California Water Service Company

2006 Urban Water Management Plan

Westlake District

ADOPTED

December 15, 2006

Table of Contents

TABLE OF CONTENTS **2**
LIST OF FIGURES **4**
LIST OF TABLES **5**
CONTACT SHEET **7**
1 INTRODUCTION **8**
1.1 PURPOSE 8
1.2 PUBLIC REVIEW 8
1.3 PLAN ADOPTION 9
1.4 WATER MANAGEMENT TOOLS 9
1.5 PLAN ORGANIZATION 10
1.6 IMPLEMENTATION OF PREVIOUS UWMP 11
2 SERVICE AREA INFORMATION **12**
2.1 GENERAL INFORMATION 12
2.2 SERVICE AREA POPULATION 16
2.3 CLIMATE 19
3 WATER SOURCES **21**
3.1 INTRODUCTION 21
3.2 PURCHASED WATER 21
3.3 SURFACE WATER 21
3.4 GROUNDWATER 21
3.4.1 Basin Boundaries and Hydrology *21*
3.4.2 Groundwater Management Plan *22*
3.5 RECYCLED WATER 22
3.5.1 Wastewater Collection *22*
3.5.2 Estimated Wastewater Generated *23*
3.5.3 Potential Water Recycling *23*
3.6 DESALINATED WATER 25
3.7 TRANSFER OR EXCHANGE OPPORTUNITIES 25
3.8 WATER SUPPLY RELIABILITY 25
3.8.1 Water Quality *26*
3.9 WATER SUPPLY PROJECTS 27
4 WATER SHORTAGE CONTINGENCY PLAN **28**
4.1 WORST CASE WATER SUPPLY AVAILABILITY 28
4.2 STAGES OF ACTION 28
4.2.1 Actions to Be Undertaken By California Water Service Company *28*
4.2.2 Mandatory Prohibitions *29*
4.2.3 Consumption Limits *29*
4.2.4 Monitoring Procedure during Periods of Water Shortages *29*
4.2.5 Penalties or Charges for Excessive Use *30*
4.2.6 Analysis of Revenue and Expenditure Impacts *30*
4.3 IMPLEMENTING THE PLAN 30
4.4 SUPPLY SHORTAGE TRIGGERS 31
4.5 THREE-YEAR MINIMUM WATER SUPPLY 31
4.6 CATASTROPHIC WATER SUPPLY INTERRUPTION 31
5 WATER USE PROVISIONS **32**

5.1 DISTRIBUTION OF SERVICES 32
5.2 HISTORICAL AND CURRENT WATER DEMAND 33
5.3 PER CAPITA WATER DEMAND 35
5.4 HISTORICAL AND PROJECTED WATER DEMAND 36
5.4.1 Scenario 1 38
5.4.2 Scenario 2 38
5.4.3 Scenario 3 38
5.5 AVERAGE DAY, MAXIMUM DAY, AND PEAK HOUR DEMAND 42
5.6 SUMMARY 47

6 SUPPLY AND DEMAND COMPARISON 50

6.1 NORMAL-YEAR COMPARISON 50
6.2 SINGLE DRY-YEAR COMPARISON 51
6.3 MULTIPLE DRY-YEAR COMPARISON 52

7 WATER DEMAND MANAGEMENT 57

7.1 CALIFORNIA URBAN WATER CONSERVATION COUNCIL 57
7.2 WATER CONSERVATION BEST MANAGEMENT PRACTICES 57
7.3 ECONOMIC ANALYSIS METHODOLOGY AND ASSUMPTIONS 58
7.4 ECONOMIC ANALYSIS RESULTS 61
7.5 ADDITIONAL ISSUES 65
7.6 PREVIOUS WATER MANAGEMENT PROGRAM ACCOMPLISHMENTS 65
7.6.1 External Measures to Achieve Public Support 65
7.6.2 Internal Measures to Achieve Efficient Water Management 65
7.7 OVERALL DISTRICT GOALS 66
7.8 IMPLEMENTATION 66

REFERENCES 68

APPENDIX A: RESOLUTION TO ADOPT THE URBAN WATER MANAGEMENT PLAN
APPENDIX B: SERVICE AREA MAP
APPENDIX C: WATER SUPPLY, DEMAND, AND PROJECTION WORKSHEETS
APPENDIX D: CALIFORNIA'S GROUNDWATER BULLETIN 118
APPENDIX E: TARIFF RULE 14.1 WATER CONSERVATION AND RATIONING PLAN
APPENDIX F: WATER EFFICIENT LANDSCAPE GUIDELINES
APPENDIX G: CUWCC ANNUAL REPORTS
APPENDIX H: BMP ECONOMIC ANALYSIS ASSUMPTIONS
APPENDIX I: PURCHASE AGREEMENT
APPENDIX J: CALLEGUAS WATER MANAGEMENT PLAN

List of Figures

Figure 2.1-1: General Location of Westlake District 13
Figure 2.1-2: General Service Area 14
Figure 2.1-3: Major Fault Lines near Westlake District 15
Figure 2.2-1: Approximated SAM with US Census 2000 Tract Map 17
Figure 2.2-2: Estimated Population Comparison 18
Figure 2.2-3: Estimated Housing Comparison 19
Figure 2.3-1: Average Monthly Temperature and Rainfall (Table 3) 20
Figure 2.3-2: Monthly Average ETo Values (Table 3) 20
Figure 3.5-1: Estimated District Annual Wastewater Generated 23
Figure 3.8-1: Comparison of Annual Rainfall to Historical Average 25
Figure 5.1-1: Distribution of Services (2005) 32
Figure 5.2-1: Historical Sales 33
Figure 5.2-2: Historical Service Counts 34
Figure 5.2-3: Historical Demand per Service 35
Figure 5.3-1: Percent of Total Demand by Type of Use (2005) 36
Figure 5.4-1: Historical & Projected Services 37
Figure 5.4-2: Historical & Projected Demand (without system losses) 38
Figure 5.5-1: Average Day, Maximum Day, and Peak Demand 42
Figure 5.5-2: Average Day Demand and Projection 45
Figure 5.5-3: Historical Average Day Demand 45
Figure 5.5-4: Maximum Day Demand and Projection 46
Figure 5.5-5: Peak Hour Demand 46
Figure 5.6-1: Historical & Projected Demand (system losses incorporated) 48
Figure 5.6-2: Historical & Average Projected Sources 48
Figure 7.4-1: Westlake BMP Implementation Costs 62
Figure 7.4-2: Westlake BMP Water Savings 62

List of Tables

Table 1.2-1: Coordination with Appropriate Agencies (Table 1) ... 9
Table 2.2-1: Summary of Census 2000 Data ... 16
Table 2.2-2: Population - Current and Projected (Table 2) ... 17
Table 2.3-1: Average Annual Climate (Table 3) ... 19
Table 3.1-1: Planned Water Supplies (Table 4) ... 21
Table 3.5-1: Disposal of wastewater (non-recycled) AF Year (Table 34) ... 23
Table 3.5-2: Recycled Water Uses - Actual and Potential (AFY) (Table 35) ... 24
Table 3.5-3: Projected Future Use of Recycled Water in Service Area - AF Year (Table 36) ... 24
Table 3.5-4: Recycled Water Uses - Projected compared with actual - AFY (Table 37) ... 24
Table 3.8-1: Basis of Water Year Data (Table 9) ... 26
Table 3.8-2: Supply Reliability - AF Year (Table 8) ... 26
Table 3.8-3: Factors Resulting In Inconsistency of Supply (Table 10) ... 26
Table 4.2-1: Consumption Reduction Methods (Table 27) ... 28
Table 4.4-1: Water Supply Triggering Levels ... 31
Table 4.5-1: Three-Year Estimated Minimum Water Supply (Table 24) ... 31
Table 5.3-1: Per Capita Water Demand (2005) ... 35
Table 5.4-1: Past, Current, and Projected Water Deliveries for Scenario 1 (Table 12a) ... 39
Table 5.4-2: Past, Current, and Projected Water Deliveries for Scenario 2 (Table 12b) ... 40
Table 5.4-3: Past, Current, and Projected Water Deliveries for Scenario 3 (Table 12c) ... 41
Table 5.5-1: Average Day, Maximum Day, and Peak Demands ... 44
Table 5.6-1: Additional Water Uses and Losses - AF Year (Table 13 and 14) ... 47
Table 5.6-2: Total Water Use - AF Year (Table 15) ... 47
Table 5.6-3: Agency Demand Projections To Wholesale Supplier – AFY (Table 19) ... 49
Table 6.1-1: Projected Normal Water Supply - AF Year (Table 40) ... 50
Table 6.1-2: Projected Normal Water Demand - AF Year (Table 41) ... 50
Table 6.1-3: Projected Supply and Demand Comparison - AF Year (Table 42) ... 50
Table 6.2-1: Projected Single Dry-year Water Supply - AF Year (Table 43) ... 51
Table 6.2-2: Projected Single Dry-year Water Demand - AF Year (Table 44) ... 51
Table 6.2-3: Projected Single Dry-year Supply and Demand Comparison - AF Year (Table 45) 51
Table 6.3-1: Projected Supply During Multiple Dry Year To 2010 (Table 46) ... 52
Table 6.3-2: Projected Demand Multiple Dry Year To 2010 (Table 47) ... 52
Table 6.3-3: Projected Supply And Demand Comparison To 2010 (Table 48) ... 52
Table 6.3-4: Projected Supply During Multiple Dry Year To 2015 (Table 49) ... 53
Table 6.3-5: Projected Demand Multiple Dry Year To 2015 (Table 50) ... 53
Table 6.3-6: Projected Supply And Demand Comparison To 2015 (Table 51) ... 53
Table 6.3-7: Projected Supply During Multiple Dry Year To 2020 (Table 52) ... 54
Table 6.3-8: Projected Demand Multiple Dry Year To 2020 (Table 53) ... 54
Table 6.3-9: Projected Supply And Demand Comparison To 2020 (Table 54) ... 54
Table 6.3-10: Projected Supply During Multiple Dry Year To 2025 (Table 55) ... 55
Table 6.3-11: Projected Demand Multiple Dry Year To 2025 (Table 56) ... 55
Table 6.3-12: Projected Supply And Demand Comparison To 2025 (Table 57) ... 55
Table 6.3-13: Projected Supply During Multiple Dry Year To 2030 (Table 55) ... 56
Table 6.3-14: Projected Demand Multiple Dry Year To 2030 (Table 56) ... 56
Table 6.3-15: Projected Supply And Demand Comparison To 2030 (Table 57) ... 56
Table 7.2-1: Water Conservation Best Management Practices ... 58

Table 7.3-1: Housing Estimates and Projections (1997) 58
Table 7.3-2: Connections by Classifications (1997)..... 59
Table 7.3-3: Definition of Terms Used in the Economic Analysis..... 60
Table 7.4-1: Results Of Economic Analysis..... 61
Table 7.4-2: Summary Of BMP Annual Interventions, Water Saved, Cost..... 63
Table 7.6-1: Conservation Measure..... 65
Table 7.8-1: Proposed Annual Conservation Program Budget 2006 – 2008..... 67

California Water Service Company
2006 Urban Water Management Plan
Contact Sheet

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1 Introduction

California Water Service Company is an investor-owned public utility supplying water service to 1.7 million Californians through 435,000 connections. Its 25 separate water systems serve 63 communities from Chico in the North to the Palos Verdes Peninsula in Southern California. In 2000, Cal Water merged with the Dominguez Services Corporation incorporating several northern and southern California water systems. California Water Service Group, Cal Water's parent company, is also serving communities in Washington, New Mexico and Hawaii. Rates and operations for districts located in California are regulated by the California Public Utilities Commission (CPUC) and are set separately for each of the systems. Cal Water incorporated in 1926 and has provided water service to the Westlake community since 1983.

1.1 Purpose

California Water Code §10644(a) requires urban water suppliers to file with the Department of Water Resources, the California State Library, and any city or county within which the supplier provides water supplies, a copy of its Urban Water Management Plan, no later than 30 days after adoption. All urban water suppliers as defined in Section 10617 (including wholesalers), 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 annually are required to prepare an Urban Water Management Plan.

California Water Service Company will follow the California Water Code and file an Urban Water Management Plan at least once every five years on or before December 31, in years ending in five and zero. However, since California Water Service Company operates 25 Districts, updating and submitting all 25 Urban Water Management Plans in a single year is unfeasible. Therefore, the Districts have been divided into three sets that will follow an established three-year schedule. The Plan for Westlake is part of the 2006 grouping and was last submitted in 2002. The next update for this District will be in 2009.

