates and Regulations for Water Service.

3. **Appeal:** Any customer against whom a penalty is levied pursuant to this Ordinance shall have the right to appeal as follows:
   a. 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:
      i. A description of the issue,
      ii. Evidence supporting the appeal, and
      iii. A request for resolution of the dispute.
   b. 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.
   c. 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.

6. **SEVERABILITY.** If any competent court shall find any portion of this Ordinance unconstitutional, such decision shall not affect the validity of any other portion thereof.

7. **EFFECTIVE DATE.** This Ordinance becomes effective this 22nd day of April, 2015.

PASSED AND ADOPTED at a regular meeting of the Board of Directors of the Casitas Municipal Water District held on April 22, 2015 by the following vote:

AYES: Word, Baggerly, Kaiser, Bergen
NOES: None
ABSENT: Hicks
ABSTAIN: None

APPROVED:

Mary Bergen, President
Casitas Municipal Water District

ATTEST:

Russ Baggerly, Secretary
Casitas Municipal Water District

CASITAS MUNICIPAL WATER DISTRICT

RESOLUTION NO. 15-30

A RESOLUTION OF THE CASITAS MUNICIPAL WATER DISTRICT SETTING CONSERVATION PENALTY FOR EXCESSIVE WATER USE PURSUANT TO WATER CODE SECTION 372, ET. SEQ.

**WHEREAS**, on June 10, 2015, the Board of Directors of the Casitas Municipal Water District adopted the Water Efficiency and Allocation Program that established an allocation-based conservation water structure; and

**WHEREAS**, pursuant to California Water Code Section 372 et seq, the District may impose a conservation charge on all increments of water use in excess of the basic use allocation.

**NOW, THEREFORE**, the Board of Directors of the Casitas Municipal Water District ordains as follows:

A conservation penalty, imposed as a regulatory charge, be set at $1.00 per unit of water be applied to monthly water use by a Casitas Residential and Multi-residential classification customer that is in excess of the individual customer's assigned monthly water allocation be set at $1.00 for each unit that is in excess of the monthly allocation. The conservation penalty shall be billed monthly.

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, Inter-departmental, Other, and Resale classifications. The conservation penalty shall be billed at the end of the fiscal year to each individual customer that has accrued an excess water use.

ADOPTED this 22th day of July 2015.

Mary Bergen, President
Casitas Municipal Water District

ATTEST:

Russ Baggerly, Secretary
Casitas Municipal Water District

# WATER EFFICIENCY AND ALLOCATION PROGRAM

## Casitas Municipal Water District

## June 10, 2015

## SECTION 1: INTRODUCTION

In 1992 the Casitas Municipal Water District (Casitas) 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. Since 1992, there has been a significant outreach by Casitas to raise the public's awareness on the importance to conserve local water supplies, changes in the water supply and demand, regulatory compliance directives pursuant to the Endangered Species Act (ESA), and system outage events that temporarily activated Casitas' emergency response plan. All of these factors, including the responses and experiences of the current drought, are considered in the update of the Water Efficiency and Allocation Program.

### 1.1 Purpose and Principles of the Plan.

The purpose of this update of the WEAP is to provide guidance on water supply and demand strategies that (1) conserve the water supply of the Ventura River Project, Lake Casitas and other water resources that are in the direct control of Casitas, for the greatest public benefit, (2) mitigate the effects of a water shortage on public health and safety and economic activity, (3) 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, and (4) 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.

### 1.2 Relationship between this Document, Water Codes, and Other Plans.

This WEAP shall be guided by State regulations and planning requirements as provided by the California Water Code that provides Casitas with broad powers to implement and enforce regulations and restrictions for managing a water shortage (§71640-71644), to implement water conservation programs (§375--378), to implement allocation-based conservation water pricing (§370-374), and to declare a water shortage emergency(§350-359).

As required by Water Code Section 10632, this WEAP shall be integrated as a part of the Casitas Urban Water Management Plan (UWMP), as amended or updated every five years. The Casitas 2010 UWMP has been accepted and approved by the State Department of Water Resources. The UWMP provides an in-depth description of the Casitas water system, water resources and demands, and water supply reliability. For the purposes of integration and lessening the conflicts due to the replication of

information, the WEAP shall rely on the updates of the Water Code Sections provided in the attached Appendices and UWMP, as amended or updated every five years.

## SECTION 2: WATER SUPPLY AND DEMAND CONDITIONS

### 2.1 Water Supply.

The water supply for Casitas is derived from (1) the watersheds that flow directly and indirectly by diversion from the Ventura River of water during wet years to carryover storage in Lake Casitas for use during dry years, and (2) groundwater to the extent that Casitas has its own groundwater supply. The watersheds of the Ventura River region are subject to an extreme variation in the weather patterns, ranging from multiple years of drought to sometimes significant wet year events that are associated with El Nino conditions that add to the uncertainty of available local water supplies.

#### 2.1.1 Surface Water.

The primary goal of Casitas is to provide a safe and reliable water supply. Due to the uncertainty of weather conditions that provide water to the local watersheds, a safe yield modeling has been implemented to provide guidance on water supply availability. The safe yield modeling criteria for the Casitas surface water supply provides a theoretical rate of decline in available water supply during a critical drought period, that if given a specific annual extraction rate from storage, that would reduce Lake Casitas to an exhausted minimum pool.

The sizing of Lake Casitas storage volume and the determination of the annual safe yield of water from Lake Casitas was originally determined by the Bureau of Reclamation in 1954, based on the hydrologic modeling for the critical drought period that started in 1919 and continued through 1936. The storage volume of the off stream reservoir, Lake Casitas, was set to be 254,000 acre-feet and the annual safe yield was determined to be 28,000 acre-feet. In 2004, Casitas recalculated the annual safe yield of Lake Casitas for the drought period of 1944 to 1965 based on newer knowledge of the diminished value of Matilija Reservoir and its impending removal, and the change in Robles Diversion operations resulting from the 2003 Biological Opinion established by the National Marine Fisheries Service pursuant to the federal Endangered Species Act. The recalculated annual safe yield of Lake Casitas was determined to be 20,840 acre-feet per year.

The safe yield trend for the 1944-1965 critical drought period is illustrated in Figure 1, with the assumption that the critical drought period begins with a full reservoir. The modeling applies the hydrology, river diversions operations, and lake evaporation for the period (1944-1965) that contribute to the Lake Casitas storage. The safe yield is a constant extraction rate from lake storage that contribute to the decline in Lake Casitas storage during the critical drought period, taking lake storage from full capacity to a minimum pool condition. Based on the safe yield model with a continuous and steady extraction rate, or safe yield, of water at 20,840 acre-feet each year, Lake Casitas would decline from full storage to minimum pool in approximately twenty years.

Also included in Figure 1 is the Recovery Period of Lake Casitas, which illustrates the actual filling rate experienced at Lake Casitas during the 1959 to 1978 period. The recovery of the Lake Casitas volume during the Recovery Period that is illustrated in Figure 1 cannot be assumed as the normal or common sequence given the variability of the rainfall amounts in the Ventura River watershed, constraints, and other influences to Lake Casitas inflow and storage. Casitas may experience elevated water supply risks that could be associated with a delay in the start of the recovery period

while at minimum pool in Lake Casitas, or there could be a condition where the critical drought period begins with a partially recovered storage level in Lake Casitas.

The availability of the Lake Casitas supply can be influenced or impacted by long-term droughts, changes to lake water quality, and/or changes to diversion and storage conditions. The safe yield of Lake Casitas and annual water availability may need to be reconsidered in the future as a result of changing conditions or new information that differs from the present conditions.

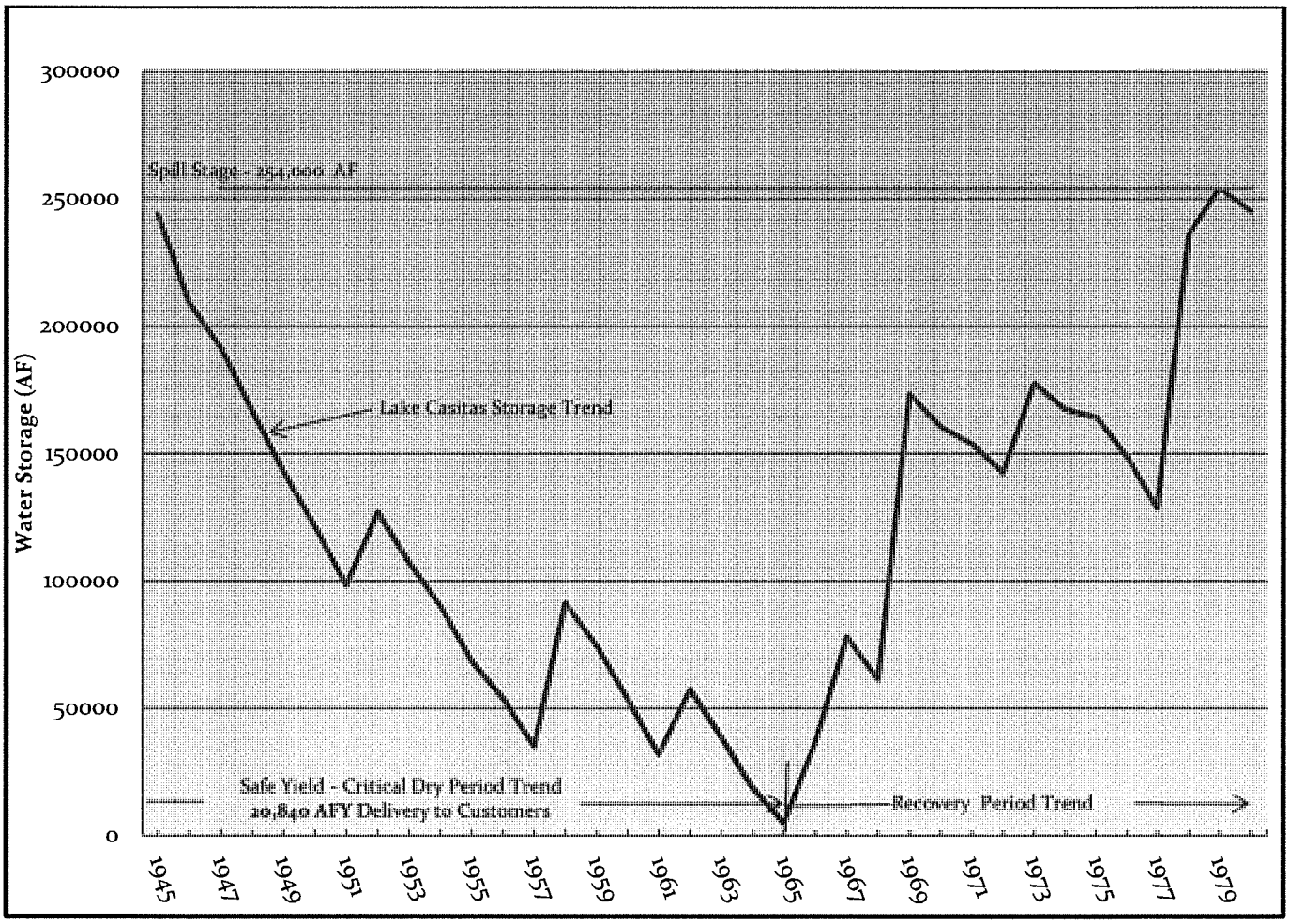


Figure 1 – Lake Casitas Safe Yield Storage and Recovery Period Trends

### 2.1.2 Groundwater.

Within Casitas' district boundaries, there are several local groundwater basins that are primary and critical sources of water supply for other local water purveyors (public, mutual and private), individual residential use and agriculture. During extended periods of drought with several years of less than average rainfall (20-inches) the local groundwater basins can become depleted due to pumping, natural drainage and evapotranspiration. The Lake Casitas surface water supply serves as a back-up water supply to the groundwater supply during times of extended drought.

Table 1 – Groundwater Basins of the Ventura River Watershed

| **Groundwater Basin** | Acres | Max. Capacity (AF) | Approx. Safe Yield (AF/Yr.) |
|---|---|---|---|
| Upper Ojai | 2,840 | 5,681 | Unavailable |
| Ojai Valley | 6,471 | 85,000 | 5,026 |
| Upper Ventura River | 9,360 | 35,118 | 9,482 |
| Lower Ventura River | 6,090 | 8,743 | 2,130 |

Source: Ventura River Watershed Council

The groundwater basins have demonstrated an ability to recharge rapidly in any one year with sufficient rainfall events, upon which time groundwater becomes the preferred source for those with well pumping access to the groundwater basins.

## 2.2 Water Demand.

The Casitas Board of Directors has established that the average long-term demand upon Lake Casitas must not exceed the annual safe yield of Lake Casitas supply. As a result of the 1987-1991, multi-year drought that resulted in water demands exceeding the annual safe yield, Casitas implemented specific actions in 1992 to limit water demands. The actions included the declaration of a voluntary twenty percent reduction in water demand, the assignment of water allocations based on 80 percent of FY1989-90 water usage that reflects a reduction in demand that comports more closely to safe yield of the Lake Casitas Supply, the implementation of water conservation measures to assist water users in adapting to less water consumption, and the limiting of new water service connections and expansions of agricultural plantings. Table 2 provides a comparison of classification water use, from prior to the action being taken by Casitas, to the level of water use during the recent drought. The FY 1989-90 water demand is recognized as being a high extreme water demand year at the end of the four year drought period.

Table 2 – Water Use Comparison by Customer Classification

| Classification | No. of Service Connections | | | Water Demand – Lake Casitas (AF) | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | FY 1989-90 | FY 2013-14 | | FY 1989-90 | FY 2012-13 | FY 2013-14 |
| | | | | | | |
| Residential | 2424 | 2700 | | 1603 | 1678 | 1738 |
| Business | 93 | 108 | | 821 | 663 | 724 |
| Industrial | 12 | 9 | | 155 | 23 | 22 |
| Other | 33 | 41 | | 530 | 244 | 255 |
| Resale Gravity | 8 | 8 | | 7724 | 4642 | 5614 |
| Resale Pumped | 15 | 15 | | 1027 | 551 | 1182 |
| Irrigation | 253 | 251 | | 11706 | 7978 | 9385 |
| Interdepartmental | 21 | 21 | | 343 | 120 | 119 |
| Temporary | | | | 11 | 13 | 55 |
| Total | 2,859 | 3,153 | | 23,909 | 15,899 | 19,094 |

The local groundwater resources of the Ojai Valley and Ventura River provide on average 7,385 acre-feet per year (Daniel B. Stephens, 2010) to municipal, residential and agricultural pumpers. During multiple dry years, the groundwater basins become depleted and groundwater demands are met by supplementing groundwater supply from the Lake Casitas supply. In most cases, groundwater pumpers have a water service connection to Casitas as a backup supply of water. During any year or multiple dry year sequence of less than average rainfall, Casitas can anticipate that a portion of the 7,385 acre-feet of groundwater demand may be supplemented by the Lake Casitas supply. When

groundwater basins are restored by rainfall events, groundwater pumpers convert back to the less expensive groundwater supply. The demand shifts are illustrated in Table 2 and Figure 2 for various classifications of water consumers. The FY 1989-90 and FY 2013-14 water demands occurred at the end of a three-year drought sequence.