This UWMP is a foundation document and source of information for a Water Supply Assessment and a Written Verification of Water Supply. An UWMP also serves as:

- A long-range planning document for water supply,
- Source data for development of a regional water plan, and
- A source document for cities and counties as they prepare their General Plans.
- A key component to Integrated Regional Water Management Plans.

1.2 Public Review

California Water Service Company completed a draft of the Urban Water Management Plan for the District on July 26, 2006. The draft was sent to the Cities and County listed in Table 1.2-1 for review and comment. Copies of the draft plan were available at the California Water Service Company San Jose corporate and district office for public review and comment.

California Water Service Company conducted a formal public meeting to present information on its general rate case request to the CPUC. Presentation of the Urban Water Management Plan is included in the proceedings and serves as a public review of the Urban Water Management Plan. A public hearing was held on Monday, November 27, 2006, at 7:00 p.m. at the following location:

Village Homes Homeowners' Association Clubhouse
1040 Evenstar Avenue
Westlake Village, CA 91361

Proof of the public hearing is presented in Appendix A

Table 1.2-1: Coordination with Appropriate Agencies (Table 1)

	Commented on the draft	Was sent a copy of the draft plan	Was sent a notice of intention to adopt
City of Thousand Oaks		✓	✓
City of Westlake		✓	✓
Ventura County		✓	✓
Calleguas Municipal Water District		✓	✓

1.3 Plan Adoption

Final comments were received by December 11, 2006. The final plan was adopted by the Vice President of Engineering & Water Quality on December 15, 2006 and was submitted to California Department of Water Resources within 30 days of approval. Appendix A presents a copy of the signed Resolution of Plan Adoption.

The agencies listed in Table 1.2-1 above will also be sent a copy of the final version of this report, as well as a copy to the California State Library.

In addition to the resolution, Appendix A also contains the following:

- Any comments received during the public review of this plan.
- Minutes from the public hearing.
- The review sheet check list from Department of Water Resources.

1.4 Water Management Tools

California Water Service Company uses the following water management tools to maximize water resources for the district:

- Hydraulic analysis will be used to identify limitations in the water distribution network and provide recommendations if main replacement is required.

- SCADA/Water measurement provides information as to how the district is operating and gives a historical record of the district, including water levels of the reservoirs. California Water Service Company maintains detailed records including the water sales and the customer service connections by sector and used this information for future projections.
- Geographical Information Systems (GIS) will be used to combine several sources of information and allow land usage management tools to provide insight into the growth of the district.
- Water quality data analysis provides a detailed compositional analysis of the water and provides information on potential supply shortfalls that can result from mineral intrusion or contamination.
- Water Supply and Facilities Master Plan will provide details into the district from a global perspective and evaluates the major equipment and facilities replacement schedule, and identifies long-term projects. The Water Supply and Facilities Master Plan will be prepared in 2008.

1.5 Plan Organization

This plan is organized as described in the following outline. The corresponding provisions of the California Urban Water Management Planning Act are included as references. Tables in this plan have cross-references to the tables as listed in the "Guidebook to Assist Water Suppliers in the Preparation of a 2005 Urban Water Management Plan" prepared by the California Department of Water Resources.

Section	Executive Summary	Act Provision
Contact Sheet	List of Contact Persons	-
Chapter 1	Introduction This chapter describes the requirement and the purpose of the Urban Water Management Planning Act, plan adoption, schedule, and management tools.	§10620 (d, f) §10621(a -b) §10635(b) §10642 §10643 §10644 (a) §10645
Chapter 2	Service Area Information This chapter describes the District's service area and includes area information, population estimate, and climate description.	§10631 (a)
Chapter 3	Water Sources This section includes a detailed discussion of the water supply sources including a section on the water quality.	§10620 (d)(1)(2) §10631 §10633 §10634
Chapter 4	Water Shortage Contingency Plan This chapter describes the District's planning during water shortages during drought and emergency situations.	§10631 (d) §10632
Chapter 5	Water Use Provisions This chapter describes the water supply projection methodology used to estimate water demand and supply requirements to 2030 in five-year increments.	§10631

Section	Executive Summary	Act Provision
Chapter 6	Supply And Demand Comparison This discussed the water supply outlook for the District under different hydrologic conditions in accordance with DWR guidelines. Specifically, supply and demand comparisons in five-year increments to 2030 under normal, dry-year, and multiple dry-year conditions are presented in this section.	§10635 (a)
Chapter 7	Water Demand Management Demand management measures used to benchmark conservation methods are described in this chapter.	§10631
References	References The sources for the information used in this plan are listed in this section.	-
Appendix A	Resolution To Adopt The Urban Water Management Plan This section includes the following: 1) Resolution 2) Letters to and comments from various agencies 3) Minutes from the public hearing 4) DWR Checklist	§10621 (b) §10642 §10644 (a)
Appendix B	Service Area Map This appendix includes the service area map of the District as filed with the Public Utilities Commission.	-
Appendix C	Water Supply, Demand, And Projection Worksheets This section includes the spreadsheet used to estimate the water demand for the District.	-
Appendix D	California's Groundwater Bulletin 118 Sections from the Department of Water Resources Bulletin 118 are included as a reference and details the basin for the District.	§10631 (b)(1-4)
Appendix E	Tariff Rule 14.1 Water Conservation And Rationing Plan This section contains the tariff rule for reference.	-
Appendix F	Water Efficient Landscape Guidelines The guideline for water efficient landscape that California Water Service Company uses at its properties, including renovations, is contained in this section.	-
Appendix G	CUWCC Annual Reports This sections contains the reports filed with the California Urban Water Conservation Council.	§10631 (j)
Appendix H	BMP Economic Analysis Assumptions Worksheets for each BMP are presented in this section.	-
Appendix I	Purchase Agreement The Purchase Agreement between Calleguas and Cal Water is attached as a reference.	-
Appendix J	2005 Calleguas Water Management Plan The 2005 Calleguas Water Management Plan is attached as a reference.	§10631 (b)(1-4)

1.6 Implementation of Previous UWMP

California Water Service Company has 25 separate water service districts and maintains separate plans for each district. The plans have been divided into 3 groups, with each group being updated on a 3-year cycle, as approved by the Public Utilities Commission. The last Urban Water Management Plan for the District was published in 2001 as part of the general rate case. The BMP programs outlined in that plan and the status of each program as of last year is discussed in Section 7.6

2 Service Area Information

2.1 General Information

The Westlake District is located in the eastern section of Ventura County within the City of Thousand Oaks. The service area lies approximately 40 miles northwest of Los Angeles via Highway 101. The service area encompasses 8,200 acres which was part of the historic Albertson Ranch. Elevation of the area varies from approximately 900 feet to approximately 1,675 feet above sea level. Figure 2.1-1 shows a general location map of the district in relation to other cities in the area[1]. Figure 2.1-2 shows the approximated service area of the District in relation to the City boundary.

The City of Thousand Oaks Water Department and California American Water Company own and operate water systems in the remaining area of the city.

Major transportation links in the district include State Route 101 and State Route 23.

The San Andreas Fault Zone is situated to the north-east. The Bailey, Malibu Coast, and Chatsworth Faults surround the district. These faults, along with many others, are responsible for the uplift of base rock that forms the Santa Monica and San Gabriel Mountains bordering the district[2]. A major earthquake on these faults may disrupt water service. The Pacific Ocean lies to the southwest of the district. Figure 2.1-3 shows the relation of the District and the major fault lines in the area.

Figure 2.1-1: General Location of Westlake District

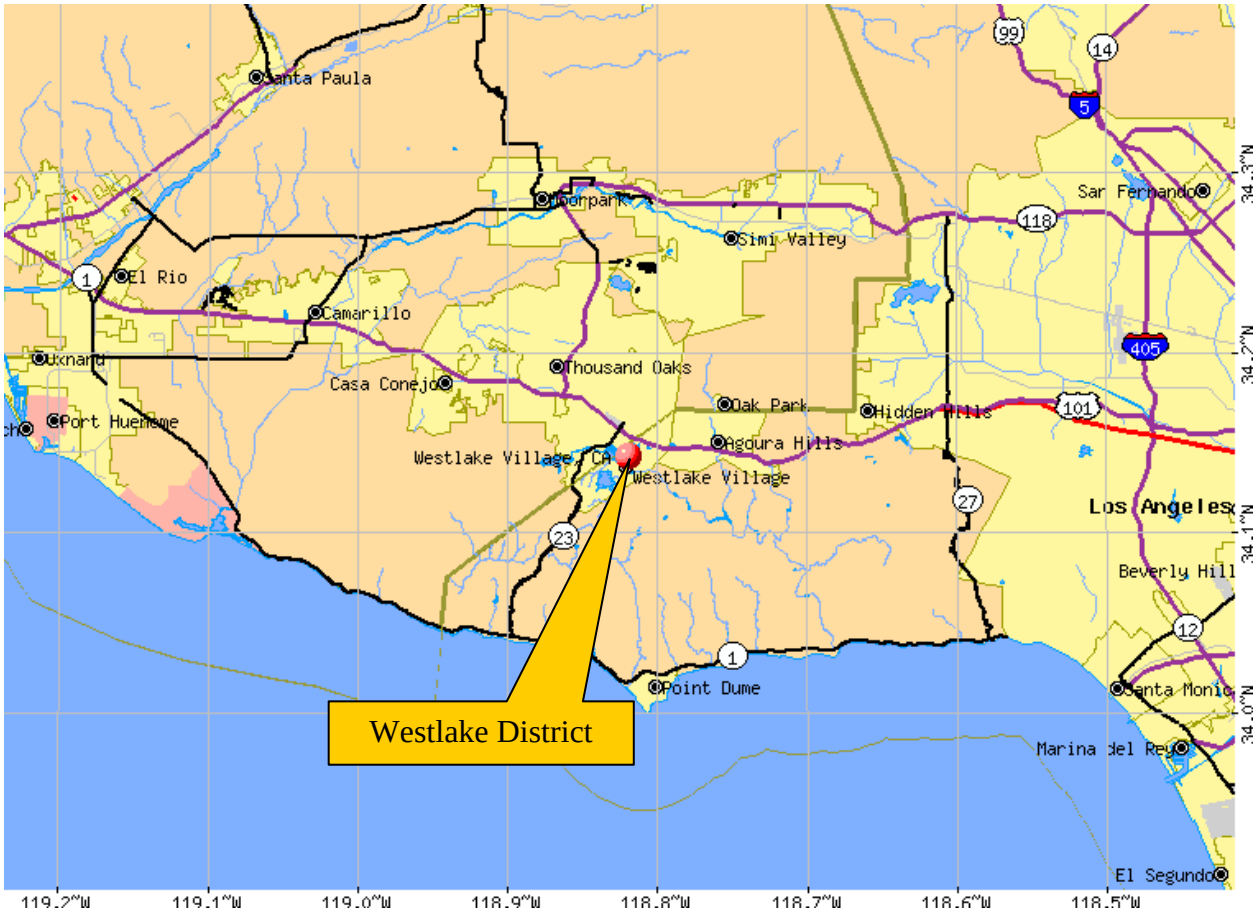
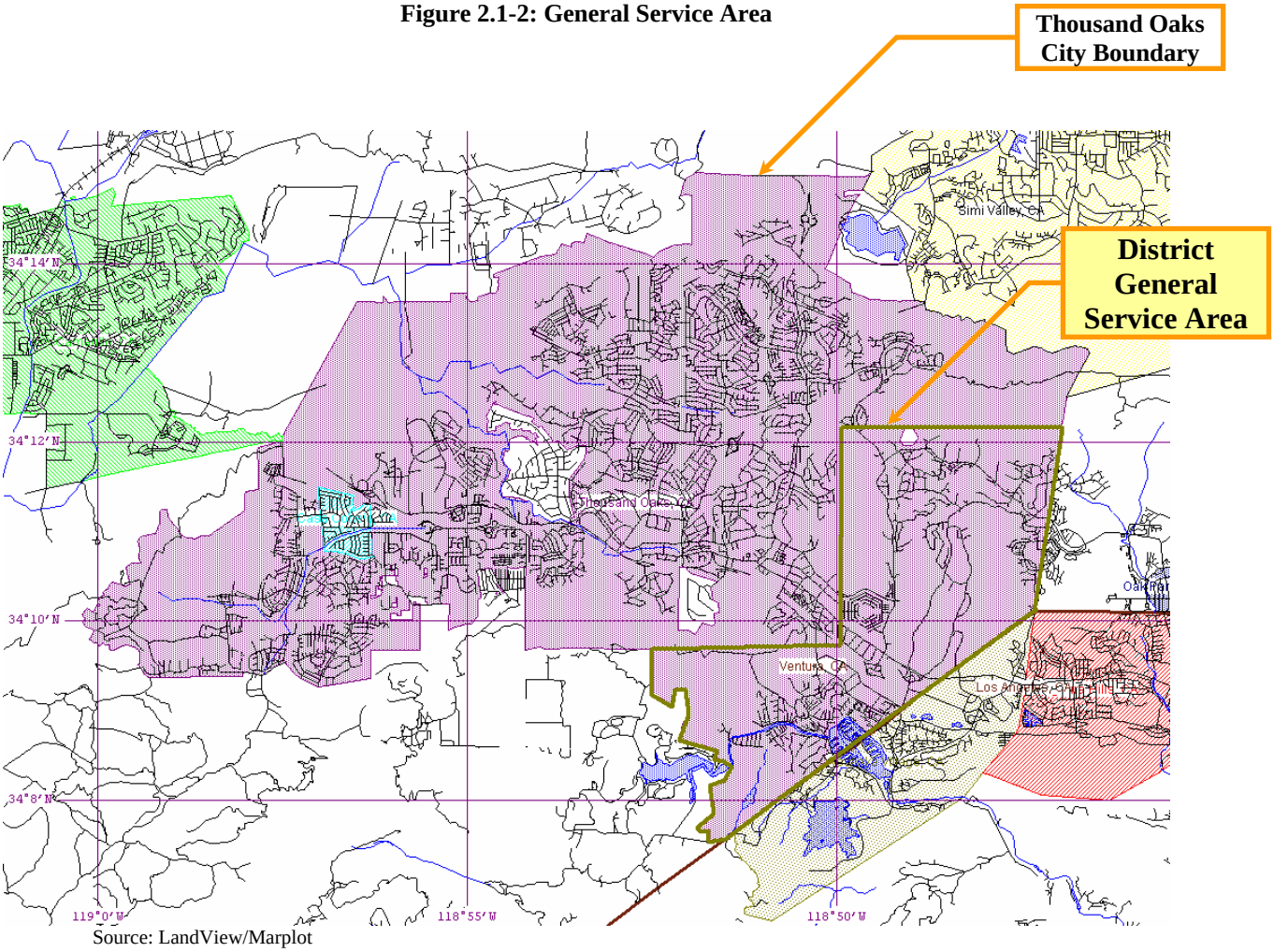
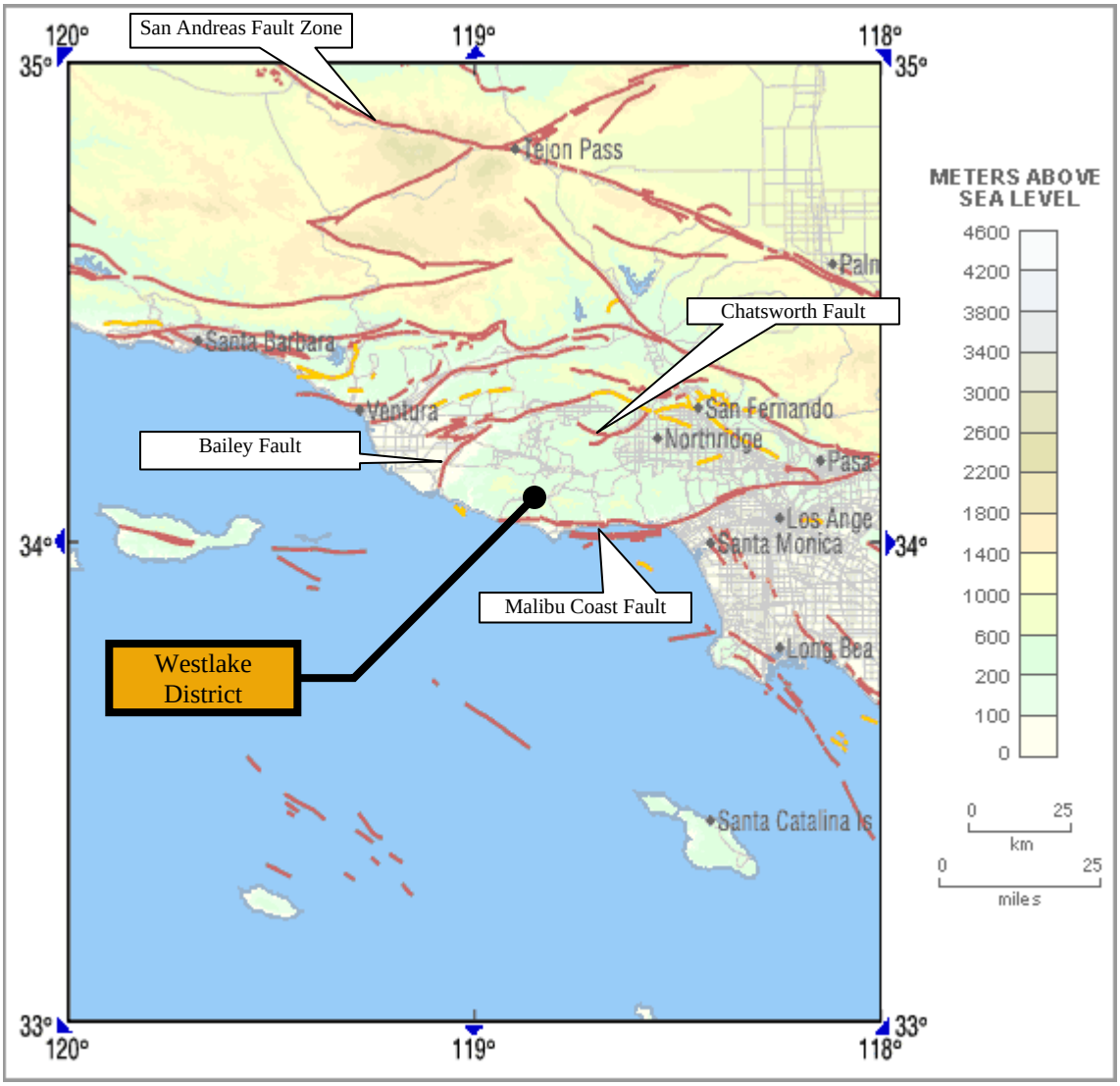


Figure 2.1-2: General Service Area



Source: LandView/Marplot

Figure 2.1-3: Major Fault Lines near Westlake District



Source: USGS

2.2 Service Area Population

California Water Service Company's Westlake District growth rate has remained slow since 1990. Currently, there are no new housing developments proposed. Any housing growth would probably be a result of redevelopment, which may also be limited due to growth restrictions imposed by the city. Growth in total services has averaged 0.24% in the past five years, and 0.48% for the past 10 years. Residential 5 and 10-year average growth rates are 0.06% and 0.15%, respectively.

Based on 2000 U.S. Census data, and considering actual service connection growth and assuming that density has remained unchanged since the census was conducted, Cal Water estimates that, as of December 2005, the District's population is approximately 16,910. A density of 2.33 persons per residential service (single family services plus multi family units) was used for this estimate.

Estimate of the population serviced by California Water Service Company is based on overlaying the U.S. Census 2000 Block data with the service area map (SAM), as shown in Figure 2.2-1. A summary of the census data for the Year 2000 is shown in Table 2.2-1. LandView 5 and MARPLOT ® software were used to generate the data[3].

California Water Service Company estimates the service area's population could reach 17,240 by 2030. Table 2.2-2 lists the population growth in 5-year increments.

Table 2.2-1: Summary of Census 2000 Data

	Census Blocks	Population	Housing Units
Westlake Service Area	111	16,717	6,982

Figure 2.2-1: Approximated SAM with US Census 2000 Tract Map

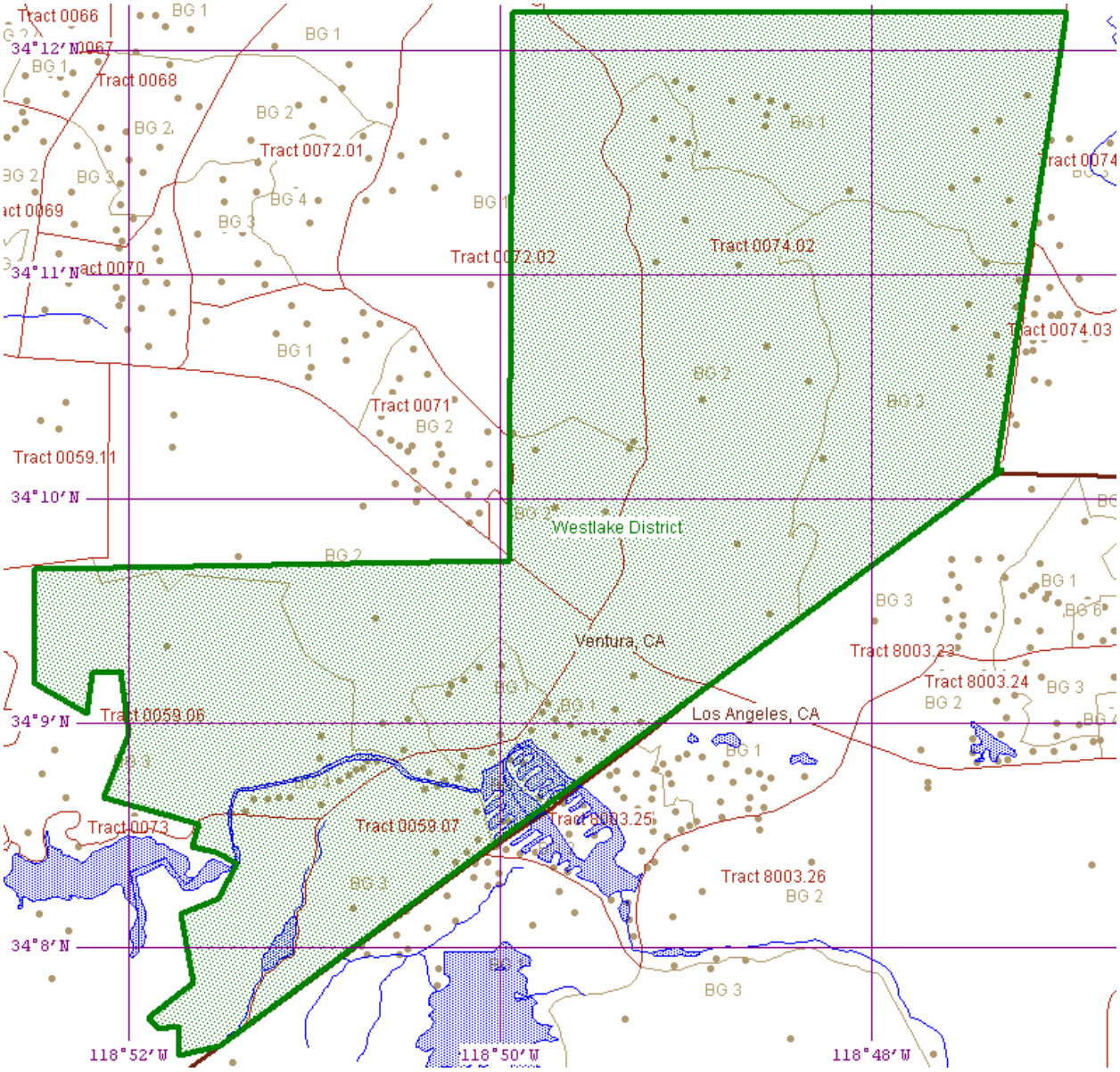
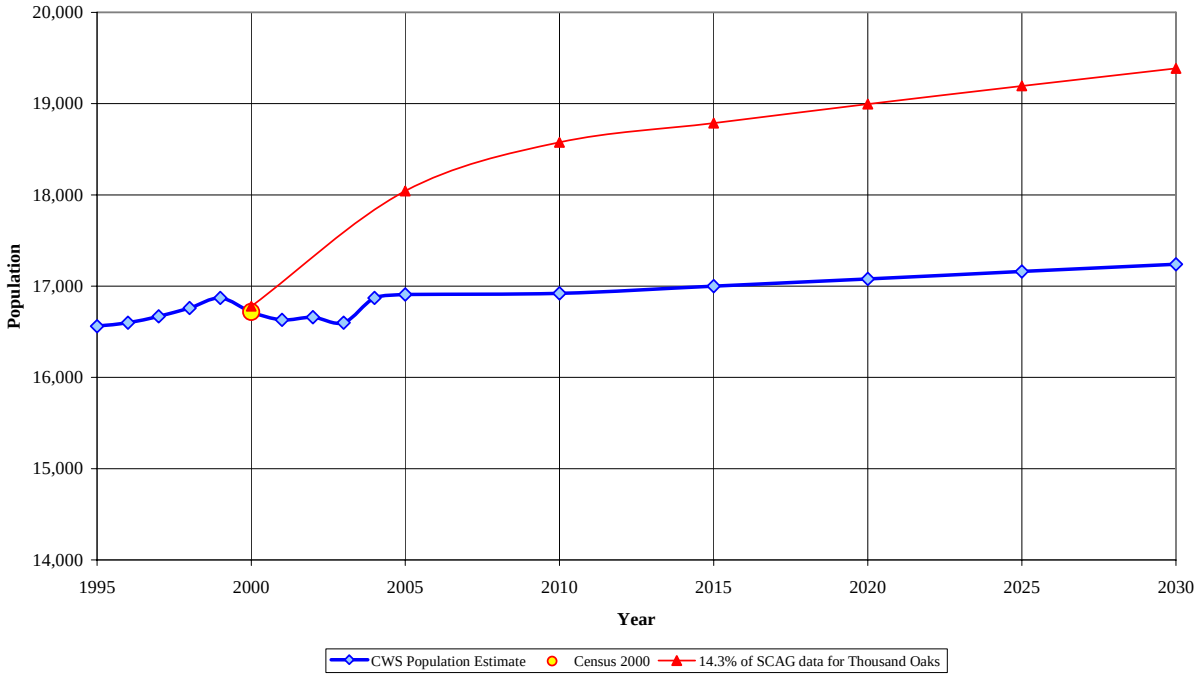


Table 2.2-2: Population - Current and Projected (Table 2)						
	2005	2010	2015	2020	2025	2030
Service Area Population	16,910	16,920	17,000	17,080	17,160	17,240

A population estimate for the District was made and compared to projections made by another governmental agency, as shown in Figure 2.2-2. The Cal Water Projection is made based on extending the past 5-year single family residential service growth rate of 0.06% and multi-family residential growth at 0.24%, the five-year overall growth rate. The only projection that was obtained to compare the Cal Water's projection was from Southern California Association of Governments (SCAG)[4].