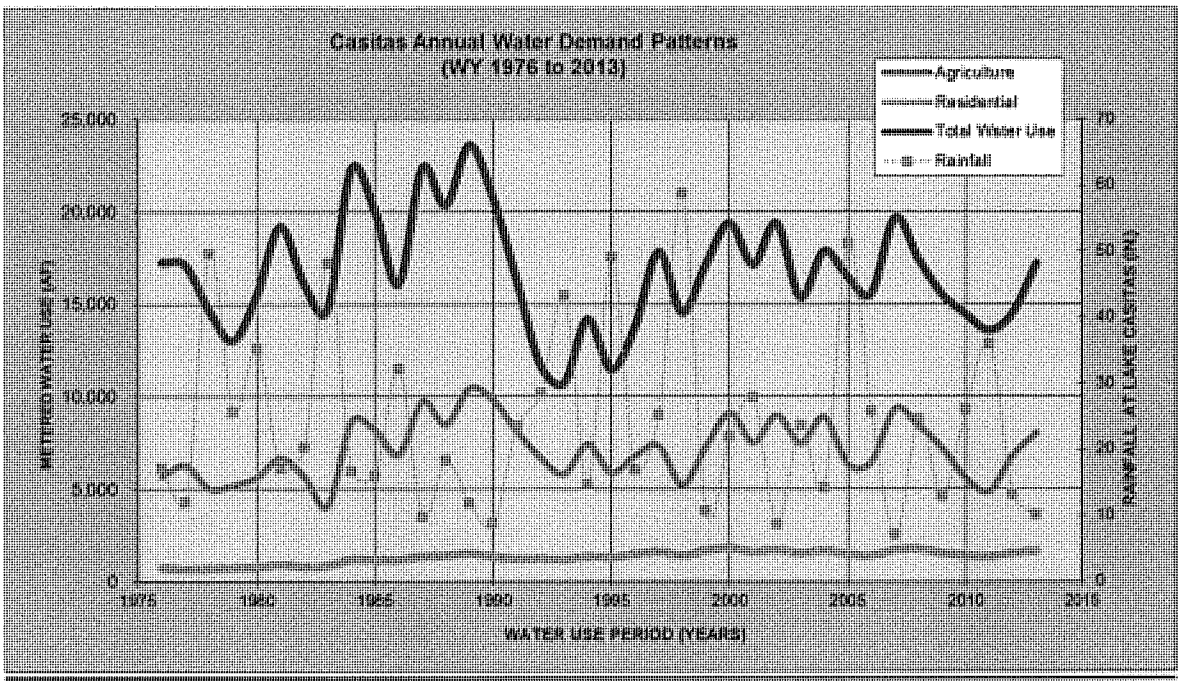


Figure 2 – Casitas Annual Demand Patterns

## 2.3 Priorities of Water Use.

Casitas recognizes the following priorities for potable water:

1) Public safety, health and sanitation;
2) Economic sustainability; and
3) Quality of life for the district'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 the western Ventura County. The non-essential water uses may be asked at any time to be curtailed during times of extreme water shortages.

Casitas 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 and the public may be faced with additional decisions on water use reductions that may impact the agricultural classification.

# SECTION 3: WATER SHORTAGE EMERGENCY ACTIONS

## 3.1 Urban Water Contingency Analysis.

Water Code 10632 requires that the agency's Urban Water Management Plan provide an urban water shortage contingency analysis that includes specific elements that are within the authority of the

urban water supplier. The required water shortage analysis is performed in the Casitas 2010 Urban Water Management Plan, and is further supported by this WEAP and the Casitas Emergency Response Plan, as amended.

### 3.2 Water Shortage Emergencies.

Water Code §350-359 provides that the governing body of a distributor of a public water supply may declare a water shortage emergency condition to prevail within the service area whenever it finds and determines that the ordinary demands cannot be satisfied without depleting water supplies to the extent that there would be insufficient water for human consumption. When deemed as a water shortage emergency in accordance with Water Code 350, Casitas shall follow the procedures provided by the Water Code in the implementation of the water shortage declaration and actions.

The State of California, through its authority under the Water Code and Government Code, may declare a water shortage emergency and require curtailment of water use that is above and beyond the requirements of the Casitas WEAP. Customers of Casitas must respond and comply with the orders of the State in a timely manner. A failure to comply may cause the State to impose fines and penalties that will be redistributed to the customers of Casitas in a manner determined by the Casitas Board of Directors.

### 3.3 Water Shortage Contingency Plan.

The District has prepared a Water Shortage Contingency Plan (Resolution 92-11), and further defined in the Casitas Urban Water Management Plan, 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 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 district-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 response to a short-term interruption of water supply may cause the implementation of the Casitas 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.

### 3.4 Water Waste Prohibitions on Certain Uses.

Water Code § 71640 provides the District the authority to restrict the use of district water during any emergency caused by drought, or other threatened or existing water shortage, and the district may prohibit the wastage of district water or the use of district water during such periods for any purpose other than household uses or such other restricted uses as the district determines to be necessary. The District may also prohibit use of district water during such periods for specific uses which it finds to be nonessential.

## SECTION 4: STRATEGY FOR MANAGED WATER SUPPLY AND DEMAND

### 4.1 Strategy Principles.

The communities and rural agricultural areas of western Ventura County recognize that there is a reliance on limited local groundwater and surface water supply to serve all of the beneficial uses within the District, 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 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.

To address the water shortage risk that may occur during an extended drought, the Casitas Board established in the Casitas Urban Water Management Plan of 1995 a series of five storage levels of Lake Casitas at which the Board could take actions to restrict the annual water extractions from Lake Casitas. The safe yield trend and the five stages of restrictive actions are illustrated in Figure 3.

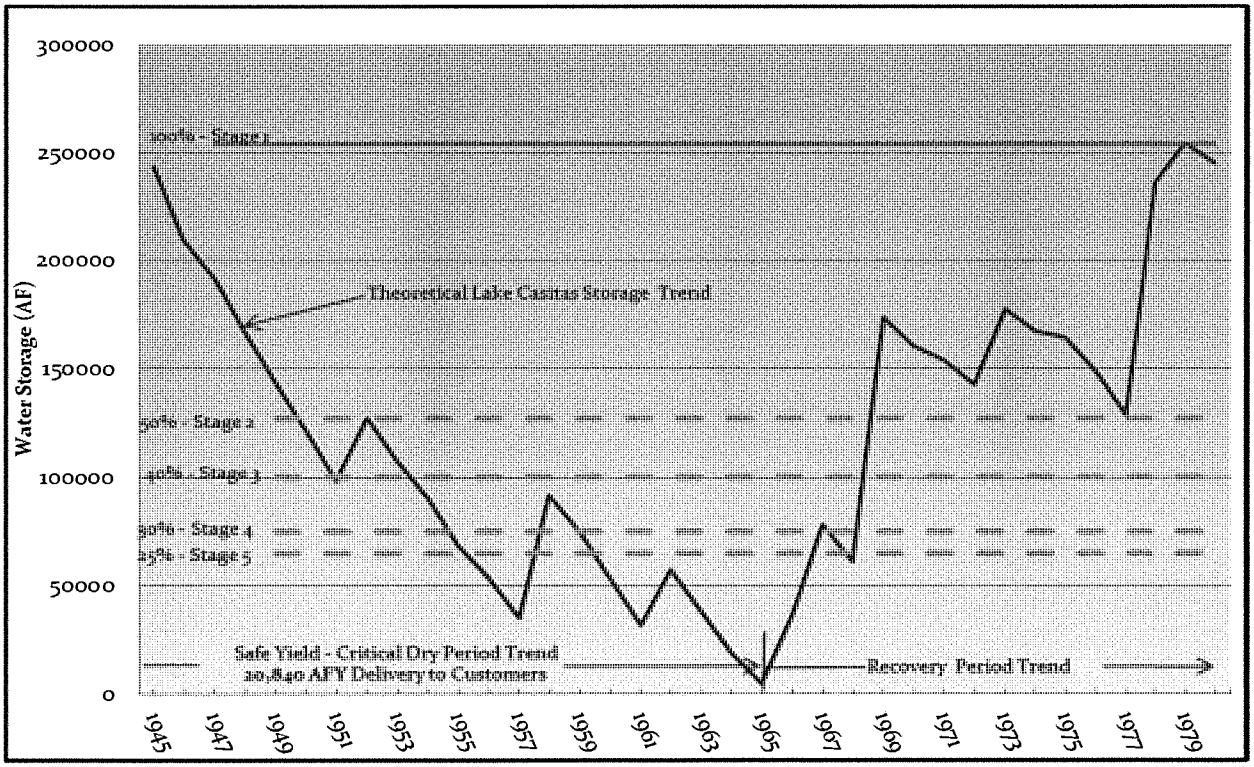


Figure 3 – Lake Casitas Safe Yield Storage Trend and Stages for Demand Reduction

### 4.2 Water Allocation Principles.

Each and every water service provided by Casitas 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 (WC § 372). The following principles are to be followed for the Casitas water allocations:

1) Each Casitas 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.

2) Allocation shall not mean an entitlement or imply water rights in favor of the customer.

3) 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.

4) The Casitas 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.

5) Water allocations provided by Casitas are assigned to property or water purveyors and are not transferrable from one property or water purveyor to another.

6) Casitas' water allocations shall not be sold, exported, bartered or traded by or between Casitas' customers.

7) Casitas 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.

### 4.3 Allocation Assignments to Water Service Classifications.

Casitas has established the definitions of water customer classifications as provided by the Casitas Rates and Regulations for Water Service and has made specific allocation assignments to each and every water account by either (1) written agreement, or (2) the application of historical water use data, or (3) the application of documented water use standards. Where deemed necessary by Casitas, Casitas may perform site specific water use audits and survey to determine the appropriate level of allocation to be assigned to any one service connection or customer. Water allocations may change by action of the Casitas 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:

**Business**

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; or
3) Where not defined by recorded agreement, the lesser of the historical water consumption recorded for either the 80% of the 1989-90 water use or the Fiscal Year 2012-13 water use.

**Fire**

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

**Industrial**

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; or
3) Where not defined by recorded agreement, the lesser of historical water consumption recorded for either the 80% of the 1989-90 water use or the Fiscal Year 2012-13 water use.

**Interdepartmental**

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 2012-13 water use.

**Irrigation (Commercial Agriculture)**

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 and the property owner. Casitas' 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 2012-13 or (2) eighty (80) percent of recorded water volume metered to the account in fiscal year 1989-90, 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.

**Multi-Family Residential**

1) Stage 1 water allocations are assigned to each existing Multi-Family Residential account by either a recorded agreement or based on the standards set in 1992 by Casitas.
2) The Multi-Family Residential water allocation for each account shall be distributed by either a monthly or bi-monthly scheduling of the allocation.
3) A part of the Multi-Family Residential allocation is provided for health and sanitation and shall be set at **84 units per year per dwelling,** distributed evenly each month as 7 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 Multi-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 follows:

| Month | July | August | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % of Total Annual Allocation | .17 | .17 | .12 | .05 | .05 | .05 | .02 | .02 | .02 | .10 | .10 | .12 |

The part of the Multi-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 **84 units per year per year per dwelling,** and be constant for 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;

**Other**

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; or
3) Where not defined by recorded agreement, the lesser of historical water consumption of either the 80% of the 1989-90 water use or the Fiscal Year 2012-13 water use.

**Resale**

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, 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 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 do not exceed their annual water allocation from Casitas.
5) The allocation assignment from Casitas 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 Casitas.
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 to assure the continued availability of water for health and safety purposes.

**Residential**

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.
2) The Residential water allocation for each account shall be distributed by either a monthly or bi-monthly scheduling of the allocation.
3) A part of the Residential Allocation is provided for health and sanitation and shall be set at **120 units per year,** distributed evenly each month 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 follows:

| Month | July | August | Sep | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | June |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % of Total Annual Allocation | .17 | .17 | .13 | .05 | .05 | .05 | .02 | .02 | .02 | .10 | .10 | .12 |

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,** and be constant for each month of the year;
    b. Non-essential portion of the annual residential allocation shall be based on actual irrigated landscape area of the parcel with a maximum limit to 1.99 acres (86,684 square feet) of irrigated landscape area and set as follows:
        i. For the first 5,000 square feet of irrigated landscape area, 15 gallons per square foot;
        ii. For the next 10,000 square feet of irrigated landscape area, 10 gallons per square foot
        iii. For the next increment up to 71,684 square feet of irrigated landscape area, 3 gallons per square foot;

**Temporary**

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 Board of Directors approves a limited continuance of the temporary service.

## 4.4 Allocation Adjustments.

A Casitas customer may request the reconsideration of their initial assigned Stage 1 water allocation within 60 days of the adoption of the WEAP 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 their request considered by the General Manager of the District. 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 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.

## 4.5 Standards for a Water Allocation Adjustment.

Water allocation adjustments may be considered by Casitas 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:

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

Water allocations will not be adjusted to accommodate:

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

Agricultural Irrigation Allocation Adjustment Standards:

a. Limited to acreage planted in commercial agricultural production prior to March 1, 1992. Casitas 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.
b. Comparative (same crop type and average use of various parcels) crop usage in FY2012-13 for full irrigation, not to exceed 3 AF/AC/YR, which is located within a 1-mile circumference of the parcel seeking the appeal for a change in water allocation.

## 4.6 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 Water Resources Manager stating the nature of the appeal. The appeal shall be reviewed by the Casitas 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 Board of Directors. The determination by the Board of Directors shall be final.

## 4.7 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 Board of Directors meeting. The determination that water is or is not available shall be within the determination of the Board of Directors. 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 Board of Directors, the supply of water is definite enough to provide the assurance to the County of Ventura that there is a forty year supply.

## 4.8 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' 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 CMWD project supply or additional new supplies, supplies shall be allocated in accordance with the following criteria:

a) 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.

b) All applicants seeking an allocation shall provide Casitas 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 shall determine meter size and amount of allocation based upon reasonable and necessary needs and Casitas' Rates and Regulations.

c) The amount of water to be allocated shall be at Casitas' 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 District and as amended. The amount of water required for the project may be calculated and submitted for the

consideration of Casitas by a civil engineer, registered in the State of California, representing the project proponent.

## SECTION 5: STAGED DEMAND REDUCTION IMPLEMENTATION

### 5.1 Staged Demand Reduction Principles.

The primary source of water that is available to the Casitas Municipal Water District is the amount of water stored behind Casitas Dam, forming Lake Casitas. The quantity of water stored in Lake Casitas is dependent upon the local hydrology, watershed conditions, diversions from the Ventura River, and the outflow from lake evaporation and water deliveries to beneficial uses. There may be times during which Casitas 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 District 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:

1) conserving the water supply for the greatest priority and public benefit; and
2) mitigating the effects of a water shortage on public health, safety, and economic activity.

### 5.2 Water Resource Conditions and Actions.

The General Manager shall report to the Board of Directors each year *(April)* with an assessment of the current water storage in Lake Casitas and local groundwater 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 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. Casitas shall make such determinations public and follow with appropriate and timely notification of all customers. Casitas has established the implementation of various Stages of action based on the amount of water in storage in Lake Casitas, as shown in Table 3. An action to declare and implement a Stage may be by either an action by Casitas Board of Directors based on unanticipated changing lake supply conditions or by the following schedule in Table 4.

Table 3 – Stage Conditions

| Stage | Stage Title | Lake Casitas Storage - % | Lake Casitas Storage Action Level (acre-feet) |
|---|---|---|---|
| 1 | Water Conservation | 100% - 50% | 254,000 to 127,000 |
| 2 | Water Shortage Warning | 50% - 40% | 127,000 to 100,000 |
| 3 | Water Shortage Eminent | 40% - 30% | 100,000 to 75,000 |
| 4 | Severe Water Shortage | 30% - 25% | 75,000 to 65,000 |
| 5 | Critical Water Shortage | 25% - 0% | 65,000 to 3,000 |

Table 4 - Stage Action Schedule

| Target Dates | Action |
|---|---|
| June - April | Monitor water demands, rainfall, reservoir level trend, groundwater trends, and diversion and runoff amounts. |
| Early April | Staff presents water status report and a recommendation to the Casitas Board of Directors. Publish a notice of a public hearing if changes are recommended. |
| Late April | Casitas Board of Directors 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. |

## 5.3 Demand Reduction Goals and Measures.

The demand reduction goals and measures begin with Stage 1, where reasonable and appropriate water allocation assignments are made to each Casitas service connection and the end water users are implementing the 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 adjustment of allocations that were made available for each classification during Stage 1 by a reduction of the allocation during the duration of the declared Stage condition.

## 5.4 Stage Adjustments to Allocations.

The five stages of storage in Lake Casitas and the initial guideline for water allocation adjustments for each classification at each Stage are presented in Table 5. Upon recommendation of the General Manager and approval of the Board of Directors at the onset of a specific Stage, the District shall apply appropriate demand reduction factors to the allocations for each customer classification, as deemed necessary. The Board of Directors retain 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 5. 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.

Table 5 – Staged Water Demand Reductions for Water Classifications

| **Demand Reduction Stage** | **1** | **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 |
| % Lake Storage | 100% - 50% | 50% - 40% | 40% - 30% | 30% - 25% | 25% - 0% |
| Water Use Reduction Response Goal | 20% | 20% | 30% | 40% | 50% |
| Residential & Multi-Family Residential<br>Essential Use<br>Non-essential Use | <br>0%<br>20% | <br>0%<br>20% | <br>0%<br>50% | <br>0%<br>80% | <br>0%<br>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% |

Note: Initial Stage 1 Allocations include a 20% reduction from the 1989-90 demands.

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

### 5.5 Customer Notification.

The customers of each and every 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.

### 5.6 Water Rates and Conservation Penalty.

The Casitas 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 has implemented a four tier inclining rate structure for the Residential and Multi-family Residential classifications that represents the proportional cost of service that is attributable to the parcel that is served water.

The Casitas 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' water conservation costs and provide revenue for water shortage related projects.

Implementing changes to the WEAP 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.

### 5.7 Appeals for Exception to Staged Adjustments of Allocation.

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

1) The Staged adjustment would cause a condition affecting the health, sanitation, fire protection, or safety of the applicant or the public;
2) 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;
3) Hospitals and health care facilities using industry best management practices are eligible for an exception;
4) The business has already implemented environmental sustainability measures reducing water consumption to the maximum extent possible.

An exception must be presented to the District 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 Water Resources Manager stating the nature of the appeal. The appeal shall be reviewed by the Casitas 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 Board of Directors. The determination by the Board of Directors shall be final.

## SECTION 6: EXPORT OF CASITAS WATER

Water Code Section 71611 authorizes Casitas to sell water under its control for use only within the jurisdictional boundaries of the Casitas Municipal Water District. The unauthorized export and use of Casitas water beyond the Casitas district boundaries can have significant negative impacts on the Casitas water supply reliability, and therefore shall be prohibited unless specifically authorized in writing by the Casitas Board of Directors. All customers receiving Casitas water into water conveyance systems which cross Casitas boundaries shall meet the following requirements as a condition of service:

1) Customers shall submit to Casitas a certified report on the last day of each month that demonstrates that no Casitas water was transported or used outside Casitas boundaries during the prior month without written approval by Casitas.
2) Customer shall install and maintain approved metering devices and shall be required to account for all Casitas water delivered in the customer's system.
3) In the event Casitas water is exported during any month, the customer shall be billed for exported water at five (5) times the Casitas rate for the Temporary Service classification.
4) In the event the customer fails to comply with the conditions of service stated in the above (1) and/or (2), all water purchased in excess of the allocation shall be considered exported water and shall be billed in accordance with the foregoing.
5) This Section, Export of Casitas Water, is in effect at all times.
6) The exceptions to the export are during a declaration by the Board of Directors of surplus water, and limited to the surplus water or exchange agreement between the Board of Directors and other party.

Continuing or reoccurring violations of this section by any Casitas customer may result in the restriction or disconnection of water service to the customer.

Table 6 – Stage Actions and Water Demand Reduction Measures

| Water Shortage Condition | Key Casitas Communications and Actions | Customer Demand Reduction Measures | Penalties And Rates |
|---|---|---|---|
| **Stage 1**<br><br>Supply Range<br>100% - 50%<br><br>Demand Reduction<br>**0%**<br><br>**(80% of 1989 use)** | • Initiate public information and advertising campaign.<br>• Publicize ways to reduce water consumption.<br>• Coordinate conservation actions with other water purveyors and cities.<br>• Perform water audits and promote water efficient use/conversions.<br>• Conduct water workshops.<br>• Temporary staffing for public inquiries, as needed. | • Water conservation practices requested of all customer classifications.<br>• Adhere to Water Waste Prohibition Ordinance.<br>• Adhere to assigned water allocation or less. | • Consider and implement Conservation Penalty for water use in excess of allocation.<br><br>• Consider rates for revenue stabilization and cost of service. |
| **Stage 2**<br><br>Supply Range<br>50% - 40%<br><br>Demand Reduction<br>From Stage 1<br>Allocation<br>**20%** | • Declare Stage 2<br>• Implement demand reductions for each customer classification.<br>• Intensify public information campaign.<br>• Optimize existing water resources.<br>• Intensify leak detection.<br>• Develop appeals staffing.<br>• Consult with major customers to develop conservation plans and water use audits. | • Continue all Stage 1 measures.<br>• Landscape watering restricted to two (2) watering days per week.<br>• Require water audits for large water users; implement recommendations of the water audits.<br>• Businesses display "save water" signage.<br>• Increase public information. | • Consider and implement Conservation Penalty for water use in excess of allocation – response to reduced allocation.<br><br>• Consider rates for revenue stabilization and cost of service. |
| **Stage 3**<br><br>Supply Range<br>40% - 30%<br><br>Demand Reduction<br>From Stage 1<br>Allocation<br>**30%** | • Declare Stage 3<br>• Implement demand reductions for each customer classification.<br>• Expand and intensify public information campaign.<br>• Provide regular briefings, publish monthly consumption report.<br>• Hire additional temporary staff in customer service, conservation, and water distribution. Water waste enforcement.<br>• Moratorium on new service connections. | • Continue with Stage 1 and 2 measures.<br>• Reduced water allocations.<br>• Landscape watering restricted to one (1) watering day per week.<br>• No landscape changes unless xeriscape. | • Consider and implement Conservation Penalty for water use in excess of allocation – response to reduced allocation.<br><br>• Consider rates for revenue stabilization and cost of service. |
| **Stage 4**<br><br>Supply Range<br>30% - 25%<br><br>Demand Reduction<br>From Stage 1<br>Allocation<br>**40%** | • Declare Stage 4<br>• Implement demand reductions for each customer classification.<br>• Continue to provide regular media briefings.<br>• Scale up appeals<br>• Open drought information center. | • Continue with Stage 1 through 3 measures.<br>• Reduced water allocations.<br>• Landscape watering restricted to one (1) watering day per week.<br>• Implement restrictive Irrigation delivery schedule.<br>• Minimal water for large landscapes.<br>• Consider prohibition of filling swimming pools and fountains.<br>• Implement restrictive Irrigation delivery schedule and quantities greater than 60%. | • Consider and implement Conservation Penalty for water use in excess of allocation – response to reduced allocation.<br><br>• Consider rates for revenue stabilization and cost of service. |
| **Stage 5**<br><br>Supply Range<br>25% - 0%<br><br>Demand Reduction<br>From Stage 1<br>Allocation<br>**50%** | • Declare Stage 5<br>• Implement demand reductions for each customer classification.<br>• Minimize outdoor water use and non-essential uses.<br>• Implement aggressive public outreach and education program.<br>• Implement crisis communications plan.<br>• Coordinate with State and local agencies to address enforcement challenges.<br>• Water Shortage Emergency declaration to be considered. | • Continue with Stage 1 through 4 measures.<br>• Reduced water allocations.<br>• Rescind Temporary meters issued.<br>• No turf irrigation.<br>• Implement restrictive Irrigation delivery schedule and quantities greater than 50%. | • Consider and implement Conservation Penalty for water use in excess of allocation – response to reduced allocation.<br><br>• Consider rates for revenue stabilization and cost of service. |

# Appendix L

## CMWD CUWCC BMP Coverage Report

# CUWCC BMP Wholesale Coverage Report 2014

*Foundational Best Managemant Practices for Urban Water Efficiency*

## BMP 1.1 Wholesale Agency Assistance Programs

**ON TRACK**

**7076** **Casitas Municipal Water District Wholesale**

Name: RON MERCKLING Email: RMERCKLING@CASITASWATER.COM

**a) Financial Investments and Building Partnerships**

| BMP Section | Monetary Amount for Financial Incentives | Monetary Amount for Equivalent Resources | |
|---|---|---|---|
| BMP 2.1 Public Outreach | | 8975.00 | |
| BMP 1.1 Operation Practices | | 4000 | |
| BMP 2.2 School Education Program | | 13175 | |
| BMP 3 Residential | 12878.16 | | |
| BMP 5 Landscape | 2528.8 | | |
| BMP 4 CII | 400 | | |
| BMP 1.2 Wate Loss Control | | 1407.50 | |
| BMP 5 Landscape | 250 | | |
| BMP 4 CII | | 10778 | |

**b) Technical Support**

**c) Retail Agency**

**d) Water Shortage Allocation**

Adoption Date: 6/10/2015

File Name:

**e) Non signatory Reporting of BMP implementation by non-signatory Agencies**

**f) Encourage CUWCC Membership List Efforts to Recuit Retailers**

Large retail agencies are members of CUWCC (City of Ventura and Golden State - Ojai). Other retail water agencies are too small to afford to join.

**At Least As effective As** No

**Exemption** No

**Comments:**

# CUWCC BMP Coverage Report 2014

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## BMP 1.2 Water Loss Control **ON TRACK**

**7076 Casitas Municipal Water District Wholesale**

| | |
|---|---|
| Completed Standard Water Audit Using AWWA Software? | Yes |
| AWWA File provided to CUWCC? | Yes |
| Copy of AWWA-WAS-v5-09152014.xls | |
| AWWA Water Audit Validity Score? | 84 |
| Complete Training in AWWA Audit Method | Yes |
| Complete Training in Component Analysis Process? | Yes |
| Component Analysis? | Yes |
| Repaired all leaks and breaks to the extent cost effective? | Yes |
| Locate and Repar unreported leaks to the extent cost effective? | Yes |
| Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair. | Yes |

Provided 7 Types of Water Loss Control Info

| Leaks Repairs | Value Real Losses | Value Apparent Losses | Miles Surveyed | Press Reduction | Cost Of Interventions | Water Saved (AF) |
|---|---|---|---|---|---|---|
| | 31437 | 272054 | 2 | False | | |

**At Least As effective As** No

**Exemption** No

Comments:

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## BMP 1.3 Metering With Commodity

**ON TRACK**

**7076 Casitas Municipal Water District Wholesale**

| | |
|---|---|
| Numbered Unmetered Accounts | No |
| Metered Accounts billed by volume of use | Yes |
| Number of CII Accounts with Mixed Use Meters | |
| Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? | No |
| Feasibility Study provided to CUWCC? | No |
| Date: | |
| Uploaded file name: | |
| Completed a written plan, policy or program to test, repair and replace meters | Yes |

**At Least As effective As** No

**Exemption** No

Comments:

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## BMP 2.1 Public Outreach

**ON TRACK**

**7076** **Casitas Municipal Water District Wholesale** **Wholesale**

Does your agency perform Public Outreach programs? Yes

The list of retail agencies your agency assists with public outreach

| |
|---|
| Casitas Municipal Water District Retail,Golden State Water Company - Ojai |
| There is not enough space here to mention all of the agencies and contact information. There are eight small water agencies that are not council members. |

| Agency Name | ID number |
|---|---|
| Casitas Municipal Water District Retail | 37 |
| Golden State Water Company - Ojai | 5042 |

The name of agency, contact name and email address if not CUWCC Group 1 members

Did at least one contact take place during each quater of the reporting year? Yes

| **Public Outreach Program List** | **Number** |
|---|---|
| Newsletter articles on conservation | 2 |
| Website | 22 |
| Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | 6 |
| **Total** | **30** |

Did at least one contact take place during each quater of the reporting year? Yes

| **Number Media Contacts** | **Number** |
|---|---|
| Newspaper contacts | 11 |
| Television contacts | 1 |
| News releases | 1 |
| **Total** | **13** |

Did at least one website update take place during each quater of the reporting year? Yes

Public Information Program Annual Budget

| **Annual Budget Category** | **Annual Budget Amount** |
|---|---|
| Postage | 8500 |
| Newsletter | 9500 |
| Website | 2000 |
| Graphic Design | 900 |
| **Total Amount:** | **20900** |

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*Foundational Best Management Practices For Urban Water Efficiency*

## BMP 2.1 Public Outreach

**ON TRACK**

| **Public Outreah Additional Programs** |
| --- |
| Facebook postings |

Description of all other Public Outreach programs

Comments:

| | | |
| --- | --- | --- |
| **At Least As effective As** | No | |
| **Exemption** | No | 0 |

CUWCC BMP Coverage Report 2014

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## BMP 2.2 School Education Programs

**ON TRACK**

**7076 Casitas Municipal Water District Wholesale** **Wholesale**

Does your agency implement School Education programs? Yes

The list of retail agencies your agency assists with public outreach

Casitas Municipal Water District Retail,Golden State Water Company - Ojai

Karen Waln, City of Ventura, kwaln@ventura.ca.us and eight other smaller agencies.

| Agencies Name | ID number |
|---|---|
| Casitas Municipal Water District Retail | 37 |
| Golden State Water Company - Ojai | 5042 |

Materials meet state education framework requirements? Yes

Resource Action materials, Also purchase materials from Bete-Channing, and Culver.