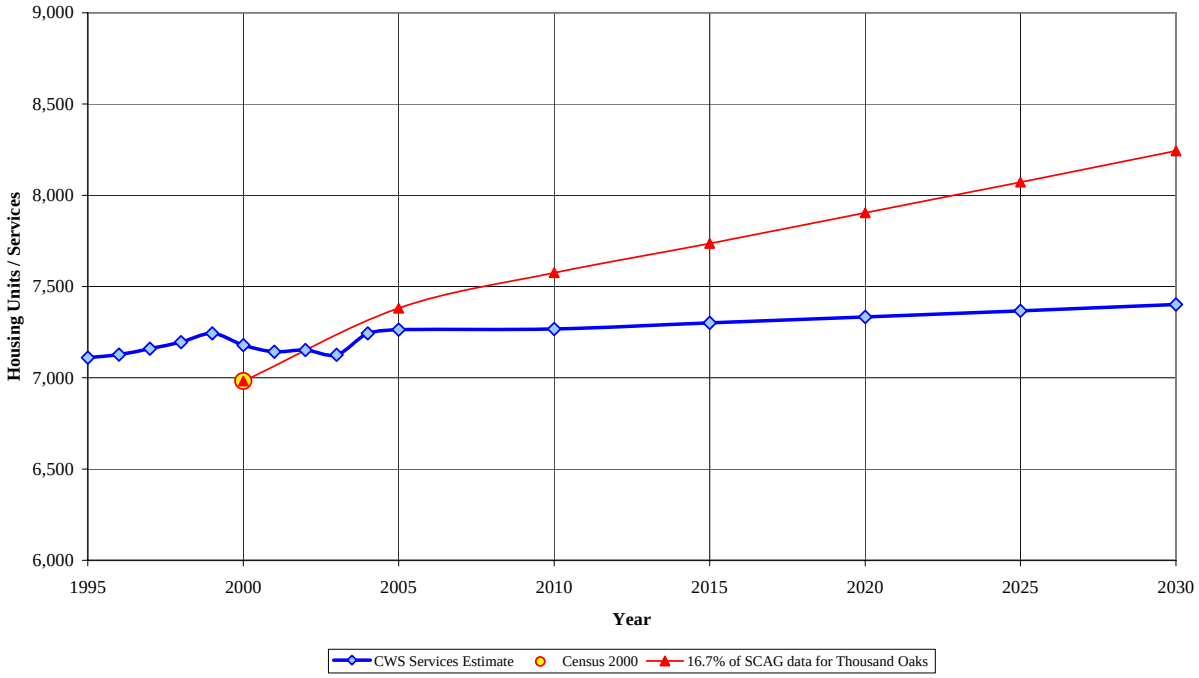
Figure 2.2-2: Estimated Population Comparison



The total population for City of Thousand Oaks was estimated by SCAG at 117,400 persons. According to 2000 US Census Data the population of the Westlake District makes up 14.3% of this total. The same percentage was used throughout the given time frame to determine the population projection based on growth rate as estimated by SCAG. The growth rate projected by the SCAG is shown to be growing at a much higher rate then has been experienced in the Westlake District since the 1990's. The projection made by SCAG presumably reflects the growth that is to occur in the City of Thousand Oaks; however, not within the boundary of California Water Service Company's service area.

Similarly, the housing count was estimated by comparing the US Census 2000 data and the service counts for the Westlake District, Figure 2.2-3. The service count for the year 2000 is slightly lower than the US Census 2000 dwelling units estimate. This is a result of multiple service connections that serve single housing units. The US Census 2000 housing units was established by summarizing the individual census blocks enclosed within the service area of the District.

Figure 2.2-3: Estimated Housing Comparison



The growth rate used by SCAG is much greater than the rate projected by CWS as shown in the above figure. As discussed before, the growth projected given by SCAG assumes this growth to occur within the City of Thousand Oak, but not necessarily within the service area of Westlake District.

2.3 Climate

The climate for the Westlake District is moderate with warm dry summers and cool winters. The majority of precipitation falls during late autumn, winter, and early spring.

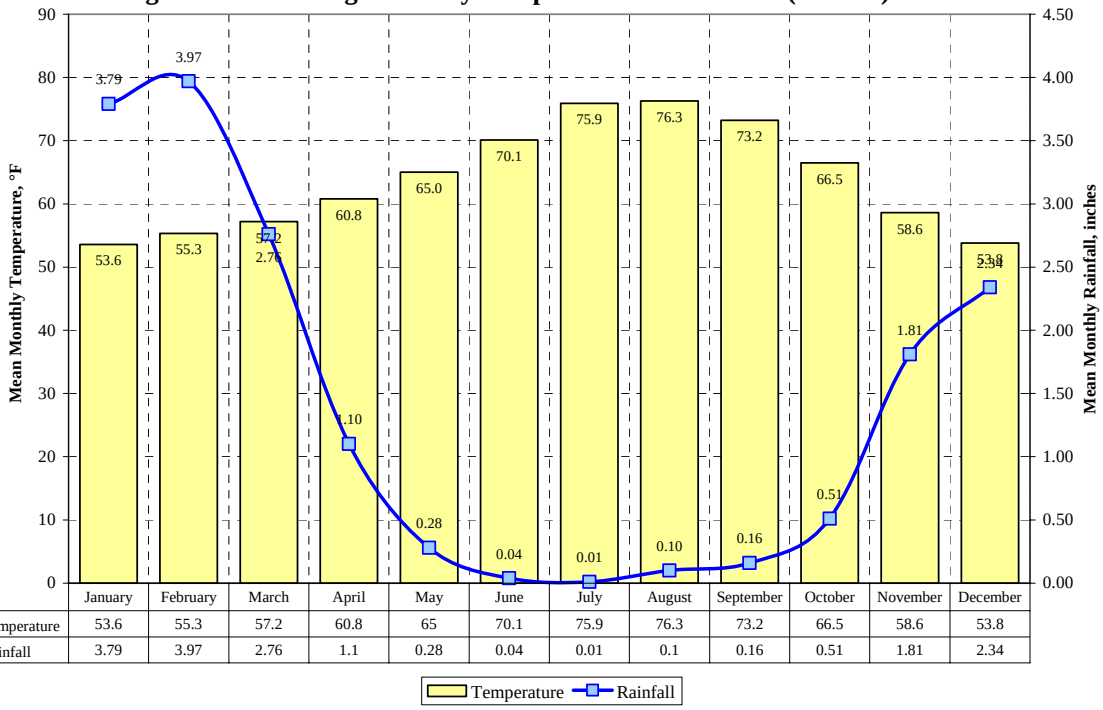
The following table, Table 2.3-1, lists the average annual conditions for the closest weather station to Westlake District. The average rainfall for the District is 34% of the annual total evapotranspiration value.

Table 2.3-1: Average Annual Climate (Table 3)

Average Temperature	Average Rainfall	Annual Total Evapotranspiration
61.2°F	18.24 inches	53.37 inches

Figure 2.3-1 displays the average monthly temperature and rainfall[5].

Figure 2.3-1: Average Monthly Temperature and Rainfall (Table 3)

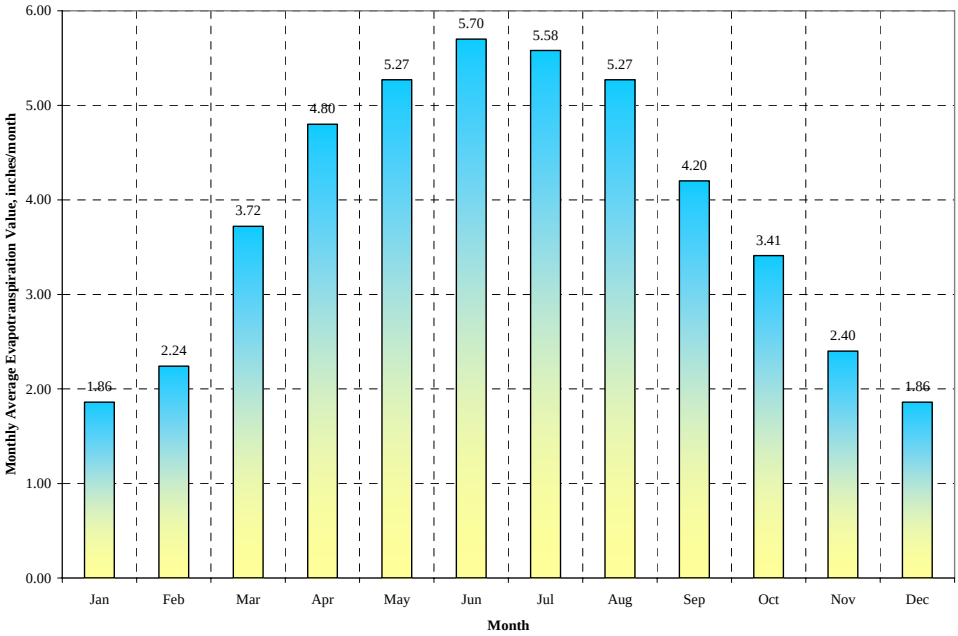


	January	February	March	April	May	June	July	August	September	October	November	December
Temperature	53.6	55.3	57.2	60.8	65	70.1	75.9	76.3	73.2	66.5	58.6	53.8
Rainfall	3.79	3.97	2.76	1.1	0.28	0.04	0.01	0.1	0.16	0.51	1.81	2.34

Figure 2.3-2 displays the monthly average evapotranspiration values for the area of the District[6]. Evapotranspiration values estimate the amount of water loss by the combination of two separate processes: evaporation from soil surface and transpiration by plants.

Additional climate data is provided in the Appendix C, worksheet 18.

Figure 2.3-2: Monthly Average ETo Values (Table 3)



3 Water Sources

3.1 Introduction

The water supply for the customers of the Westlake District is a combination of purchased imported water and recycled water. The projected water supply source and amount based on average consumption is summarized in Table 3.1-1.

Table 3.1-1: Planned Water Supplies (Table 4)
(AFY)

Water Supply Sources	2006	2010	2015	2020	2025	2030
Calleguas Municipal Water District	9,639	9,793	9,910	10,029	10,149	10,271
Surface Water	-	-	-	-	-	-
Supplier produced groundwater	-	-	-	-	-	-
Transfers in or out	-	-	-	-	-	-
Exchanges In or out	-	-	-	-	-	-
Recycled Water (projected use)	457	466	472	478	484	489
Desalination	-	-	-	-	-	-
Total	10,096	10,259	10,382	10,507	10,633	10,760

3.2 Purchased Water

The imported water is purchased from the Calleguas Municipal Water District, which is a member agency of the Metropolitan Water District of Southern California. This water is imported into southern California through Metropolitan's connections to the State Water Project. The Calleguas MWD acts as a secondary wholesale water agency, purchasing the water from Metropolitan and reselling it to Cal Water.

The Westlake District's storage capacity is held in 6 reservoirs totaling 21.050 million gallons.

3.3 Surface Water

The District does not currently receive, or have plans to receive surface water.

3.4 Groundwater

Groundwater is not being used as a source for the District. No groundwater wells have been located within the service area of the District.

3.4.1 Basin Boundaries and Hydrology

The Thousand Oaks Area Groundwater Basin underlies a small valley between Lake Sherwood and Thousand Oaks in southeastern Ventura County and western Los Angeles County. The basin is bounded by semi-permeable rocks of the Santa Monica Mountains. The valley is drained by Conejo Creek and Triunfo Canyon. Even though the basin may

be able to maintain wells outside of the service area, wells located within the District service area would not have practical flow rates.

The above description and additional details of the basin are given in the DWR Groundwater Bulletin 118, see Appendix D[7].

The following information is given as reference:

- The District is located in the South Coast Hydrologic Region
- The basin is designated as the Thousand Oaks Area Groundwater Basin
- Groundwater Basin Number is 4-19
- The groundwater basin is not adjudicated

3.4.2 Groundwater Management Plan

There is no Groundwater Management Plan for the basin. In addition, California Water Service Company does not have any groundwater wells within the Westlake District. Calleguas MWD relies principally on purchased Metropolitan Water District water, supplemented by groundwater wells. Calleguas MWD has several programs to maintain the groundwater supply, which may indirectly benefit California Water Service Company. Appendix J contains the 2005 Calleguas Water Management Plan which contains information regarding regional programs to increase or maintain water supply.

3.5 Recycled Water

The recycling of wastewater offers several potential benefits to Cal Water and its customers. The greatest benefit is reducing potable supply needs by utilizing recycled water for appropriate uses (e.g., landscape, irrigation) now being served by potable water. The potential amount of recycled water that can be produced is proportional to the amount of wastewater that is generated by the District, and is discussed in the following sections.

3.5.1 Wastewater Collection

The Tapia Water Reclamation Facility, owned and operated by Las Virgenes Municipal Water District, provides the wastewater service and recycled water for the Westlake District service area. The wastewater at the Tapia Water Reclamation Facility undergoes tertiary treatment with sand filtration and chlorination. Las Virgenes Municipal Water District has a joint venture with Triunfo Sanitation District. The ownership of the recycled water changes to Triunfo in Ventura County. Calleguas Municipal Water District, the water wholesaler for Ventura County, then purchases the recycled water from Triunfo. During the summer months, 100 percent of the treated effluent from the Tapia Water Reclamation Facility is recycled for irrigation of commercial property, parks, golf courses, and school grounds. Wastewater is not recycled during the winter months, but is discharged to Malibu Creek. The Tapia Water Reclamation Facility currently treats 10.5 million gallons per day of wastewater.

3.5.2 Estimated Wastewater Generated

Estimates for the District wastewater quantity since 1985 are shown in Figure 3.5-1 and were calculated by annualizing 90 percent of January water use in Cal Water's service area. The future quantity of waste generation is based on a linear equation of the historical estimates. The estimated volume of wastewater generated for the District in five-year increments to the year 2030 is presented in Table 3.5-1

Figure 3.5-1: Estimated District Annual Wastewater Generated

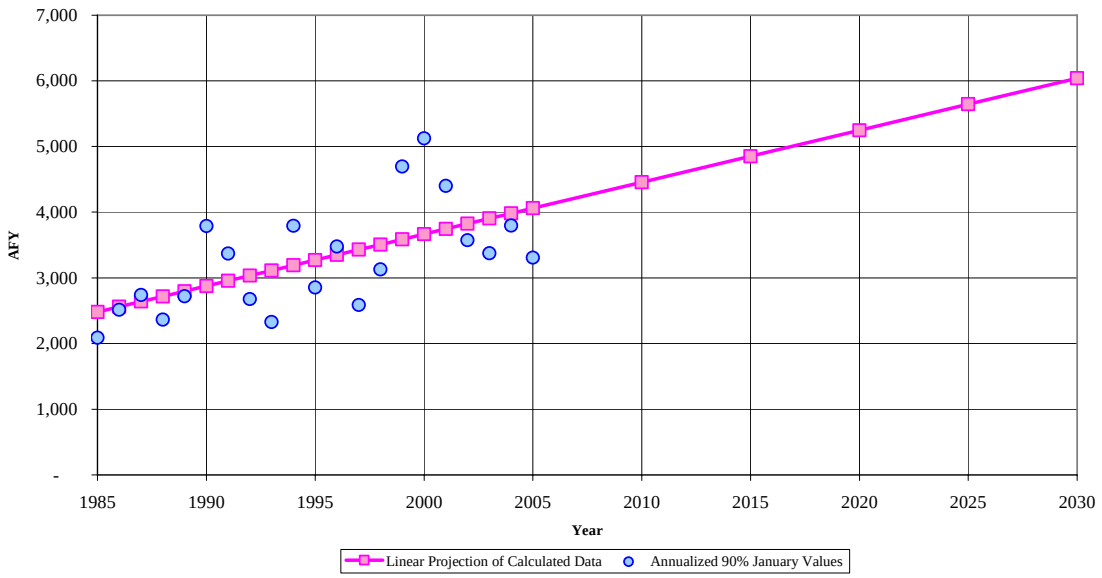


Table 3.5-1: Disposal of wastewater (non-recycled) AF Year (Table 34)							
Method of disposal	**Treatment Level**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
100 percent treated effluent is recycled for irrigation during summer, discharged to Malibu Creek during winter	Tertiary	4,062	4,457	4,853	5,248	5,644	6,039
	Total	4,062	4,457	4,853	5,248	5,644	6,039

3.5.3 Potential Water Recycling

It is anticipated that no new recycled water customers will be acquired in the near future due to existing high demand and insufficient volume of recycled water to meet these demands. The recycled water use (actual and potential) in the Westlake service area is summarized in Table 3.5-2. Currently, the largest recycled water customer is North Ranch golf course.

Table 3.5-2: Recycled Water Uses - Actual and Potential (AFY) (Table 35)							
User type	Treatment Level	2005	2010	2015	2020	2025	2030
Agriculture		-	-	-	-	-	-
Landscape	Tertiary	325	466	472	478	484	489
Wildlife Habitat		-	-	-	-	-	-
Wetlands		-	-	-	-	-	-
Industrial/Commercial		-	-	-	-	-	-
Groundwater Recharge		-	-	-	-	-	-
	Total	325	466	472	478	484	489

Currently, the demand for recycled water is so high during the summer months that it is supplemented with potable water for irrigation use. Table 3.5-3 summarizes the projected recycled water supply in Cal Water's Westlake service area through the year 2030. Cal Water has not implemented any incentive programs to encourage recycled water use because Cal Water does not own or operate the wastewater system; however, the recycled water supplier does offer a reduced rate which Cal Water does offer as a direct pass-through to the customer.

Table 3.5-3: Projected Future Use of Recycled Water in Service Area - AF Year (Table 36)					
	2010	2015	2020	2025	2030
Projected use of Recycled Water	466	472	478	484	489

A comparison of the projected quantity of recycled water in the previous UWMP and the actual is shown in the following table, Table 3.5-4. The table shows the actual recycled water nearly met or exceeded the projection from the previous UWMP.

Table 3.5-4: Recycled Water Uses - Projected compared with actual - AFY (Table 37)		
Year	Projected value from Previous UWMP	Actual
2000	380	538
2005	380	325

The Triunfo Sanitation District constructed a recycled water distribution system in the southern portion of the Westlake District, and Calleguas MWD constructed a recycled water distribution system in the North Ranch portion of the District. In an effort to consolidate the management and operation of these two systems, Calleguas MWD has purchased the South Ranch distribution pipeline and will be the sole wholesaler for all water supplies in the region.

Cal Water has signed an agreement for the purchase of water from these systems as the supplies become available. Deliveries in the South Ranch and North Ranch began upon completion of the distribution system in 1995. As the price of Metropolitan's potable supply increases, it will become economical to add additional services to the recycled

water system and as a result, the sales should slowly increase. This recycled water use reduces the amount of imported potable water that must be purchased from Metropolitan.

Metropolitan Water District assisted in the development of these recycled water projects through their Local Projects Program. Other local supply enhancement programs are offered by Metropolitan that provide financial incentives for modifying and improving the operation of local water supplies. The Westlake District is unable to participate in these other programs because of the lack of other usable local supplies.

3.6 Desalinated Water

There are no opportunities for the development of desalinated water in the District.

3.7 Transfer or Exchange Opportunities

There are no water transfer or exchange opportunities for the District.

3.8 Water Supply Reliability

Percentage of rainfall since 1980 is shown in Figure 3.8-1 with the average annual rainfall for the District of 16.87 inches. The most recent driest year occurred in 2002 when the rainfall was 61.4% below average (6.5 inches). This is taken as the Single Dry Year shown in Table 3.8-1. The three Multiple Dry-Water Years used are based on the most recent and consecutive lowest annual rainfall totals which occurred in 1988, 1989, and 1990. This period coincides with the drought conditions that California experienced during 1987-1992.

Figure 3.8-1: Comparison of Annual Rainfall to Historical Average

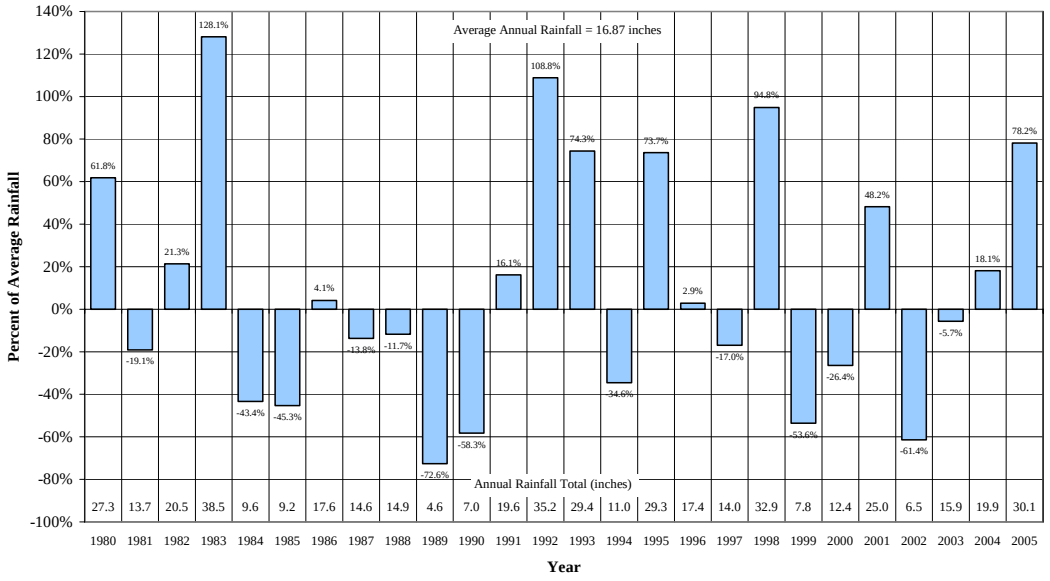


Table 3.8-1: Basis of Water Year Data (Table 9)	
Water Year Type	**Base Year (s)**
Average Water Year	1996
Single-Dry Water Year	2002
Multiple-Dry Water Years	1988, 1989, 1990

The supply reliability is shown in Table 3.8-2 and shows that during below average rainfall periods, demand increases and has been met by the given supply.

Table 3.8-2: Supply Reliability - AF Year (Table 8)				
Average / Normal Water Year	**Single Dry Water Year**	**Multiple Dry Water Years**		
		Year 1	**Year 2**	**Year 3**
8,828	9,822	7,660	8,977	8,862
% of Normal	111.3%	86.8%	101.7%	100.4%

Although the historical climatic record shows that the demand can be met by the supply, future climatic changes may present an obstacle. In addition, other factors which may threaten the reliability of the sole source are listed in Table 3.8-3.

Table 3.8-3: Factors Resulting In Inconsistency of Supply (Table 10)				
Name of supply	**Legal**	**Environmental**	**Water Quality**	**Climatic**
CMWD	✓		✓	✓

As water supply conditions change on the State Water Project, the availability of water for delivery to the customers in the Westlake District will be affected due to legal and climatic affects. During the last drought, Metropolitan put into place the Incremental Interruption and Conservation Program (IICP). This program established a series of escalating levels of voluntary and mandatory reductions in demand that were applied as supply conditions worsened. These reductions were placed upon the member agencies of Metropolitan and in nearly all cases passed on through the member agency to the retail water supplier, who in turn applied them in various methods to their customers. The mandatory levels carried with them penalties for exceeding the target volume, and at least initially credits for conserving more than the target volume; however the credits were terminated when Metropolitan began to experience a monetary drain from the massive response.