Materials distributed to K-6? Yes

Channing Bete Color Book, My Book About Water and Channing Bete Water Conservation, A Coloring and Activities Book. Some additional work books for 5th and 6th Grade per teacher requests are provided as well.

Materials distributed to 7-12 students? Yes (Info Only)

Resource Action Water Survey Kit to include classroom instruction

Annual budget for school education program: 13175.00

Description of all other water supplier education programs

Water Conservation Kits with classroom instruction and activities. Staff participation with some classrooms, and coloring and activities books on request.

Comments:

**At Least As effective As** No

**Exemption** No 0

# CUWCC BMP Wholesale Coverage Report 2013

*Foundational Best Managemant Practices for Urban Water Efficiency*

## BMP 1.1 Wholesale Agency Assistance Programs

**ON TRACK**

**7076** **Casitas Municipal Water District Wholesale**

Name: Cinnamon McIntosh Email: cmcintosh@casitaswate.com

**a) Financial Investments and Building Partnerships**

| BMP Section | Monetary Amount for Financial Incentives | Monetary Amount for Equivalent Resources | |
|---|---|---|---|
| BMP 3 Residential | 15750 | | |
| BMP 2.2 School Education Program | 14294.7 | | |
| BMP 2.1 Public Outreach | 15210 | | |
| BMP 1.1 Operation Practices | | 608.41 | |
| BMP 4 CII | 2000 | | |

**b) Technical Support**

**c) Retail Agency**

**d) Water Shortage Allocation**

Adoption Date: 10/1/2003

File Name:

**e) Non signatory Reporting of BMP implementation by non-signatory Agencies**

**f) Encourage CUWCC Membership List Efforts to Recuit Retailers**

Two largest retail agencies Golden State and City of Ventura are currently members of the CUWCC. The other mutual water companies have very small operations.

**At Least As effective As** No

**Exemption** No

**Comments:**

# CUWCC BMP Coverage Report 2013

*Foundational Best Management Practices For Urban Water Efficiency*

## BMP 1.2 Water Loss Control **ON TRACK**

**7076 Casitas Municipal Water District Wholesale**

| | |
|---|---|
| Completed Standard Water Audit Using AWWA Software? | Yes |
| AWWA File provided to CUWCC? | Yes |
| Casitas_wholesale_ AWWA_Audit_13_14.xls | |
| AWWA Water Audit Validity Score? | 92 |
| Complete Training in AWWA Audit Method | Yes |
| Complete Training in Component Analysis Process? | Yes |
| Component Analysis? | Yes |
| Repaired all leaks and breaks to the extent cost effective? | Yes |
| Locate and Repar unreported leaks to the extent cost effective? | Yes |
| Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair. | Yes |

Provided 7 Types of Water Loss Control Info

| Leaks Repairs | Value Real Losses | Value Apparent Losses | Miles Surveyed | Press Reduction | Cost Of Interventions | Water Saved (AF) |
|---|---|---|---|---|---|---|
| 27 | | | 35 | | | 0 |

**At Least As effective As** No

**Exemption** No

Comments:

CUWCC BMP Coverage Report 2013

*Foundational Best Management Practices For Urban Water Efficiency*

## BMP 1.3 Metering With Commodity

**ON TRACK**

**7076 Casitas Municipal Water District Wholesale**

| | |
|---|---|
| Numbered Unmetered Accounts | No |
| Metered Accounts billed by volume of use | Yes |
| Number of CII Accounts with Mixed Use Meters | 0 |
| Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters? | Yes |
| Feasibility Study provided to CUWCC? | Yes |

Date: 12/13/2013

Uploaded file name: Copy2_of_BMP1_3_Feasibility_Tool.xls

| | |
|---|---|
| Completed a written plan, policy or program to test, repair and replace meters | Yes |

**At Least As effective As** Yes

Wholesale accounts are for meters to retail agencies so this is not applicable.

**Exemption** No

Comments:

CUWCC BMP Coverage Report 2013

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## BMP 2.1 Public Outreach

**ON TRACK**

**7076** **Casitas Municipal Water District Wholesale** **Wholesale**

Does your agency perform Public Outreach programs? Yes

The list of retail agencies your agency assists with public outreach

| |
|---|
| Golden State Water Company - Ojai |
| There is not enough space here to mention all of the agencies and contact information. There are eight small water agencies that are not council members. |

The name of agency, contact name and email address if not CUWCC Group 1 members

Did at least one contact take place during each quater of the reporting year? Yes

| Public Outreach Program List | Number |
|---|---|
| Newsletter articles on conservation | 2 |
| Website | 11 |
| General water conservation information | 22 |
| Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets | 6 |
| **Total** | **41** |

Did at least one contact take place during each quater of the reporting year? Yes

| Number Media Contacts | Number |
|---|---|
| Newspaper contacts | 10 |
| Radio contacts | 1 |
| Television contacts | 4 |
| News releases | 1 |
| **Total** | **16** |

Did at least one website update take place during each quater of the reporting year? Yes

Public Information Program Annual Budget

| Annual Budget Category | Annual Budget Amount |
|---|---|
| Postage | 8500 |
| Newsletter | 7500 |
| Website | 2000 |
| Graphic Design | 900 |
| **Total Amount:** | **18900** |

| Public Outreah Additional Programs |
|---|
| Facebook postings |

CUWCC BMP Coverage Report 2013

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## BMP 2.1 Public Outreach

**ON TRACK**

Description of all other Public Outreach programs

Comments:

| | | |
|---|---|---|
| **At Least As effective As** | No | |
| **Exemption** | No | 0 |

CUWCC BMP Coverage Report 2013

*Foundational Best Management Practices For Urban Water Efficiency*

## BMP 2.2 School Education Programs

**ON TRACK**

**7076 Casitas Municipal Water District Wholesale** **Wholesale**

Does your agency implement School Education programs? Yes

The list of retail agencies your agency assists with public outreach

Golden State Water Company - Ojai

City of Ventura (member but not listed in drop down menu) Karen Waln kwaln@venturawater.net; Meiners Oaks Water District Michael Hollbrands mikeh20@meinersoakswater.com; Senior Canyon Mutual Water Company, Larry Catlett, lcatlettscm@gmail.com; Ventura River Water District, Bert Rapp, bert@venturariverwd.com; Casitas Mutual Water Company, Tom Reed, reed.tom@sbcglobal.net; Tico Mutual Water Company, Francis Fitting, ffitting@sbcglobal.net; Hermitage Mutual Water Company, Roger Essick, rogeressick@gmail.com; Sisar Mutual Water Company, Rod Thompson, rodthompson1@verizon.net; and Siete Robles Mutual Water Company, Jan Martinez, janmartinez@jacobsandjacobs.com

Materials meet state education framework requirements? Yes

Resource Action provides kits and instructions that meet state education framework requirements.

Materials distributed to K-6? Yes

Materials from Resource Action are distributed to K-6.

Materials distributed to 7-12 students? Yes (Info Only)

Casitas did not distribute 7-12 materials directly.

Annual budget for school education program: 15883.00

Description of all other water supplier education programs

Resource Action programs Living Wise Kit. Casitas also conducted a few presentations and participated at Ojai Day event where children were engaged in conservation education activities as well.

Comments:

**At Least As effective As** No

**Exemption** No 0

# Appendix M

## Examples of CMWD's Public Outreach Materials

# Free Landscape Classes

*Casitas' Graywater Workshop*

Please join us this year, for our free water conservation workshops, so you can learn more about how to save water and money. Workshops are scheduled from 9:00 a.m. to noon:

- **Landscape Design for Fire Protection** – You do not need a moonscape to protect your home from fire. You can have a beautiful landscape and a fire safe zone. This workshop will focus on "Firescaping" – Landscape design in wildfire areas. *Saturday, February 27, 2016*
- **Orchard and Oaks Care** – With extreme weather and invasive insects, it seems more difficult than ever to keep our trees healthy. Find out what you can do to protect your trees by attending this fun and informative workshop. *Saturday, May 14, 2016*
- **Rainwater Capture and Graywater** - Learn how to install a small scale system that meets all county health and safety requirements. *Saturday, August 13, 2016*

Please RSVP early at rmerckling@casitaswater.com or (805) 649-2251 Extension 118.

Workshops will be held at Oak View Park & Resource Center (formerly the Oak View Elementary School) located at 555 Mahoney Avenue. Attendees are encouraged to park in the parking lots instead of the street.

**The Casitas Speakers Bureau** provides an opportunity for customers and the community to learn more about water issues in the Western Ventura County area. Please contact Ron Merckling, Water Conservation and Public Affairs Manager, 805-649-2251, extension 118, to invite a speaker to your next community group or organizational meeting.

Please visit the Water Wise Gardening in Ventura County website at www.ventura.watersavingplants.com.


CASITAS Municipal Water District

1055 Ventura Ave.
Oak View, CA 93022
805-649-2251
www.casitaswater.org


Find us on Facebook

Join the Casitas Municipal Water District Facebook page to get the latest updates on water conservation and the Lake Casitas Recreation Area at: www.facebook.com/lakecasitasmunicipalwaterdistrict.

## Your Board in Action

**Bill Hicks,** Division I
**James W. Word,** Division II
**Pete Kaiser,** Division III
**Mary Bergen,** Division IV
**Russ Baggerly,** Division V

The Casitas Board of Directors is scheduled to meet at 3:00 p.m. in the board room located in the main office at 1055 Ventura Ave., Oak View, on the 2nd and 4th Wednesday of every month.


PRSRT STD
U.S. POSTAGE
**PAID**
OXNARD, CA
PERMIT NO. 2020



CASITAS Municipal Water District

# Casitas Water News

Winter 2016


# One El Nino Year is Unlikely to Fill Lake Casitas

***Lake Casitas - at historic lows***

Large rainfall this winter is unlikely to fill Lake Casitas. What does this mean for Western Ventura County water customers? Continued conservation efforts will be needed to help sustain our local water supplies for the foreseeable future.

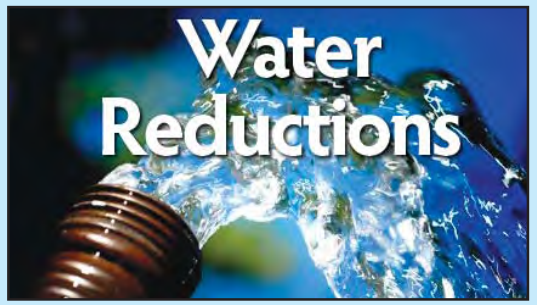
Entering into this winter, the amount of water stored in Lake Casitas declined to a fifty year low of 100,000 acre-feet.

One acre foot is roughly a football field filled with one foot of water. It will take about two years of historic large El Nino water inflows into Lake, which average 60,000 acre-feet to fill Lake Casitas.

Until Lake Casitas recovers to full capacity, the drought will continue for Western Ventura County, which relies exclusively on the limited local water resources – surface water in Lake Casitas and ground water in our local basins.

"Casitas' customers have done a great job at reducing water use throughout this drought period. It is important that water customers continue to be vigilant even through the rainy season. Shoud this winter not produce full water resource recovery, all customers are going to be asked to continue with water use reduction measures," declared Ron Merckling, Public Affairs/Resource Manager for Casitas.

## State Water Reduction Mandates to Continue




The State Water Resources Control Board (SWRCB) has extended the statewide drought emergency through October 2016. For Casitas' direct customers, a continuation of the 32% water reduction mandate can be expected. For most residential, business, and institutional customers this means significant outdoor water use reductions. For Casitas customers, water allocations and surcharges may be adjusted based on the amount of water stored in Lake Casitas after April 1, 2016.

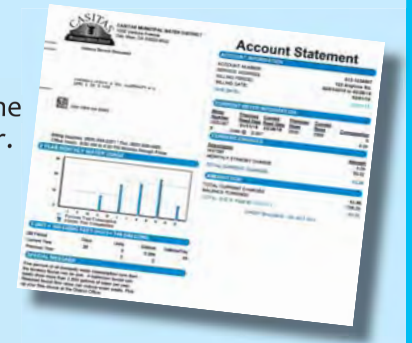
If there is little water supply recovery in Lake Casitas from the 2016 winter storms, water allocations could be reduced further for all customers. Casitas' highest priority is to maintain water supply for health and safety.

## Casitas Working on Urban Water Management Plan Update

Casitas plans to hold a public workshop on the draft Urban Water Management Plan (UWMP) this coming May. Casitas is required to submit an updated UWMP to the California Department of Water Resources every five years. The plan is a summary of water supplies, demands, conservation, and overall water service reliability for the next 25 years.

The UWMP update will be made available for public review prior to the May workshop. The final plan will be presented at a public hearing in June of 2016. More information will be made available at www.casitaswater.org. Anyone interested in receiving additional updates can call Ron Merckling at (805) 649-2251 extension 118 or email at rmerckling@casitaswater.com


## Coming Soon – E-pay for Casitas' Direct Customers




Although customers can now make payments online at www.casitaswater.org, it is about to become easier to make a payment. Casitas' direct customers will soon be able sign-up for monthly emails that will provide an online link for easy bill payment. Additional updates on this program will be made available in an upcoming bill insert. Once the program is launched, customers will be able to sign-up to participate by visiting Casitas' website under the Quick Links tab "Make-A-Payment."

Any Casitas customer with billing related questions is encouraged to visit the website or to call for customer assistance at (805) 649-2251.





# Water Wasters Now Subject to Fines

No one likes to get a fine and Casitas' staff takes no pleasure in giving them. The seriousness of the drought now makes it necessary to issue fines to prevent water waste so we can protect the limited local water supply. Casitas' Water Waste Ordinance states that a first violation will result in a written warning. Subsequent violations will incur fines up to $600, for each incident.

# Report Water Waste

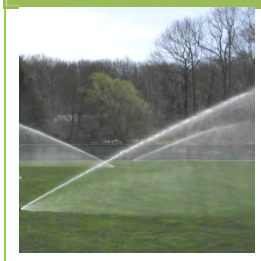
Casitas' staff depends on the public to assist with getting everyone to comply with Casitas' water waste ordinance to protect our limited local water supplies. If you see anyone violating Casitas' water waste provisions please call Casitas' hotline at (805) 649-2251 Extension 128 or visit our website at www.casitaswater.org and complete an anonymous reporting form. Please be sure to include the address of water waste; date and time of water waste; if possible please send a photo; and type of water waste from the list below:

- Outdoor irrigation limited to two days per week
- Leaks must be fixed by property owners within a reasonable period of time (usually 48 hours)
- Fountains and water features must have a re-circulating water system
- No outdoor irrigation from 10 am to 6 pm
- Keep irrigation runoff from spilling on to streets and sidewalks
- Use a hose nozzle shut-offs at all times when cleaning vehicles or hand watering landscapes
- Sweep, don't wash sidewalks, driveways, and parking areas with a hose except for safety and sanitary reasons.
- No irrigation during rainfall or for 48 hours following rainfall.
- Restaurants must not serve drinking water unless requested by the customer
- Restaurants must use water saving dish wash spray valves
- Hotels and motels must give guests the option to decline daily bed linen and towel changes
- No installation of "single pass cooling systems" in buildings requesting new water service
- No installation of non-recirculating water systems at car washes and laundry systems

# OUTDOOR WATER RESTRICTIONS ARE IN EFFECT

The Casitas Municipal Water District has established prohibitions on water waste to help manage Casitas' potable water supply and to minimize the effects of drought within Casitas' urban service area.

## Mandatory Water Restrictions to Include the following:



- Limit of Two days per week outdoor irrigation
- No outdoor irrigation from 10 am to 6 pm

Sweep, don't wash sidewalks, driveways, and parking areas except for safety and sanitary purposes

Keep irrigation on the landscape
Not on sidewalks or streets

Hose nozzle shut-offs are required at all times

- Cleaning vehicles
- Hand watering landscape areas

**Please adjust irrigation timer and sprinkler heads to meet the mandatory restrictions**

Please call (805) 649-2251 Ext. 128 or report on website www.casitaswater.org the address, time, date, and type of water waste witnessed

### Violations and Penalties

Notices of water waste violations will be by telephone, mail, hand-delivery, or posting at premises. A written notice will be issued stating time, place and general description of violation or repeat of violation, as well as a time frame to correct the violation. Penalties for failure to comply with mandatory watering restrictions are as follows:

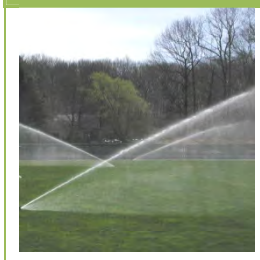
- **First violation** – Written notice to customer by a hang tag at customer's address
- **Second violation** – If corrective action is not taken within the given time frame provided for the first violation or a second violation occurs within the preceding 12 months after the first violation, second notice of violation will be issued with a fine of $100
- **Third violation** – A third violation within the preceding twelve months after the second notice is punishable by an administrative fine of $250
- **Fourth & Subsequent violations** – Each day of violation beyond the remedy allowance provided in the third notice of violation will be subject to discontinuance of water service. A fine of not more than $600 or imprisonment in county jail for not more than 30 days, or both fine and imprisonment may be imposed upon conviction.

Please visit Casitas' website at www.casitaswater.org to find out about additional information on water conservation, landscape classes, and rebates. Or, Call (805) 649-2251 Ext. 110 to schedule a free home water survey.

# BUSINESS & OTHER
# WATER RESTRICTIONS NOW IN EFFECT

The Casitas Municipal Water District has established prohibitions on water waste to help manage Casitas' potable water supply and to minimize the effects of drought within Casitas' urban service area.

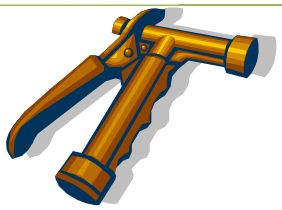
## Mandatory Water Restrictions to Include the following:



- Limit of two days per week outdoor irrigation
- Limit irrigation hours to 10 am to 6 pm

Sweep, don't wash sidewalks, driveways, and parking areas except for safety and sanitary purposes

Keep irrigation on the landscape
Not on sidewalks or streets



Hose nozzle shut-offs are required at all times when
- Cleaning vehicles
- Hand watering landscape areas

- Eating and drinking establishments provide drinking water served upon request only
- Food preparation establishments prohibition against non-water conserving dish wash sprays

- Provide option to not launder linen and towels daily at hotels, motels, and other lodging establishments
- Fountains and decorative water features must be recirculated

**Please adjust irrigation timer and sprinkler heads to meet the mandatory outdoor restrictions**

**Large Landscaped areas greater than 3 acres may request a variance for the two day watering restriction conditioned upon a 20% overall reduction in usage from 2013 monthly usage. Contact Casitas to inquire about a conditional variance. (Large landscapes include areas such as golf courses, parks, schools, and cemeteries.**

### Violations and Penalties

Notices of water waste violations will be by telephone, mail, hand-delivery, or posting at premises. A written notice will be issued stating time, place and general description of violation or repeat of violation, as well as a time frame to correct the violation. Penalties for failure to comply with mandatory watering restrictions are as follows:

**First violation** – Written notice to customer by a hang tag at customer's address
**Second violation** – If corrective action is not taken within the given time frame provided for the first violation or a second violation occurs within the preceding 12 months after the first violation, second notice of violation will be issued with a fine of $100
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**Fourth & Subsequent violations** – Each day of violation beyond the remedy allowance provided in the third notice of violation will be subject to discontinuance of water service. A fine of not more than $600 or imprisonment in county jail for not more than 30 days, or both fine and imprisonment may be imposed upon conviction.

Please visit Casitas' website at www.casitaswater.org to find out about additional information on water conservation, landscape classes, and rebates or call (805) 649-2251 Ext. 110.

# Restricciones del uso del Agua

El Distrito Municipal de Agua de Casitas (The Casitas Municipal Water District) ha establecido restricciones respecto al desperdicio de agua. Esto es para controlar el agua potable de Casitas y para reducir los efectos de la sequía dentro de las áreas de servicio de Casitas.

## Las Restricciones Obligatorias de Agua incluirán lo siguiente:

- Riegue antes de las 10 a.m. o después de las 6 p.m.
- Se permite regar solo dos días por semana.

- No lave las banquetas/aceras, ni las áreas de estacionamiento, mejor use la escoba a excepción si es por seguridad y salubridad.

- Riegue el jardín, no en las banquetas/aceras, ni la calle.

- Se requiere manguera con interruptor:
  - para lavar autos
  - Regar el jardín a mano

- Si ve que están desperdiciando agua, por favor, llame al (805) 649-2251 Ext. 128 ó reportelo en la página del Internet www.casitaswater.org provea el domicilio, la hora, la fecha y el tipo de desperdicio de agua.

## Violaciones y Penalidades

Avisos de violaciones por desperdiciar agua se harán por teléfono, por correo, por entrega directa, o poniendo el aviso en las propiedades. El aviso escrito especificará la hora, el lugar y descripción en general de la violación, repetición de la violación, así como el tiempo que se espera para que la corrijan. Las penalidades por no cumplir con estas restricciones son las siguientes:

- **Primera violación -** Por escrito y se pondrá el aviso en el domicilio/propiedad
- **Segunda violación -** De no corregirse el problema durante el tiempo que se le dio en la primera violación o si ocurre una segunda violación entre los 12 meses de cuando ocurrió la primera violación, se dará un segundo aviso con una multa de $100
- **Tercera violación -** Una tercera violación entre los doce meses del segundo aviso recibirá una multa de $250
- **Cuarta & más violaciones -** Por cada día después de la solución permitida y después del tercer aviso, estará sujeto a que se le cancele/discontinúe el servicio de agua. Podría recibir una multa de no más de $600 ó encarcelamiento por no más de 30 días, o de ser encontrado culpable se le podría imponer ambas.

Por favor, visite nuestra página www.casitaswater.org para obtener más información en como conservar agua, clases en mantenimiento de jardines, y reembolsos o llame al (805) 649-2251 Ext. 110 y pida una cita para una encuesta/evaluación gratuita de como conservar agua.

# Water Conservation Tips

1. Water your lawn only when it needs it. Step on your grass. If it springs back when you lift your foot, it doesn't need water. So set the sprinklers for longer interval times or days in between watering. Saves 750 to 1,500 gallons a month. Also, make sure your sprinklers are not watering the sidewalks
2. Fix leaky faucets and plumbing joints. Saves 20 gallons a day for every leak fixed.
3. Don't run the hose while washing your car. Use a bucket of water and a quick hose rinse at the end. Saves 150 gallons each time. For a two-car family that's up to 1,200 gallons a month
4. Install water-saving showerheads or flow restrictors. Saves 500 to 800 gallons a month.
5. Watch your water use when brushing your teeth, doing dishes by hand, shaving to make sure you are not letting water run freely down the drain.
6. When washing your dishes or clothes only do full loads in the washing machine and dishwasher. Saves 300 to 800 gallons a month.
7. Slightly shorter showers. One to two-minutes less in the shower can save up to 700 gallons a month.
8. Use a broom instead of a hose to clean driveways and sidewalks. Saves 150 gallons or more each time. At once a week, that's more than 600 gallons a month.
9. Don't use your toilet as an ashtray or wastebasket. Saves 400 to 600 gallons a month.
10. Capture tap water. While you wait for hot water to come down the pipes, catch the flow in a watering can to use later on house plants or your garden. Saves 200 to 300 gallons a month.

**Lake Casitas Recreation Area**
11311 Santa Ana Road Ventura, CA 93001
General Information: 805-649-2233
Reservations: 805-649-1122

**Casitas Municipal Water District - Office**
1055 Ventura Ave Oak View, CA 93022
Phone: 805-649-2251 Fax: 805-649-4485

# Water Conservation Links

2004 Water Supply and Demand Study

1989 Water Supply and Demand Study

Agricultural Irrigation Improvement Recommendations for Western Ventura County Farmers

Free water conservation devices

Water Conservation Programs

Water Conservation Rebate

Irrigation Contoller Rebate

## Waterwise Information for Residents:

Be Water Wise - Metropolitan Water District's Water Conservation Page (for LA area residents)

Water Saver Home Tour - California Urban Water Conservation Council Water Saver Home. Take a tour of water saving opportunities in your home.

Saving Water in your Swimming Pool - Money saving tips from Marin Water District.

Software for Environmental Awareness - Save an amazing amount of water money while protecting the environment. (Self-extracting zipfile 0.9 Mb)

WaterWiser Drip Calculator - Measure and estimate water wasted due to leaks.

## Waterwise Information for Businesses:

Water Savings Calculator: Multi-housing Laundry Association - For common area laundry rooms. http://www.laundrywise.com/

Global Environmental Management Initiative: Water Sustainability Tool - Information useful to businesses interested in saving water. http://www.gemi.org/

## Waterwise information for Landscape Maintenance:

Water Right - Irrigation information from the Center for Irrigation Technology.

EPA Water Efficiency Measures for Landscaping - Landscaping tips during non-drought conditions.

Be Water Wise Plant Database: Find beautiful plants that use minimal water.

# Conservation Programs

### Casitas MWD offers many water Conservation programs to assist both residential and commercial customers.

Casitas offers free water surveys to all residential customers that live within the district. This service is open to residents living within Casitas MWD's district and not just to Casitas' direct customers. The district includes the upper Ojai, Rincon, and East Ventura, please call if you need to verify if you live in the district. Casitas also provides rebates for high efficiency washing machines, high efficiency toilets, and other devices. Please contact Ron Merckling, Water Conservation Manager at (805) 649-2251 Extension 118 for further information.

### Water conservation Services for agricultural customer

Casitas plans to offer in the summer of 2012 distribution uniformity evaluations to agricultural customers. Those customers with the highest water usage per acre will be given first priority. Please contact Ron Merckling, Water Conservation Manager for more information at (805) 649-2251 Extension 118.

### Water conservation for teachers and students

Casitas provides state approved curriculum that teaches students about water conservation. Free educational materials are available to teachers and students. Please contact Ron Merckling Water Conservation Manager at (805) 649-2251 Extension 118 for additional details.

### Creating Your Own Water-wise Landscape

Here are some basic water-wise landscaping suggestions that will help you arrive at beautiful landscape solutions that work in the Southern California's climate.

1. Limit non-functional turf.

2. Ask your local nursery for suggestions on native plant species that will meet your landscape needs the most effectively.

3. Install proper irrigation systems throughout your yard, conventional sprinklers are best for turf, while low-volume irrigation, such as drip, is best for trees, shrubs and perennials.

4. Group plants with similar water needs. Maximize the use of

low-water-use plants especially in sunny, dry and windy areas. Plants that need more water should be used sparingly and planted close to the house in either shady areas or placed in containers.

5. Improve the texture of the soil, if needed, by adding amendments. Amendments can either increase water retention or improve drainage, depending on the soil composition.

6. Use a thick layer of mulch around your plants to help the soil retain moisture. Mulch also inhibits weeds.

7. Plant trees to lower air and soil temperatures. This reduces plant and soil moisture loss.

8. Use low, spreading shrubs and trees to cover large slopes rather than shallow-rooted groundcovers. Minimize water runoff with drip irrigation

# Smart Irrigation Controller Rebates

The goal of the irrigation controller rebate program is to increase irrigation efficiency and promote healthy and attractive landscaping within Casitas' district boundaries. It saves water and lowers your bill.

A new generation of irrigation controllers are now available that automatically adjust irrigation scheduling based on actual site and weather conditions. They stop irrigating when it rains and apply more water when it is dry. They will automatically cycle and soak to reduce runoff on slopes

Casitas is offering up to $250 rebates for qualifying irrigation controllers.

**NOTE: As of October 1st, 2011, the Smart Irrigation Controller Rebate requirements and amounts will be changing. The new Rebate amount will be $250. Applicants will be required to demonstrate an average summer use in excess of 25 units of water per month. A site visit by Casitas staff will also be required.**

Application process:

Review terms and conditions

Select and install qualifying irrigation controller, shown on Makes and Models list, according to manufacture's directions. Contact manufacture for installation, programming questions and for a list of distributors that may have a list of professional installers if you choose not to install yourself.

Complete application with attached receipt and deliver it to Casitas MWD, 1055 Ventura Avenue, Oak View, California 93022. Casitas reserves the right to inspect for proper installation.

Online or PDF Application

Approved Makes and Models List

Brochure

# Free Water Conservation Devices

Casitas MWD provides the following water conservation devices for free to all customers living in the service area. Customers can pick up these devices between 8:00 and 4:30 p.m. at the District's main office located at 1055 Ventura Avenue, Oak View, California.

EARTH SHOWERHEAD

(Massage Showerhead) This showerhead will provide an effective spray but use much less water.

KITCHEN AERATOR WITH SWIVEL

Swivel action for effective cleaning, both with aerated jet and wide spray.

1.5 GALLONS-PER-MINUTE BATHROOM FAUCET AERATOR

Flows at only 1.5 gpm, but delivers the force of gallons more. Easy to install.

TOILET FLAPPER

Toilet flappers will begin to leak with age. It is important to maintain them. These sturdy universal flappers install easily in to your toilet tank.

DYE TABLETS

(Packet with 2 tablets) Drop these blue dye tablets into your toilet tank to check for toilet leaks.

SHOWER SHUT-OFF VALVE

Install this device above your showerhead so that you can easily turn-off your shower while lathering. This will limit the number of minutes that your shower will be running, which will add to many gallons of water savings per day.

**Lake Casitas Recreation Area**
11311 Santa Ana Road Ventura, CA 93001
General Information: 805-649-2233
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Phone: 805-649-2251 Fax: 805-649-4485

# Landscape Suggestions

Landscaping water requirements represent over fifty percent of residential water needs. Homes and businesses have a great opportunity to save more of our limited local water supply by planting drought tolerant plants and installing and maintaining efficient irrigation systems.