3.8.1 Water Quality

The drinking water delivered in the Westlake District meets all federal and state regulations. All drinking water standards are set by the U.S. Environmental Protection Agency under the authorization of the Federal Safe Drinking Water Act of 1974. In California, the state's Department of Health Services can either adopt the USEPA

standard or set state standards that are more stringent than those set by the federal government.

There are two types of drinking water standards: Primary and Secondary Standards. Primary Standards are designed to protect Public Health by establishing Maximum Contamination Levels (MCL) for substances in water that may be harmful to humans or affect their health. MCLs are established very conservatively for each contaminant, and are generally based on health effects, which may occur if a person was to drink two liters of the water per day for 70 years. Secondary standards are based on the aesthetic qualities of the water, such as taste, odor, color, and certain mineral content. These standards, established by the State of California, specify limits for substances that may affect consumer acceptance of the water.

3.9 Water Supply Projects

Future water supplies will be provided by the Calleguas Municipal Water District. CMWD has worked to augment the reliability of imported water supplies. Cal Water will support that work whenever feasible.

Because growth potential is limited in the Westlake area, no major new facilities are planned. As new projects are developed or existing areas are redeveloped, additional facilities may be required. One of the district's reservoirs is showing signs of fatigue and will require costly maintenance, repair or replacement. Cal Water will continue its annual main replacement program to upgrade and improve the Westlake District's distribution system. Reservoirs and pump stations will be upgraded in the capital budgets. A Water Supply and Facilities Master Plan is to be prepared in 2008.

4 Water Shortage Contingency Plan

4.1 Worst Case Water Supply Availability

The Westlake District's domestic water source is 100% imported from CMWD, with emergency interconnections to Las Virgenes. Triunfo supplies recycled water for irrigation. CMWD has a well supply that can be used in emergencies. The Westlake District's storage of 21.050 MG has the capability to supply more than two average days demand and slightly less than two maximum days.

4.2 Stages of Action

California Water Service Company has developed a four-stage rationing plan. The plan includes voluntary and mandatory stages. Approval from the CPUC must be obtained prior to implementation of mandatory restrictions.

Table 4.2-1: Consumption Reduction Methods (Table 27)

Shortage	Stage	Demand Reduction Goal	Type Of Program
Minimum 5 - 10%	Stage 1	10% reduction	Voluntary
Moderate 10 - 20%	Stage 2	20% reduction	Voluntary or Mandatory*
Severe 20 - 35%	Stage 3	35% reduction	Mandatory*
Critical 35 - 50%	Stage 4	50% reduction	Mandatory*

* Mandatory = Allocations

4.2.1 Actions to Be Undertaken By California Water Service Company

The following outline lists the actions to be taken during periods when a reduction in consumption is required:

Stage 1

- California Water Service Company maintains an ongoing public information campaign consisting of distribution of literature, speaking engagements, monthly bill inserts, and conservation messages printed in local newspapers.
- Educational programs in area schools are also ongoing.

Stage 2

- California Water Service Company will aggressively continue its public information and education programs.
- Ask consumers for 10 to 20 percent voluntary or mandatory water use reductions.
- Prior to implementation of mandatory reductions, obtain approval from CPUC.
- Lobby for passage of drought ordinances by appropriate governmental agencies.

Stage 3

- Implement mandatory reductions after receiving approval from CPUC.
- Maintain rigorous public information campaign explaining water shortage conditions.
- Water use restrictions go into effect; prohibited uses can include watering resulting in gutter flooding, using a hose without shutoff device, filling of pools or fountains, etc.
- Limiting landscape irrigation by restricting the hours of the day and or days of the week during which water for irrigation can be used.
- Monitor production weekly for compliance with necessary reductions.
- Installation of a flow restrictor on the service line of customers who consistently violate water use restrictions.

Stage 4

- All of steps taken in prior stages intensified.
- Discontinuance of water service for customers consistently violating water use restrictions.
- Monitor production daily for compliance with necessary reductions.
- More restrictive conditions for, or a prohibition of, landscape irrigation.

4.2.2 Mandatory Prohibitions

Due to Cal Water's investor-owned status, it is not authorized to pass any ordinances. Should conditions warrant mandatory reductions, Cal Water will request authority to add Tariff Rule 14.1, Mandatory Water Conservation Plan (see Appendix E), to existing tariffs for a District. Included in Rule 14.1 is Section A. Conservation - Nonessential or Unauthorized Water Use which prohibits use of water for filling or refilling of swimming pools, use of water which results in flooding or runoff in gutters, etc.

4.2.3 Consumption Limits

California Water Service Company maintains extensive water use records on individual metered customer accounts. These records are reviewed in the Districts on a daily basis to identify potential water loss problems.

In order to protect itself against serious and unnecessary waste or misuse of water, Cal Water may meter any flat rate service and apply the regularly established meter rates where the customer continues to misuse or waste water beyond five days after Cal Water has given the customer written notice to remedy such practices.

4.2.4 Monitoring Procedure during Periods of Water Shortages

During all stages of water shortages, daily production figures are reported to and monitored by the District manager on a daily basis. Consumption will be monitored through these daily production figures in the District for compliance with necessary reductions.

4.2.5 Penalties or Charges for Excessive Use

Cal Water, after one written warning, shall install a flow-restricting device on the service line of any customer observed by Cal Water personnel to be using water for any non-essential or unauthorized use defined in Section A. of Tariff Rule 14.1 (see Appendix E). Repeated violations of unauthorized water use will result in discontinuance of water service.

4.2.6 Analysis of Revenue and Expenditure Impacts

California Water Service Company is an investor-owned water utility and, as such, is regulated by the CPUC. On March 8, 1989, the Commission instituted an investigation to determine what actions should be taken to mitigate the effects of water shortages on the State's regulated utilities and their customers. In decision D. 90-07-067, effective July 18, 1990, the Commission authorized all utilities to establish memorandum accounts to track expenses and revenue shortfalls caused both by mandatory rationing and by voluntary conservation efforts. Subsequently, D. 90-08-55 required each class A utility (more than 10,000 connections) seeking to recover revenues from a drought memorandum account to submit, for Commission approval, a water management program that addresses long-term strategies for reducing water consumption. Utilities with approved water management programs were authorized to implement a surcharge to recover revenue shortfalls recorded in their drought memorandum accounts.

However, the Commission's Decision 94-02-043 dated February 16, 1994, states:

> *10. Now that the drought is over, there is no need to track losses in sales due to residual conservation.*
> *11. The procedures governing voluntary conservation memorandum accounts (see D.92-09-084) developed in this Drought Investigation will no longer be available to water companies as of the date of this order.*
> *12. Procedures and remedies developed in the Drought Investigation that are not specifically authorized for use in the event of future drought in these Ordering Paragraphs will no longer be available to water companies as of the date of this order except upon filing and approval of a formal application.*
> *(CPUC Decision 94-02-043, Findings of Fact, paragraphs 10-12)*

It was at this time that Cal Water significantly curtailed conservation activities in its Districts. At the time that triggers for voluntary or mandatory reductions should occur in the future, Cal Water will determine if a filing to the CPUC is necessary to enforce the reductions and to begin tracking lost sales from the required reductions.

4.3 Implementing the Plan

Section 357 of the Water Code requires that suppliers that are subject to regulation by the CPUC shall secure its approval before imposing water consumption regulations and restrictions required by water shortage emergencies.

4.4 Supply Shortage Triggers

Although California Water Service Company's Westlake District is not currently experiencing a supply shortage, Cal Water intends to manage its supply prudently. If a supply deficiency should occur, Cal Water will implement the appropriate "Stage of Action" unless the Public Utilities Commission adopts findings to implement a less restrictive stage.

Table 4.4-1: Water Supply Triggering Levels	
Stage	% Shortage
Stage 1	Up to 10% supply reduction
Stage 2	10 to 20% supply reduction
Stage 3	20 to 35% supply reduction
Stage 4	35 to 50% supply reduction

4.5 Three-Year Minimum Water Supply

Table 4.5-1 lists the minimum water supply for the next three years based on current trends of the supply. The basis of the normal supply is the 5-year average covering the period 2001 to 2005. The minimum supply is based on lowest demand projection for the District for the next three years.

Table 4.5-1: Three-Year Estimated Minimum Water Supply (Table 24) (AFY)				
Source	**Normal**	**Year 1**	**Year 2**	**Year 3**
CMWD	8,984	6,786	6,795	6,804
Recycled Water	369	165	166	166
Total	9,353	6,952	6,961	6,970

4.6 Catastrophic Water Supply Interruption

Cal Water has an Emergency Response Plan in place that coordinates overall company response to a disaster in any or all of its Districts. In addition, the Emergency Response Plan requires each District to have a local disaster plan that coordinates emergency responses with other agencies in the area.

Cal Water also inspects its facilities annually for earthquake safety. To prevent loss of these facilities during an earthquake, auxiliary generators and improvements to our water storage facilities have been budgeted for and installed as part of our annual process.

During an emergency, the District can transfer water through interconnections to or from the neighboring water system owned by the Las Virgenes Water District. These interconnections can be used to help offset the impact of interrupted service to District customers or, being two-way connections, these facilities can be used to supply water to Las Virgenes.

5 Water Use Provisions

5.1 Distribution of Services

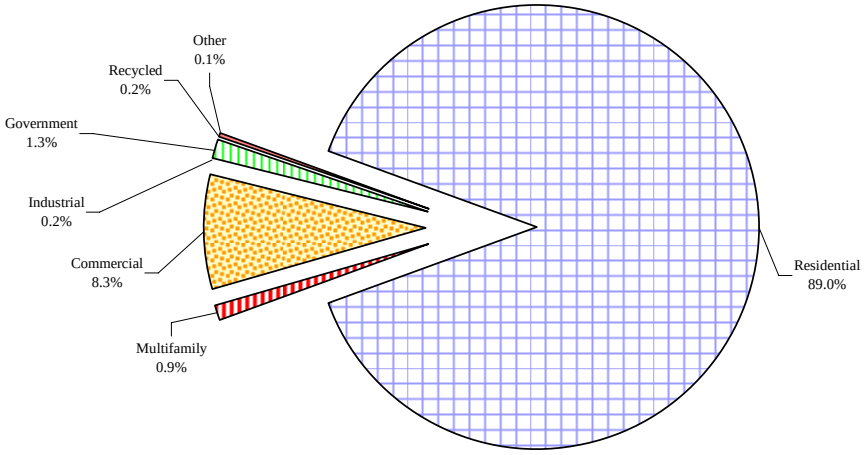
California Water Service Company designates the different customers as follows:

- Residential
- Multifamily
- Commercial
- Industrial
- Government
- Other

The residential sector of California Water Service Company's customers includes permanent single and multifamily residents. Service for seasonal customers was not considered.

The average annual services for calendar year 2005 were 6,895. Single-family residential services at 6,134 represent 89.0 percent of all services, multifamily residential services at 65 (1,129 units) represent 0.9 percent, commercial at 573 services represents 8.3 percent, industrial services at 15 (0.2 percent), governmental services at 87 (1.3 percent), recycled services at 15 (0.2 percent), and other services at 6 (0.3 percent). The distribution of services for 2005 is shown graphically in Figure 5.1-1

Figure 5.1-1: Distribution of Services (2005)



5.2 Historical and Current Water Demand

Demand per service was established as a function of historical sales and service data. Projected demand is the product of total projected services and demand per service. Historical sales values are illustrated in Figure 5.2-1. Historical Service Counts are illustrated in Figure 5.2-2.

The Westlake District provides water service to 6,895 customers in the City of Thousand Oaks. Cal Water acquired the system in 1983 when it consisted of 4,314 services. Over the past fifteen years, the community has grown by an average of 2.21%. However, during the past five years (2001 to 2005) the average annual growth rate has slowed considerably to less than a quarter of a percent.

Growth in total services has averaged 0.24% in the past five years. This slower growth rate is due to the limited available land within the District's service area that can sustain development. Much of the remaining developable property in the District has poor accessibility and developers have not been able to obtain the required permits. Therefore, Cal Water does not anticipate any significant growth in the future, except for in-fill development.