Water Wise Gardening in Ventura County – This web-resource offers you a personalized database that you develop for your specific landscape needs. You can populate your database using the vast selection of plants and garden plans that will help you design a beautiful and drought tolerant landscape that is specifically designed for Ventura County. All the homes and plans depicted are from Ventura County. Plant lists include details on needs for sun and water and attributes such as butterfly or bird attraction.

Are you adjusting your irrigation controller at least twice a year?

An easy way to remember to adjust your irrigation controller sprinkler is to turn it back in the fall when you change your clock for daylight savings time and spring it forward in the spring. Also, take the time to see if all of your sprinkler heads are working properly. Look for broken, bent or sunken sprinkler heads and clogged nozzles.

**Lake Casitas Recreation Area**
11311 Santa Ana Road Ventura, CA 93001
General Information: 805-649-2233
Reservations: 805-649-1122

**Casitas Municipal Water District - Office**
1055 Ventura Ave Oak View, CA 93022
Phone: 805-649-2251 Fax: 805-649-4485

# Report Water Waste Anonymously

Please assist us by reporting water waste such as a water running off a property, middle of the day lawn irrigation, or a faucet left running. Your help will assist Casitas MWD staff to investigate and offer assistance in resolving the problem. Complete the form anonymously or contact our Water Waste Hotline at (805) 649-2251 Ext. 128.

**Date Observed ***

**Time Observed ***

**Location Type ***

**Address/Location ***

**Type of Water Waste**

- [ ] Outdoor irrigation more than two days a week
- [ ] Outdoor irrigation between 10 am and 6 pm
- [ ] Over watering or runoff onto pavement, street or gutter
- [ ] Not using a hose nozzle shut-off when cleaning vehicles, or hand watering landscapes
- [ ] Using a hose to wash a driveway, sidewalk, and/or other exterior hard or paved surface
- [ ] Broken sprinkler
- [ ] Other, please describe in comment field below:

**Comments:**

# Request for Allocation Adjustment

The Casitas Municipal Water District's Water Efficiency and Allocation Program is designed to serve as a tool to help meet State mandated water use reductions and to manage local water supply. If you believe you need an adjusted allocation based on the reasons listed below, you must complete and return this form. Adjustments may be approved subject to verification and periodic review by Casitas Staff. Allocation adjustments are based on Stage 1 drought conditions and are subject to further limits due to drought conditions.

**NAME: _____ ACCOUNT NO. _____**
**Email: _____ Daytime Phone: _____ Evening Phone: _____**
**Mailing Address: (*if different from service address*): _____**

**I have read the ALLOCATION ADJUSTMENT GUIDELINES (on back page) and request an adjusted water allocation for the following reason(s):**

☐ **CIRCUMSTANCE.** *Please explain circumstance, attach additional page if needed. A home water survey and/ or verification may be required.*

***PLEASE NOTE: Submissions with incomplete information or missing documentation(s) will be returned to applicant. Approval of an allocation adjustment does not constitute a release from conserving in your home and penalties may be incurred if you exceed your water allocation. Processing may take 30 days. Casitas will respond to your request in writing. If approved, new allocation will apply starting with the next bill. For questions, call (805) 649-2251 Ext. 118.***

**RETURN COMPLETED APPLICATION AND ACCEPTABLE DOCUMENTATION BY:**
**(MAIL) Casitas Municipal Water District, Oak View, CA 93022, (FAX) 805-649-3001, or (EMAIL) rmerckling@casitaswater.com.**

I have completed this form and affirm that I am the above account holder and the information contained herein, including attachments, is complete and accurate. I further understand that all variances are subject to change and I may be liable for back charges for providing false information.

**PRINT NAME: _____ SIGNATURE: _____**

**For District Use Only, Date Received:_____Allocation Adjustment Essential _____ Non-Essential_____**
**Documentation Submitted_____**

# Allocation Adjustment Guidelines

A. GENERAL INFORMATION

1. The customer is responsible for contacting Casitas and submitting a Request for Allocation Adjustment in writing
2. Documentation subject to verification and review by Casitas' staff.
3. Upon verification and approval of customer's request, the allocation adjustment will be applied to the next bill and will not be retroactive
4. Refusal or failure of applicant to provide documentation acceptable to and requested by Casitas shall result in denial or revocation of adjustment
5. Reasons for requesting allocation adjustments cannot be related to water waste.
6. Variance applications may be subject to annual review

B. RELEVANT FACTORS THAT MAY QUALIFY FOR ALLOCATION ADJUSTMENTS

1. Livestock (15 gallons of water per day per animal weighing more than 100 pounds)
2. Licensed 24/7 child or adult care facility
3. Correction of irrigable area square feet
4. Correction of number of dwelling units on property

**Before submitting an application , please read the following:**

Information contained on the application form is subject to an audit (Casitas reserves the right to audit Variance Applications). As an applicant subject to an audit, you must agree to: Provide documentation to support claims. If information supplied in the application is found to be false, the fees and
charges will be adjusted retroactively to the date of the application and penalty fees may apply. Appropriate fees and charges will be added to the next water service bill for the address on the application.

# Free Landscape Class

Please join us for our last free water conservation workshop for this year. Learn more about how you can save water and money. The workshop is scheduled from 9:00 a.m. to noon on Saturday, August 8, 2015.

- **Rainwater Capture and Graywater –** Learn how to install a small scale system that meets all county health and safety requirements.

Please RSVP early at rmerckling@casitaswater.com or (805) 649-2251 Extension 118.

Workshops will be held at Oak View Park & Resource Center (formerly the Oak View Elementary School) located at 555 Mahoney Avenue. Attendees are encouraged to park in the parking lots instead of on the street.

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Please visit the Water Wise Gardening in Ventura County website at www.ventura.watersavingplants.com.


1055 Ventura Ave.
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805-649-2251
www.casitaswater.org


Join the Casitas Municipal Water District Facebook page to get the latest updates on water conservation and the Casitas Recreation Area at: www.facebook.com/bfsitecasitasmunicipalwaterdistrict.

## Your Board in Action

**Bill Hicks,** Division I
**James W. Word,** Division II
**Pete Kaiser,** Division III
**Mary Bergen,** Division IV
**Russ Baggerly,** Division V

The Casitas Board of Directors is scheduled to meet at 3:00 p.m. in the board room located in the main office at 1055 Ventura Ave., Oak View, on the 2nd and 4th Wednesday of every month.




CASITAS Municipal Water District

# Casitas Water News

Summer 2015


# Historic Drought Continues

The Casitas Board declared a Stage II condition for the Lake Casitas water supply in April 2015. Local groundwater and Lake Casitas water levels declined to historic lows not seen in fifty years. It is critical all residents, businesses, and institutions in Western Ventura County take extra measures to conserve water now and into the future.

Conserving water now can prolong water supplies for the future. Water savings measures are now mandatory per the State of California, Casitas Ordinances, and other local water agencies' requirements.

*Lake Casitas - at historic lows*

# State Mandated Water Reductions

The State has proclaimed a state of emergency based on the current drought conditions and enacted emergency regulations to prevent the waste and unreasonable use of water. The regulations are aimed at reducing urban water use to the State's goal of 55 gallons per capita per day (GPCD) and now water agencies throughout California are required to implement efforts to significantly reduce all urban water use. For most residential, business, and institutional customers this means significant outdoor water use reductions compared to each month in 2013.

The State mandated water use reduction requirements vary for each water agency. The State required greater reductions for agencies with customers using higher gallons per capita day water usage. The table at the right indicates the mandated water reduction requirements from 2013 water use.

The State goal of 55 GPCD means that a family of four will use 9 units of water each month. Residential customers that use less than 10 units on their monthly bill have met the State's goal and are doing a great job on water conservation. However, for customers that use substantially more than 10 units each month, it is expected water conservation will primarily come from reducing outdoor watering of landscapes.

**State Mandated Water Demand Reductions**

| Water Agency | % of Water Reduction | Gallons Per Capita Day Use |
|---|---|---|
| Casitas MWD | 32% | 182.9 |
| City of Ventura | 16% | 91.3 |
| Golden State Water Co. Ojai | 36% | 261 |
| Small Water Agencies (Ventura River Water District, Meiners Oaks Water Agency, local Mutual Water Companies) | 25% | |

# Casitas' Board Adopts New Water Allocation Plan

Casitas' Board of Directors approved a revised Water Efficiency and Allocation Program on June 5, 2015. The Program implements Casitas' water demand reduction measures based on storage levels in Lake Casitas. The program describes water demand reduction strategies and measures to address water shortage conditions, promote water conservation and water efficiency, and the creation of a conservation penalty to customers wasting water. A key revision in the program includes methods to assign individual allocations to Casitas' customers.

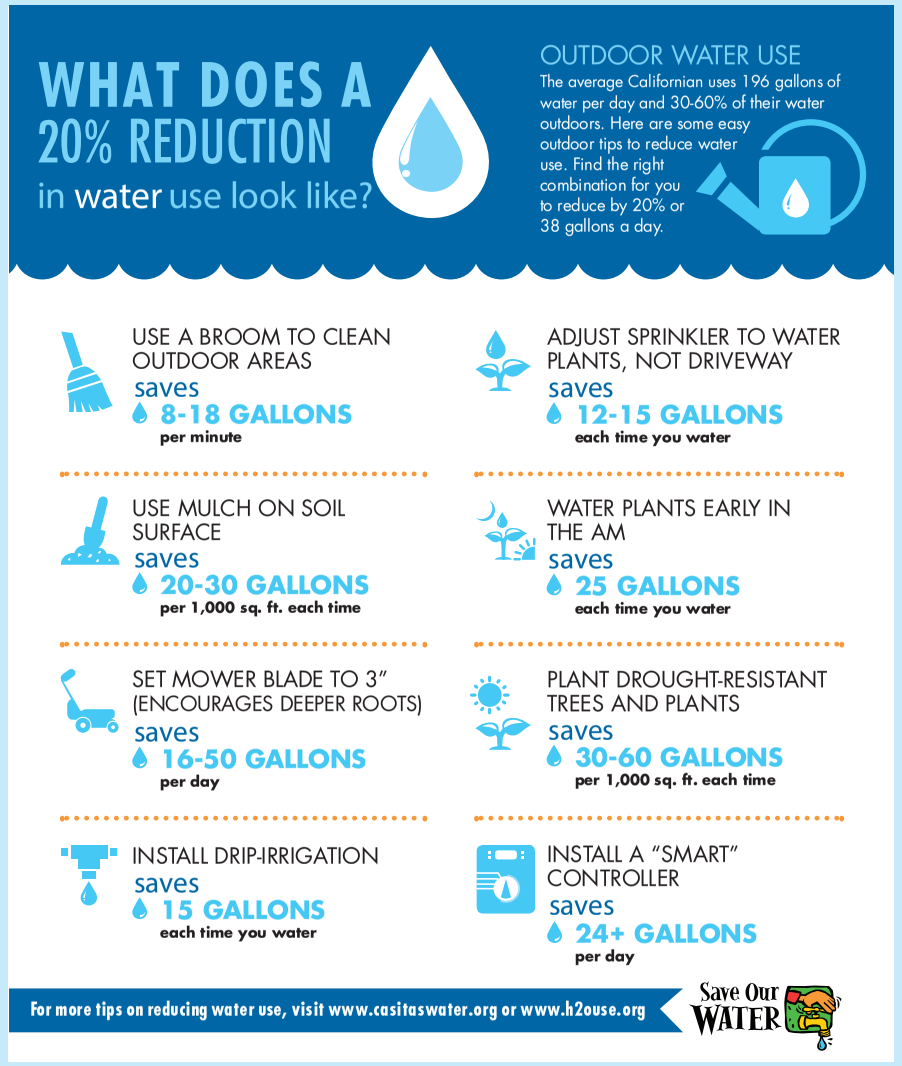
The allocations were designed to be fair and not require unreasonable cutbacks from those who already conserve. They will provide customers with the necessary amount of water to meet public health and safety. They also take into account property variations and provide additional amounts of water for seasonal landscape needs.

# Choose to Save More

Take extra steps to conserve and save thousands of gallons each year. Several suggestions include:

- Let your turf go brown or replace water-thirsty turf with water smart landscape
- Use mulch around plants to prevent evaporation
- Turn off the faucet when shaving, brushing teeth and scrubbing dishes
- Run full loads of laundry and dishes
- Take shorter showers, five minutes or less
- Install efficient fixtures and appliances – Look for rebates on Casitas' website
- Talk to your family, friends and coworkers

Check out the websites: **www.casitaswater.org** and **www.h2ouse.org** for additional suggestions on water savings.






# Water Wasters Subject to Fines

No one likes to get a fine and Casitas' staff takes no pleasure in giving them. The seriousness of the drought now makes it necessary to issue fines to prevent water waste so we can protect the limited local water supply. Casitas' Water Waste Ordinance states that a first violation will result in a written warning. Subsequent violations will incur fines up to $600, for each incident.

**Report Water Waste**

Casitas' staff depends on the public to assist us with getting everyone to stop wasting our local water supplies. If you see anyone violating any of the Casitas water waste provisions, please call our hotline at (805) 649-2251 extension 128 or visit our website at www.casitaswater.org and complete an anonymous reporting form. Please be sure to include the address of water waste; date and time of water waste; if possible please send a photo; and type of water waste from the list below:

- Outdoor irrigation limited to two days per week. No outdoor irrigation from 10 am to 6 pm
- Leaks must be fixed by property owners within a reasonable time period (usually 48 hours)
- Fountains and water features must have a re-circulating water system
- Restaurants must not serve drinking water unless requested by the customer

- Restaurants must use water saving dish wash spray valves
- Hotels and motels must give guests the option to decline daily bed linen and towel changes
- Keep irrigation runoff from spilling on to streets and sidewalks
- Use a hose nozzle shut-offs at all times when cleaning vehicles or hand watering landscapes
- Sweep, don't wash sidewalks, driveways, and parking areas with a hose except for safety and sanitary reasons
- No irrigation during, or 48 hours after, rainfall.

# The Return of Astronomy Nights at Lake Casitas

Far, far away from city lights, Lake Casitas Recreation Area is a perfect place to stargaze with NASA accredited astronomer Ernest Underhay. Peek through our super big telescope and/or bring your own binoculars or telescope. Mr. Underhay is as entertaining as he is knowledgeable.

Everyone is welcome. Park entrance fees apply. You may want to bring your blanket or lawn chair.

Meet at Picnic #1 by Santa Ana Launch Ramp, Event starts at 8:30 pm:

- **Saturday, June 27 -** "New Moon and Venus"
- **Saturday July 18 -** "Saturn, Lord of the Rings"
- **Saturday, August 15 -** "Summer Milky Way and Scorpion's Stinger"
- **Saturday, September 5 -** "Farewell to Summer"
- **Sunday, September 27 -** "Blood Moon Solar Eclipse"

# Free Landscape Class

Please join us for one of our free Saturday morning classes to learn more about how you can save water and money.