Figure 5.2-1: Historical Sales

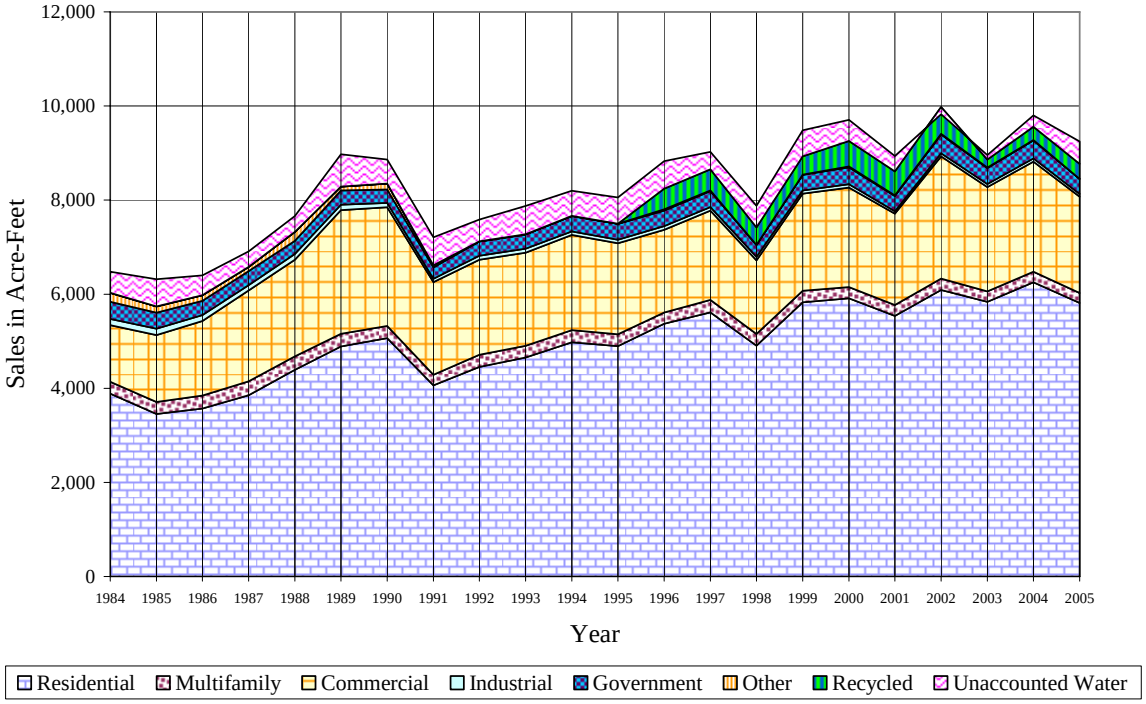
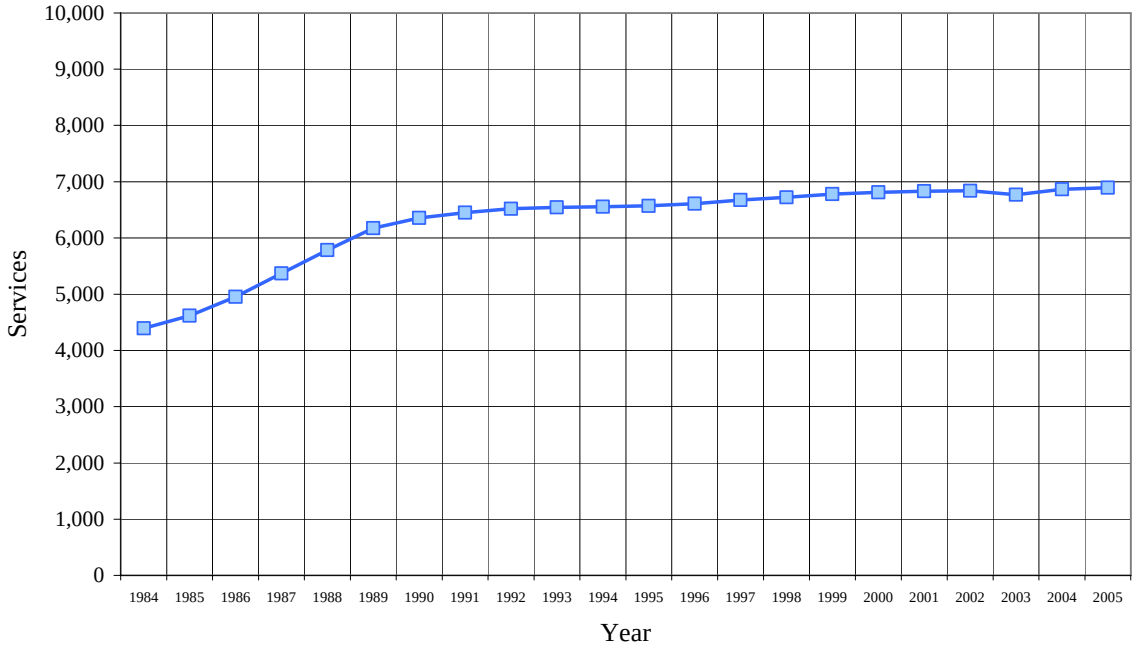


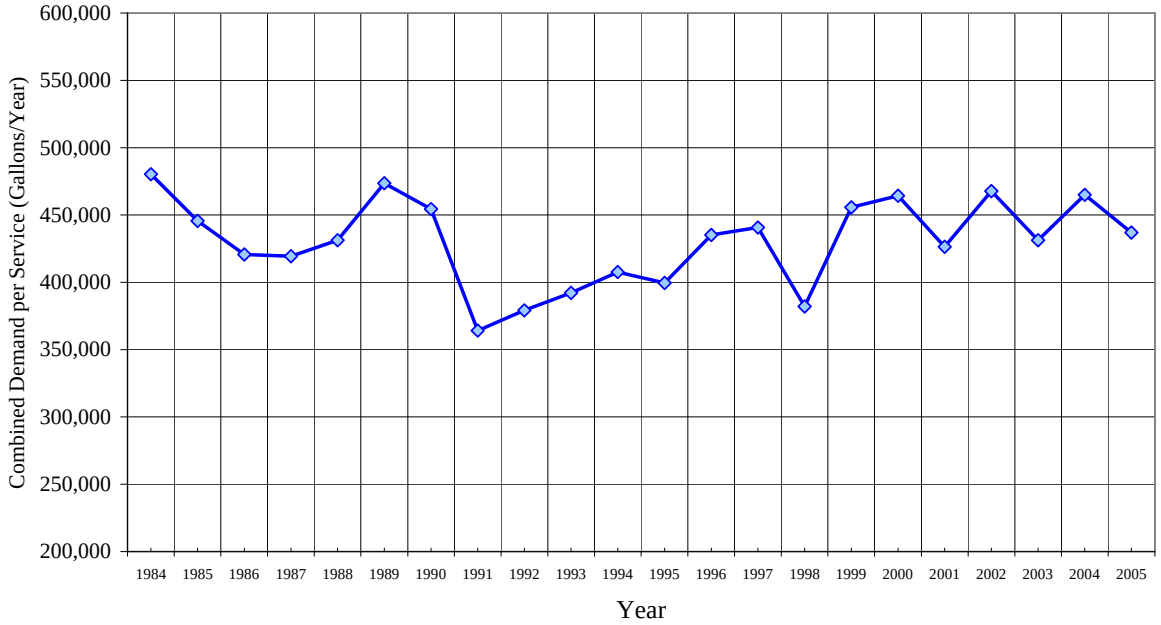
Figure 5.2-2: Historical Service Counts



The annual demand per service of the District is indicative of an area of high water consumption. While no two water systems are completely comparable, it has been observed in similar highly residential suburban water districts operated by Cal Water that the annual residential demand per service typically is between 100,000 and 200,000 gallons per service per year, but in Westlake the residential demand per service averages 300,000. This high demand per service is explainable by the fact that the community is comprised of spacious homes on large, well-landscaped lots located in a very arid environment.

The combined demand for all services fluctuates between 360,000 to 480,000 gallons per service per year, as shown in Figure 5.2-3.

Figure 5.2-3: Historical Demand per Service



The residential customers in the District were able to respond to the mandate for water conservation in 1991 by reducing the demand per service consumption by nearly 21 percent over 1990's level of consumption. When combined with the reductions by other service categories, this resulted in an overall conservation reduction in total demand of 19.7 percent over the regional base year of 1989, and 18.7 over the demand of 1990.

Since 1991 demand has steadily increased to pre-drought levels. Curbing demand will require the implementation of conservation activities. The Company's goal is a 10% reduction in demand (based on pre-drought levels). Implementation of Best Management Practices will assist in achieving this goal.

5.3 Per Capita Water Demand

Based on the end of 2005 year total demand, the per-capita water use in the District is summarized in Table 5.3-1. The per capita demand was 488.1 gallons per capita per day for all uses and 318.2 gallons per capita per day for residential only. In comparison, the statewide value is 190 gallons per capita per day.

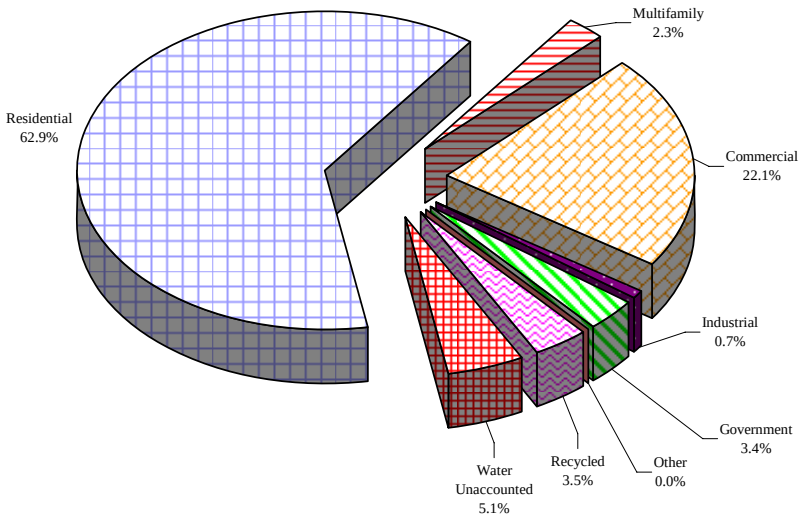
Table 5.3-1: Per Capita Water Demand (2005)

Units	All Users	Residential
Million Gallons	3,013	1,964
Estimated Population	16,910	16,910
Gallons/Person in Year	178,151	116,136
Gallons Per Capita Per Day	488.1	318.2
Gallons Per Capita Per Minute	0.339	0.221

For the purpose of projecting total system demand, the projected number of services for each customer class was multiplied by the demand per service for that classification. This process was employed because of the significant difference between the demand per service associated with certain uses and the combined or average demand per service.

Single-family residential water use represents the smallest demand per service segment in the district at 223,000 to 333,000 gallons per service per year, yet this category uses 59.3 percent of the total demand. The multifamily residential use was 2.2 percent of the total demand with a typical demand per service of 1.1 million gallons per service per year. The combined residential sector component of demand is equal to 61.5 percent of total demand. Figure 5.3-1 displays the percent of total demand by type of use.

Figure 5.3-1: Percent of Total Demand by Type of Use (2005)

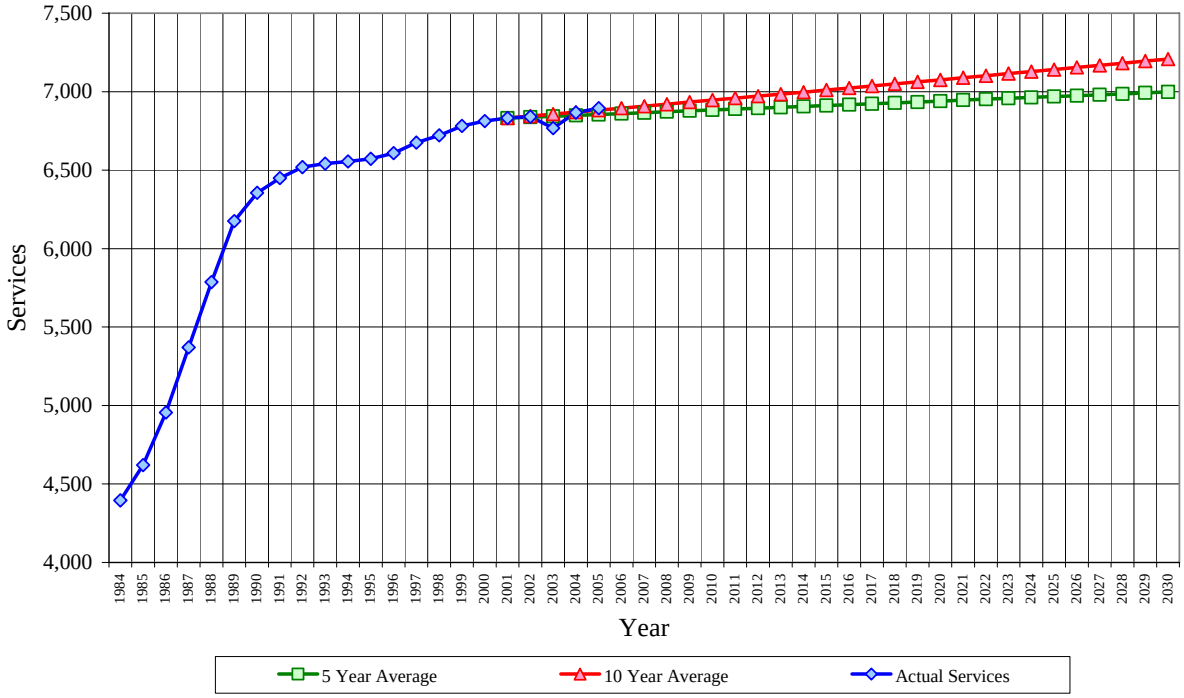


5.4 Historical and Projected Water Demand

Total system demand was projected by multiplying the number of services for each customer class by the demand per service for that class. This process allowed for the significant differences between the demands per service associated with each customer class and the different growth rates for each class. The service projection is shown in Figure 5.4-1.