**Rainwater capture/Graywater Workshop –** from 9:00 a.m. to noon on Saturday, August 16, 2014. This workshop is sure to answer all of your questions related to rainwater and graywater systems. You will learn how to install your own systems according to permit standards in Ventura County.


Please RSVP early at rmerckling@casitaswater.com or (805) 649-2251 Extension 118.

Workshops will be held at Oak View Park & Resource Center (formerly the Oak View Elementary School) located at 555 Mahoney Avenue. Attendees are encouraged to park in the parking lots instead of the street.

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## Your Board in Action

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**Bill Hicks,** Division I
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CASITAS Municipal Water District

# CASITAS WATER NEWS

Summer 2014


# Statewide Drought Requires Local Response

Western Ventura County's water resource systems will be stretched as the worse statewide drought in recent memory continues. By early summer, many local groundwater resources will reach historical low levels and groundwater pumpers will rely on Lake Casitas to meet local water demands. By the end of the summer months, Lake Casitas' storage will drop to below fifty percent for the first time since 1968. At fifty percent storage, Casitas will ask all water users in the district to further reduce non-essential water use.

***Lake Casitas is currently at 58% of full.***

"It is important for all water users throughout the district to begin to take extraordinary steps to curtail water usage," said Ron Merckling, public affairs/resource manager for Casitas. "Although, there are several years of water supply remaining, it is critical for all water users to take action now, the only water available for our service area is from local water supplies," said Merckling.

Western Ventura County is not alone in facing the drought. The current statewide drought is impacting most of the state's population and water systems. In many areas, water rationing and crop fallowing are now in place due to the scarcity of water.

Casitas' district boundaries encompass a population of approximately 70,000 residents, 5,800 acres of agriculture, and a wide variety of commercial and industrial businesses that are served by more than eight different public and private water providers. If you are receiving this newsletter by mail, you are likely a water customer within the boundaries of the Casitas Municipal Water District.

Casitas' "Drought On/Tap Off" water conservation campaign is aimed at making it as easy as possible for residents, businesses and farmers to save even more water. The campaign includes workshops, rebates for high water efficiency devices, and free agricultural, residential, and business water surveys. State resources on water conservation are also available at www.saveourH2O.org, or join the effort on Facebook and Twitter. Anyone interested in finding out more information about these incentives and programs is encouraged to visit Casitas' web site at www.casitaswater.org or call to call Ron Merckling at (805) 649-2251 Extension 118.

# Homeowner Uses Free Casitas' Consultation to Save Water

Carole Iles, a resident in the Meiners Oaks Water District scheduled a free water survey offered by the Casitas Municipal Water District. "I wanted to remove my lawn to reduce my water consumption. I thought the survey might give me some good ideas so I scheduled a consultation through Casitas' free home water survey program," said Iles. She received a home water survey and a consultation with Cinnamon McIntosh, Casitas' Water Conservation Specialist, who offered advice on how she could save on both indoor and outdoor water use.

"I was happy with all of the suggestions Cinnamon gave me. I saved water and removing the lawn improved my landscape," said Iles. Since implementing the recommendations in the survey Ms. Iles has noticed a reduction in her water use.

Anyone living in the Casitas district boundaries that is interested in getting a free home water survey is encouraged to email

***Cinnamon McIntosh, Casitas' water conservation specialist, performs a free home water survey at the residence of Ms. Carole Iles.***

cmcintosh@casitaswater.com or call (805) 649-2251 extension 110 to schedule an appointment.

# Spruce Up Your Sprinkler System and Save

Now is the perfect time to spruce up your irrigation system before you ramp up your watering efforts this summer. To get started, follow these four simple steps: *inspect*, *connect*, *direct*, and *select*.

**Inspect.** Check your system for clogged, broken, or missing sprinkler heads. If you›re not the do-it-yourself type, look for an irrigation professional certified through a WaterSense labeled irrigation program.

**Connect.** Examine points where the sprinkler heads connect to pipes/hoses. If water is pooling in your landscape or you have large wet areas, you could have a leak in your system. A leak as small as the tip of a ballpoint pen (1/32nd of an inch) can waste about 6,300 gallons of water per month.

**Direct.** Are you watering the driveway, house, or sidewalk instead of your yard? Redirect sprinklers to apply water only to your lawn or prized plants.

**Select.** An improperly scheduled irrigation controller can waste a lot of water and money. Update your system›s schedule with the seasons, or select a smart irrigation controller to take the guesswork out of scheduling. Casitas offers rebates of$250 for a smart irrigation controller, please see details on qualification requirements at www.casitaswater.org.

Learn more about maintaining a water-smart yard by visiting the U.S. Environmental Protection Agency's WaterSense website at www.epa.gov/watersense/outdoor.



# Eagles Return to Nest at Lake Casitas

For the second year in a row, a pair of bald eagles hatched two chicks in a nest near Lake Casitas this spring. The last recorded nesting of Bald Eagles on Ventura County's mainland before last year's nesting at Lake Casitas was in 1922.

***A nest with an adult eagle near Lake Casitas.***

If you plan to visit the Lake Casitas Recreation Area to see the eagle nest it is VERY important not to disturb the nest. The nesting area is closed to vehicle, bicycle, and foot traffic (a 500 foot radius) to reduce disturbance to the eagles, which is located in a eucalyptus tree near Teacup #1, within the Lake Casitas Recreation Area. The best viewing location, located far enough away to avoid disturbing the birds, is at Teacup #2, a picnic table area. There will likely be others there with spotting scopes to show you where the nesting is occurring. It is recommended that you bring a good pair of binoculars or a telescope.

Although bald eagles were delisted as federally endangered species in 2007, nesting and wintering Bald Eagles remain listed as endangered by the California Department of Fish & Wildlife. They are also protected under both the federal Bald and Golden Eagle Protection Act and the federal Migratory Bird Act of 1918.

# Protecting Lake Casitas Don't Move a Mussel

Casitas Municipal Water District recently adopted additional measures to stop devastating invasive mussels from moving into Lake Casitas in response to the continued spread of mussels in California lakes. Casitas' invasive quagga and zebra mussel protection program was already recognized as the most extensive anti-mussel prevention program in the state before these measures were adopted.

Casitas' Board of Directors in January 2014, extended the boat quarantine period from 30 to 35 days as an additional protective measure. When a boat owner comes to Lake Casitas they must accept an initial boat inspection. They then participate in a tamper proof tag program to assure their boats are not allowed to enter any other water body during a waiting period. In May, recreation staff completed an intensive two-day watercraft inspection and decontamination training. The training qualifies staff to be level I inspectors and decontaminators. It is meant to improve inspections of boats that may be at risk of harboring invasive mussels.

Invasive mussels can be spread inadvertently from one water body to another by boaters and, once introduced, can rapidly devastate that water body with the formation of massive colonies that litter beaches, cling to boats and docks, clog and damage water intake equipment, and even cause a collapse in the population of sport fish. The spread of these invasive mussels has progressed from their first introduction into North American waters in the Great Lakes in 1988 all the way to their recent discovery in Lake Piru.

Casitas water quality staff analyzes water samples each month to ensure the lake remains free of invasive mussels. For questions, information and to make a boat inspection appointment, please call (805)-649-2233.

## Free Landscape Classes

Please join us for one of our free Saturday morning classes to learn more about how you can save water and money.

- **Convert Your Turf –** from 9 a.m. to noon on Saturday, February 22, 2014. This workshop will provide training on how to remove turf and what aesthetic alternatives are available to replace your lawn.
- **Design with Native Gardens –** from 9 a.m. to noon on Saturday, May 17, 2014. This workshop will explore how to design beautiful landscapes with native plants.
- **Rainwater Capture/Graywater Workshop –** from 9:00 a.m. to noon on Saturday, August 16, 2014. This workshop is sure to answer all of your questions related to rainwater and graywater systems. You will learn how to install your own systems according to permit standards in Ventura County.

Please RSVP early at rmerckling@casitaswater.com or 805-649-2251 Extension 118.

Workshops will be held at Oak View Park & Resource Center (formerly the Oak View Elementary School) located at 555 Mahoney Avenue. Attendees are encouraged to park in the parking lots instead of the street.

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CASITAS Municipal Water District

# Casitas Water News

Winter 2014


# Historic Drought Strains Local Water Supplies

*Lake Casitas is currently at 60% of full. Above is the Santa Ana boat ramp.*

The State of California, Ventura County, and the Ventura River Watershed, begin 2014 in the grip of one of the driest recorded rain periods in history. Governor Jerry Brown declared a drought emergency on January 17, 2014, calling on every Californian to reduce their water usage by 20%. The lack of rain recently has left Lake Casitas at less than sixty percent capacity, its lowest point in more than two decades. Without any significant additional rainfall this year, it is expected to decline to 50 percent capacity, a critical point at which Casitas will implement additional water conservation measures and actions to encourage less water use. Casitas is presently reviewing and revising these measures, and will provide additional information in the near future.

As the current drought continues, there is greater demand on Lake Casitas' water supply. Lake Casitas was built in the 1950s to be a back-up water supply to local groundwater supplies. Many of Casitas' resale agencies and agricultural customers that traditionally use groundwater supplies have started to use more of Casitas' water as their own groundwater supplies have diminished. "When the Ventura River Project was built by the Bureau of Reclamation in 1959, it was intended that Lake Casitas would be a supplemental water supply during extended drought conditions, as local groundwater sources depleted," said Steve Wickstrum, general manager for the Casitas Municipal Water District.

Casitas encourages constituents throughout the district to use their water wisely through an active water conservation campaign that offers workshops, rebates for high water efficiency devices, and free agricultural, residential, and business water surveys.

Casitas' district boundaries encompass a population of approximately 70,000 residents, 5,800 acres of agriculture, and a wide variety of commercial and industrial businesses that are served by more than eight different public and private water providers. The area relies solely on local surface water and groundwater supplies. Unlike most of Southern California, there is no importation of State Water into the district's boundaries.

Anyone interested in finding out more information about incentives and programs is encouraged to visit Casitas' website at www.casitaswater.org or to call Ron Merckling at 805-649-2251 Extension 118.

# Emergency Measures Implemented Due to Quagga Mussel Threat

Lake Casitas Recreation Area responded to the December 2013 discovery of invasive Quagga mussels at Lake Piru by implementing emergency actions to include subjecting all new vessels wishing to use Lake Casitas to a mandatory 35 day quarantine period.

The Casitas Municipal Water District Board on January 22, 2014 took additional action by calling on the California Natural Resources Agency to act on its authority to plan for the control or eradication of invasive mussels from Lake Piru. Lake Piru is the first lake in Southern California to get invasive mussels from a source, likely recreational boats, other than the Colorado River aqueduct. It is feared that any further spread of invasive mussels in Ventura County will result significant environmental and economic impacts.


*Quagga sign post at Lake Casitas Recreation Area entrance gate.*

Invasive mussels reproduce rapidly and attach themselves to hard surfaces. This creates maintenance problems related to keeping water intake structures operational. Invasive mussels cause additional damage to fisheries, watershed, and water quality because they are filter feeders that filter out food supply for most fish in a water body and allow for more favorable conditions for disruptive algal blooms. The only known eradication methods include drying out a lake or in the case of a smaller water body with chemical treatment, options that would be difficult to implement at Lake Casitas.

Anyone interested in having their boat inspected at Lake Casitas, required before the 35 day quarantine period begins, is encouraged to make an appointment with the main gate at 805-649-2233 Extension 103.

## Lifeguards Needed!

The Lake Casitas Recreation Area is now accepting applications online for part-time lifeguards this summer to work at the Casitas Water Adventure. Applications can be downloaded at www.casitaswater.org under the employment tab. Applications can be mailed or turned in by hand to the front entrance of the Lake Casitas Recreation Area at 11311 Santa Ana Road, Ventura, California 93010, from now until the end of May.



# Casitas to Offer Free Agricultural Irrigation Evaluations and Rebate Programs

*Water efficient agricultural irrigation lines. Photo courtesy of Hunter Industries.*

Casitas aims to further increase agricultural water use efficiency by offering a couple of additional programs to assist agricultural growers.

One program provides rebates to Casitas' agricultural customers up to $650 per customer on equipment that will assist them to improve their irrigation efficiency. All eligible customers will first receive an irrigation evaluation by the Ventura County Resource Conservation District, which are currently offered at no cost.

The second program will fund free irrigation evaluations on hobby farms with less than two acres of planted crops, and provide rebates for water use efficiency equipment up to $125 per customer.

Funds for these programs are limited. Irrigation evaluations and rebates will be provided on a first come first served basis. For additional information on how to participate, and on eligibility requirements and program terms and conditions, customers are urged to contact Ron Merckling at rmerckling@casitaswater.com or 805-649-2251 Extension 118 or to Ventura Resource Conservation District directly at info@vcrcd.org or 805-764-5130.

# How Can I Reduce My Water Use by 20%?

- Stop over watering plants, which causes them to have shallow roots, and trains them to want more water. Plants need to be more independent, which requires they receive less watering days but deeper soaks so roots grow further down into the soil.
- If you have a struggling tropical plant, consider replacing it with a drought tolerant plant that will thrive in its place. Or even better, plant a native plant that will benefit local butterflies, birds, and bees.
- Reduce or eliminate lawn areas.
- Mulch your landscape to help increase water retention in your soil. Mulch is any substance that provides cover over your landscape such as wood chips or rocks.
- Irrigate your landscape during early morning hours before wind and sunlight can evaporate most of your irrigation water.
- Maintain your irrigation system by checking it once a month! All irrigation systems need regular maintenance to remain efficient. Drip systems require constant maintenance to repair lines chewed by critters, emitters clogged by hard water, and emitters blown off by high water pressure. Even bubblers and spray valves can be damaged by lawn mowers and trimmers, children and cars, and sunlight.
- Install high efficiency toilets, washing machines, showerheads, and faucet aerators.
- Operate clothes washers and dishwashers with full loads.
- Do not let faucets run while brushing teeth and shaving.
- Call Casitas at 805-649-2251 Extension 118 to schedule a free home water saving survey.

Visit the following websites to find out more information: Casitaswater.org or Ventura.watersavingplants.com

## Lake Casitas Recreation Area Announcements

Casitas Water Adventure will be open every day from June 15 to August 25. Hours of operation are 11 am to 6 pm Sunday through Thursday and 11 am to 7 pm on Friday and Saturday.

## Astronomy Nights at Lake Casitas

Far, far away from city lights, Lake Casitas Recreation Area is perfect for stargazing with NASA accredited astronomer Ernest Underhay. Peek through our super big telescope and/or bring your own binoculars or telescope. The event is free, park entrance fees apply. Bring blankets and chairs. For more information please call 805-649-2233 X 103.

All summer shows are 8:30 PM - 9:30 PM
Meet at Picnic #1 (by Santa Ana Launch Ramp).

**Saturday, June 29**
**Saturday, July 27**
**Saturday, August 10 and 31**
**Saturday, September 14**

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Municipal Water District
CASITAS
1055 Ventura Ave.
Oak View, CA 93022
805-649-2251
www.casitaswater.org

Find us on Facebook

Join the Casitas Municipal Water District Facebook page to get the latest updates on water conservation and Lake Casitas Recreation Area at:
www.facebook.com/pages/casitasmunicipalwaterdistrict.

**Your Board in Action**

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CASITAS Municipal Water District
# Casitas Water News
Summer 2013

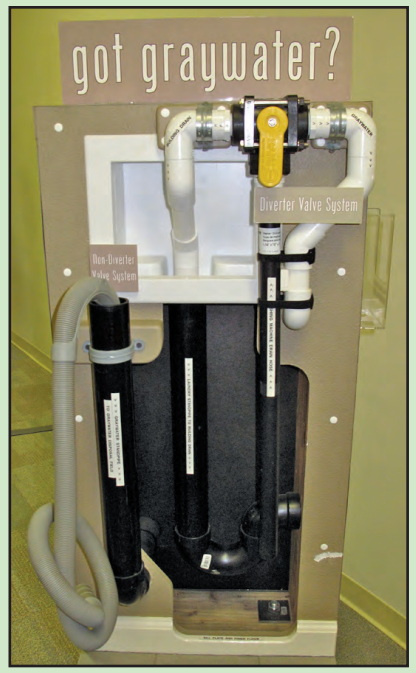
# Casitas Goes to Great Depths to Maintain Casitas Dam

Buried under a few feet of fine sediment at approximately 191 feet underwater at the Casitas Dam is an abandoned inlet. It was originally installed in 1959 as part of a mercury sensing line used to measure how full the lake was at any given time. This measuring system was replaced by an electrical/mechanical bubbler system in the mid-1980s. The old system including the mercury has since been removed. Inside the intake tunnel at the bottom of the lake, where the previous sensor entered from the outside, a small leak started that posed a risk for a greater leak to form that could potentially flood the intake tunnel of the dam if it further deteriorated.

Casitas' staff determined the best way to repair the leak was to have a diver plug the inlet from the outside, at the bottom of the lake. Casitas went out to bid for the work and Harbor Offshore's quote for $83,989 was the lowest of three bids. Since the dive was below 185 feet, federal regulations require divers to use a mixed gas system and a decompression chamber. The leak was successfully capped on May 20.

*Greg Gutshall, diver with Harbor Offshore, Inc preparing to dive.*

**Another dry winter means that we must continue to use our water wisely.**




## Free Graywater Workshop

**Saturday, July 27, 2013 from 9:00 a.m. to noon**

Please join us for our free Saturday morning class to learn the ins-and-outs of installing a graywater system at your home.

Back by popular demand, this workshop is sure to answer all of your questions related to graywater systems. Learn how to install your own system according to permit standards in Ventura County.

Attendance is limited to forty persons per class so please RSVP early at rmerckling@casitaswater.com or 805 649-2251 Extension 118. All workshops will be held in the boardroom at Casitas main offices located at 1055 Ventura Avenue in Oak View.

*Ventura County's graywater model presented at the last class.*

# Why Did Casitas Respond to Golden State Water Customers Request to Join Casitas?

In June 2011, a grassroots organization named Ojai Friends of Locally Owned Water (Ojai FLOW) approached Casitas with petitions signed by approximately 1,900 Ojai customers of Golden State that requested Casitas consider acquiring Golden State's Ojai service area. The petitions were based primarily on the fact Golden State's customers pay far higher water rates than the prevailing rates in surrounding communities. Golden State's customers have endured rate increases of over 75% since 2008, and Golden State's water rates continue to climb rapidly. Customers of Golden State Water in Ojai are constituents of Casitas, which means they pay property taxes to Casitas and vote for a representative to serve on Casitas' Board of Directors. Golden States' Ojai system also relies on Casitas' water as a backup water supply when drought conditions occur.

Casitas independently reviewed Ojai FLOW petitions and supporting studies and determined the proposed acquisition is feasible and would save Golden State's customers substantial costs. On March 13, 2013, the Casitas Board of Directors held a well-attended public hearing to consider formation of a Community Facilities District (CFD) and the imposition of a special tax on properties in Golden State's Ojai service area to finance the acquisition. *The main objective of the CFD is to provide a mechanism that allows Golden State water customers to pay for the water system in Ojai without burdening Casitas' existing customers that live outside of that service area.* The Ojai community overwhelmingly supported Casitas moving forward. At the close of the hearing, the Casitas Board of Directors voted unanimously to form the CFD and set a special election date for August 27, 2013, at which time all registered voters in Golden State's Ojai service area can make the final decision on whether to proceed or not. Casitas will only be authorized to proceed with the acquisition if two-thirds or more of the voters vote in favor.

If the election is successful, Casitas will proceed with making an offer to Golden State for the purchase of their Ojai system.

Additional detailed information on this proposal can be found on the homepage of Casitas website at www.casitaswater.org.

# What Are the Facts About Golden State Water's Lawsuit?

Golden State Water Company served Casitas Municipal Water District with a lawsuit that seeks to stop the citizens of Ojai from voting on whether to approve Casitas' proposed acquisition of Golden State's Ojai water service area. Golden State further claims it is illegal for Casitas to use a Community Facilities District (CFD) to finance acquisition of Golden State's property. The lawsuit was filed in Ventura County Superior Court on March 29, 2013. The hearing regarding this lawsuit will occur on June 10, 2013 after this issue has gone to print. It could determine whether or not the election set for August 27, 2013 will occur or be delayed. Updates will be available on Casitas' website at www.casitaswater.org.

"We have reviewed Golden State's lawsuit and believe it has no merit whatsoever," Casitas General Counsel John Mathews stated. "Casitas intends to vigorously defend its right to use the well-established CFD law to acquire Golden State's Ojai water utility if that is what the citizens of Ojai wish us to do," Mathews added.



# Eagles Nesting at Lake Casitas

A pair of young Bald Eagles hatched two chicks in a nest near Lake Casitas around April 6, 2013. The last recorded nesting of Bald Eagles on Ventura County's mainland was in 1922. The young adult pair was spotted over the last three to four years at the lake, but this is the first year they were successful in hatching chicks.

*Nest with adult eagle near Lake Casitas.*

If you plan to visit the Lake Casitas Recreation Area to see the eagle nest it is VERY important not to disturb the young eagle parents. The nesting area is closed to vehicle, bicycle, and foot traffic to reduce disturbance to the eagles, which is located in a eucalyptus tree near Teacup #1, within the Lake Casitas Recreation Area. There are two excellent viewing locations located far enough away to avoid disturbing the birds. One is outside the fence, to the east of the RV storage area. Inside the recreation area, the best spot is at Teacup #2, a picnic table area. There will likely be others there with spotting scopes to show you where the nesting is occurring. It is recommended that you bring a good pair of binoculars or a telescope.

Although Bald Eagles were delisted as federally endangered species in 2007, nesting and wintering Bald Eagles remain listed as endangered by the California Department of Fish & Wildlife. They are also protected under both the federal Bald and Golden Eagle Protection Act and the federal Migratory Bird Act of 1918.

# Feds Help Fund Recreation Projects

The United States Bureau of Reclamation and Casitas entered into a cooperative recreation agreement almost two years ago. This agreement has allowed federal matching grants to date totaling $536,748 for a variety of projects in the Lake Casitas Recreation Area. This additional funding has allowed for some long overdue improvements in the Lake Casitas Recreation Area to campgrounds, roads, and Casitas Water Adventure.

"We have two very exciting improvements on tap to begin after the busy summer season. They include a new redesigned front entrance and a new roof structure at Picnic 8, also known as Teapot," said Recreation Manager, Carol Belser. The objective of the front gate project is to improve lake security, increase recreational vehicle height capacity and to assist with boating inspections related to invasive species such as Quagga mussels. It is anticipated that the overhead structure demolition and the construction of a new overhead structure will occur in the fall of 2013.

In Picnic number eight, also known as Teapot, there will be an overhead cover replacement. The old wooden structure that once covered the area has been removed. The new structure will use existing metal and cement footings. It is anticipated the new roof will be completed by the end of Summer 2013.

*Teapot structure with old roof removed prior to new roof installation.*

## Free Landscape Classes

Since our landscape classes have been so popular we have decided to offer three more classes for this next year. Please join us at one of our free Saturday morning classes and learn how to create a beautiful, water-smart garden.

- Find and Fix a Leak - from 9:00 a.m. to noon on Saturday, April 27, 2013. – Learn how to maintain, troubleshoot, and repair your irrigation system and find out about some basic indoor plumbing tips. Discover a few ideas that will make it efficient and easy for you to repair and maintain your irrigation system. Get the basics on good maintenance practices that will help save you water, money, time, and keep your landscape looking beautiful. Participants to receive free high efficiency showerheads and faucet aerators, leak detection dye tablets, and toilet flappers.
- Graywater Workshop – from 9:00 a.m. to noon on Saturday, July 27, 2013. Back by popular demand, this workshop is sure to answer all of your questions related to graywater systems. Learn how to install your own system according to permit standards in Ventura County.

Attendance is limited to forty persons per class so please RSVP early at rmerckling@casitaswater.com or (805) 649-2251 Extension 118. All workshops will be held in the boardroom at Casitas main offices located at 1055 Ventura Avenue in Oak View.

**Casitas' Speakers Bureau:** Provides an opportunity for customers and the community to learn more about water issues in the Western Ventura County area. Please contact Ron Merckling, Water Conservation and Public Affairs Manager, (805) 649-2251 Extension 118 to invite a speaker to your next community group or organizational meeting.

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Landscape design from the Ventura County Water Wise Gardening website, courtesy of GardenSoft.

## Check Out the New and Improved Ventura County Water Wise Website

Go to www.ventura.watersavingplants.com to view the new and improved landscape website that now boasts bigger images and photos to assist you with this year's winter planting in your garden. Visitors to the site can now store plant images and garden images to a private file on the site that can help you with planning your landscape. There are also six new garden tours and hundreds of additional garden gallery images added to the site. All of the gardens and plants on the site are from residential landscapes located within Ventura county.

"The new site has a handy revised watering guide to assist homeowners with adjusting their irrigation controllers so they can water their landscapes more efficiently," said Ron Merckling, Water Conservation Manager. The site now includes a partial plant name search tool. Typing the first few letters of a plant's botanical or common name will generate a list of photos and information about the plant from the site's extensive database.

Landscape design on website courtesy of GardenSoft.

## Reliable Water Service Requires Continuous Maintenance

Brian Taylor, Pipeline Forman for Casitas climbs down into Casitas' three-way structure.

The primary goal of the Casitas Municipal Water District is to provide reliable water service to each and every customer. To achieve this goal, the District continually performs preventative maintenance, repairs and replacements of water infrastructure. In many instances, the work to maintain, repair or replace water infrastructure requires an additional effort to provide continuous water service or minimize the water outage experienced by the customer.

On September 21, 2012, residents, farmers, and businesses were asked to reduce outdoor and non-essential indoor water use while the primary water main from Casitas Dam was temporarily shutdown, repaired, and restored to service. The work took place at the three-way structure, located in Ventura County's Foster Park. Once the 42-inch diameter pipeline was dewatered, Casitas' crew replaced a critically located elbow line in need of repair, and then began to refill the pipeline. Many residents of Casitas Springs experienced a water outage for the day. Casitas provided portable water tanks at various locations for use by the community.

"Casitas would like to express appreciation to customers that were without water during the day and to customers that curtailed their water usage to avoid unexpected water outages," said Steve Wickstrum, General Manager. "We are also thankful for the cooperation by the City of Ventura in assisting with the dewatering of the pipeline," said Wickstrum.

## Maintaining Casitas Dam is Critical to Western Ventura County

Newly refurbished intake gate assembly arriving ready to be returned to service.

Maintaining a safe and reliable water supply for the public starts with ongoing repairs and maintenance of Casitas Dam. Since Casitas Dam's construction in 1959, it has remained essential to public health and safety, vital to the local economy, and indispensable to the quality of life of western Ventura County. "The most noticeable value of Casitas Dam to many members of the public is an improved quality of life through recreational opportunities, scenic values, and wildlife habitat, but the most important value is for water supply storage," said Ron Merckling, Public Affairs Manager.

Scott MacDonald performing maintenance on 4'X4' emergency gate guides deep inside dam's outlet works.

"Usually the public pays very little attention to basic water systems; that is, until a pipe bursts, the street floods, or, more tragically, a dam fails", said Merckling. Casitas must work continuously to maintain infrastructure such as the Casitas Dam to prevent interruptions in water service and serious failures in the system. To ensure Casitas Dam remains safe and meets all regulatory standards, the District conducts on-going monitoring and maintenance programs under the direction of the United States Bureau of Reclamation.

### A few recent and ongoing Casitas Dam projects include:

1) An inspection and repair of the interior and exterior of the dam's intake and outlet works, infrastructure that allows water to be taken from the lake and brought into the treatment plant before it can be delivered to the public. This work is completed every three years;
2) Refurbishment of the intake gate assembles. There are nine separate assemblies that allow for water to be taken at different depths in the lake. Water quality varies by lake depth depending on temperatures and biological processes in the lake so being able to select the best depth to take water from the lake improves the raw water quality that is brought into the treatment plant;
3) Recoating of the dam's control house hoist, metalwork, work platforms and intake track. This infrastructure is what allows for the intake gate assemblies to be placed into the lake and removed when needed for maintenance.

Setting up scaffolding for recoating of dam's hoist house equipment and intake track.

## Customer Water Service Kept on throughout Reservoir Tank Work

How do you complete work on the only water tank in a service area and keep customers happy by keeping their water running? Casitas' answer is to use temporary water tanks! Casitas is planning to avoid any interruption in water service to customers in the Upper Ojai Valley while completing interior painting and seismic improvements on the Upper Ojai Reservoir tank. The temporary water tanks will provide the necessary water storage during the work. After this work is complete, the temporary tanks will be used during future reservoir maintenance activities.

Neil Cole, Principal Civil Engineer stands in front of 16 temporary water tanks to be used during work on Upper Ojai Reservoir tank.

## Lake Casitas Recreation Area Announcements:

### Summer Lifeguards Needed!

Casitas Water Adventure is now recruiting for summer lifeguard jobs for the 2013 season. Employment applications can be downloaded at www.casitaswater.org under the employment tab. Applications can be mailed or turned in to the Lake Casitas Recreation Area 11311 Santa Ana Rd. Ventura, CA 93001. Requirements include being 15 years old by February 1st 2013; successful completion of American Red Cross Lifeguarding course; and clear a background check and drug test.

For additional information, please contact Aaron Wall, Parks Services Officer 3 at awall@casitaswater.com or (805) 649-2233 Extension 114.


Lake Casitas Lifeguards Garett Carlson and Angela Amico at work in the Lake Casitas Recreation Area.

**Don't Miss Out on this Year's Kid's Fishing Day, Saturday March 23, 2013.**