Projected service connections based on past service counts are labeled 5-year Average and 10-year Average Growth Rates. The 5-year average is the short-term growth rate, calculated from 2001 to 2005 period, which has an overall annual average growth rate of 0.24%. The 10-year average is long-term growth rate, calculated from 1996 to 2005 period, which exhibits an overall annual average growth rate of 0.48%.

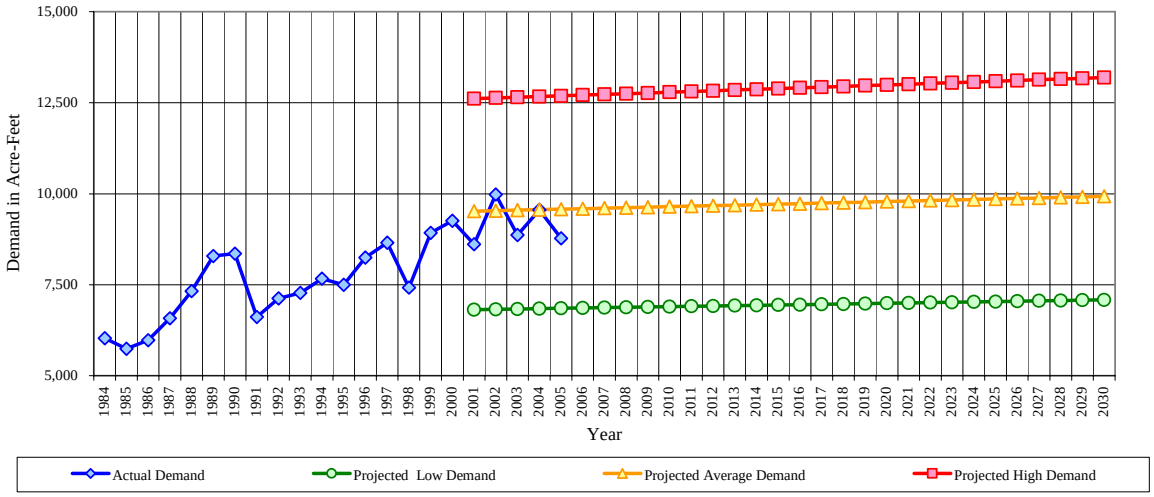
Figure 5.4-1: Historical & Projected Services



The five-year growth pattern was applied to three different scenarios to project demand for the Westlake District. The starting point for each projection was the actual annual average number of services in 2001. This compares projected values to actual values over a five-year period.

Three projection scenarios were used to develop a range of projected demand for the Westlake District. The 5-year service connection growth pattern was applied to three different sets of demand per service data. Data generated through each scenario is compiled and located in Appendix C (Worksheets 10, 11, and 12). Comparative demand data for the three scenarios is presented in Figure 5.4-2.

Figure 5.4-2: Historical & Projected Demand (without system losses)



5.4.1 Scenario 1

The District's five-year average growth pattern was applied to the lowest recorded demand per service values from each customer class. Scenario #1 forecasts total demand for the Year 2030 at 7,085 AF (without system losses). This scenario provides a bottom end for the projected demand range. This scenario represents the level of demand our customers could achieve if an emergency existed. Projected low system demands in 5-year increments, starting in 2010, are shown in Table 5.4-1.

5.4.2 Scenario 2

The District's five-year average growth pattern was combined with the ten-year average demand per service for each customer class to project the most probable demand values through the Year 2030. This scenario forecasts total demand for the Year 2030 at 9,928 AF (without system losses). Scenario #2 represents the normal position of the demand range that should most likely occur provided the 10% conservation goal established by the Company is achieved and maintained. To accomplish this level of demand it will be essential to effectively promote and implement appropriate conservation programs. Projected average system demands in 5-year increments, starting in 2010, are shown in Table 5.4-2.

5.4.3 Scenario 3

The District's five-year average growth pattern was combined with the highest recorded demand per service value for each customer class. Scenario #3 forecasts demand for the Year 2030 at 13,193 AF (without system losses). This scenario provides a top end for the projected demand range. Projected high system demands in 5-year increments, starting in 2010, are shown in Table 5.4-3.

Table 5.4-1: Past, Current, and Projected Water Deliveries for Scenario 1 (Table 12a)

		Water Use Sectors	Single family	Multifamily	Commercial	Industrial	Institutional/Gov.	Landscape/ Agriculture	Recycled	Other	Total
2000	metered	# of accounts	6,116	65	510	14	84	-	15	9	6,813
		Deliveries AFY	5,913	241	2,113	70	359	-	541	16	9,254
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2005	metered	# of accounts	6,134	65	573	15	87	-	15	6	6,895
		Deliveries AFY	5,815	212	2,044	61	318	-	321	1	8,772
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2010	metered	# of accounts	6,113	66	577	14	90	-	14	8	6,883
		Deliveries AFY	4,185	216	1,986	57	284	-	167	2	6,897
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2015	metered	# of accounts	6,132	67	584	14	91	-	14	8	6,912
		Deliveries AFY	4,198	219	2,010	57	287	-	169	2	6,943
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2020	metered	# of accounts	6,151	68	591	15	92	-	15	8	6,940
		Deliveries AFY	4,211	222	2,035	58	291	-	171	2	6,990
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2025	metered	# of accounts	6,170	69	599	15	93	-	15	8	6,969
		Deliveries AFY	4,224	224	2,060	59	295	-	173	2	7,037
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2030	metered	# of accounts	6,190	70	606	15	94	-	15	9	6,998
		Deliveries AFY	4,238	227	2,085	60	298	-	175	2	7,085
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-

Table 5.4-2: Past, Current, and Projected Water Deliveries for Scenario 2 (Table 12b)

		Water Use Sectors	Single family	Multifamily	Commercial	Industrial	Institutional/Gov.	Landscape/ Agriculture	Recycled	Other	Total
2000	metered	# of accounts	6,116	65	510	14	84	-	15	9	6,813
		Deliveries AFY	5,913	241	2,113	70	359	-	541	16	9,254
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2005	metered	# of accounts	6,134	65	573	15	87	-	15	6	6,895
		Deliveries AFY	5,815	212	2,044	61	318	-	321	1	8,772
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2010	metered	# of accounts	6,113	66	577	14	90	-	14	8	6,883
		Deliveries AFY	5,303	274	3,100	85	395	-	466	22	9,645
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2015	metered	# of accounts	6,132	67	584	14	91	-	14	8	6,912
		Deliveries AFY	5,319	278	3,138	86	399	-	472	23	9,715
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2020	metered	# of accounts	6,151	68	591	15	92	-	15	8	6,940
		Deliveries AFY	5,336	281	3,176	87	404	-	478	23	9,785
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2025	metered	# of accounts	6,170	69	599	15	93	-	15	8	6,969
		Deliveries AFY	5,352	285	3,215	88	409	-	484	23	9,856
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2030	metered	# of accounts	6,190	70	606	15	94	-	15	9	6,998
		Deliveries AFY	5,369	288	3,255	89	414	-	489	24	9,928
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-

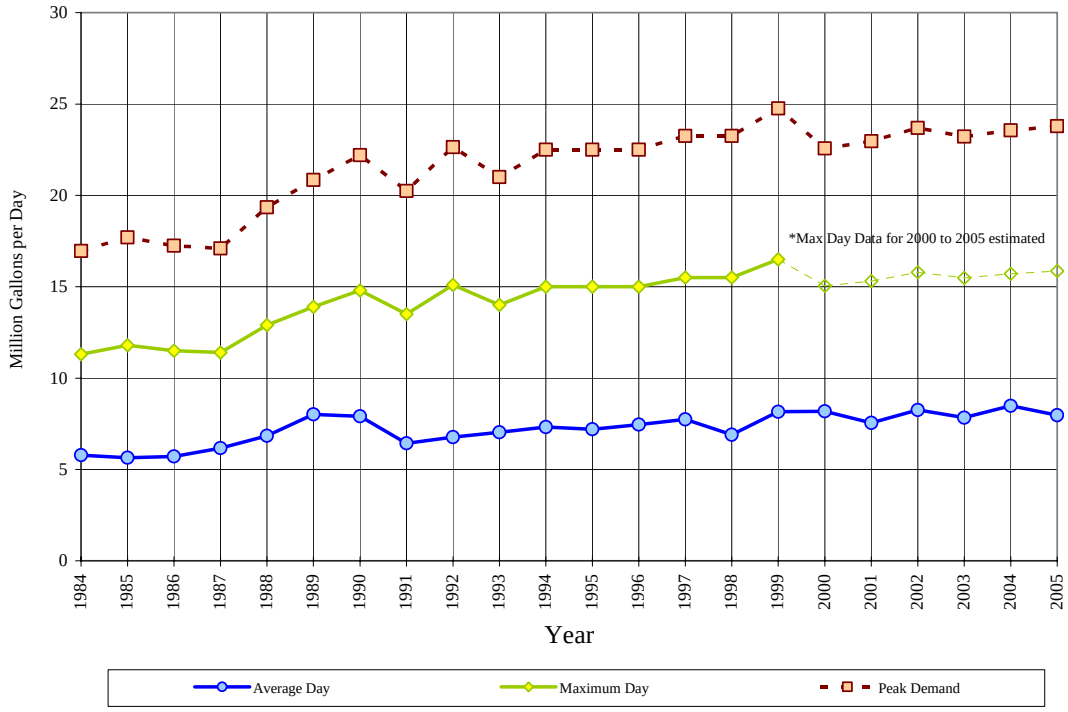
Table 5.4-3: Past, Current, and Projected Water Deliveries for Scenario 3 (Table 12c)

		Water Use Sectors	Single family	Multifamily	Commercial	Industrial	Institutional/Gov.	Landscape/ Agriculture	Recycled	Other	Total
2000	metered	# of accounts	6,116	65	510	14	84	-	15	9	6,813
		Deliveries AFY	5,913	241	2,113	70	359	-	541	16	9,254
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2005	metered	# of accounts	6,134	65	573	15	87	-	15	6	6,895
		Deliveries AFY	5,815	212	2,044	61	318	-	321	1	8,772
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2010	metered	# of accounts	6,113	66	577	14	90	-	14	8	6,883
		Deliveries AFY	6,252	362	4,774	131	582	-	638	49	12,789
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2015	metered	# of accounts	6,132	67	584	14	91	-	14	8	6,912
		Deliveries AFY	6,272	367	4,832	133	589	-	646	50	12,888
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2020	metered	# of accounts	6,151	68	591	15	92	-	15	8	6,940
		Deliveries AFY	6,291	371	4,891	135	596	-	654	51	12,989
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2025	metered	# of accounts	6,170	69	599	15	93	-	15	8	6,969
		Deliveries AFY	6,311	376	4,951	136	603	-	662	51	13,091
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-
2030	metered	# of accounts	6,190	70	606	15	94	-	15	9	6,998
		Deliveries AFY	6,330	380	5,012	138	611	-	670	52	13,193
	unmetered	# of accounts	-	-	-	-	-	-	-	-	-
		Deliveries AFY	-	-	-	-	-	-	-	-	-

5.5 Average Day, Maximum Day, and Peak Hour Demand

The historical values for average day, maximum day, and peak hour from 1984 to the present are shown in Figure 5.5-1.

Figure 5.5-1: Average Day, Maximum Day, and Peak Demand



The average day demand (ADD) and maximum day demands (MDD) are shown in the above graph and are based on the historical records for the District. The Peak Hour Demand (PHD) shown in the graph is based on the MDD multiplied by a peaking factor (PF). A peaking factor of 1.5 was used to plot the above curve for the PHD. This value for a PF is consistent with other Districts.

Peaking factors for MDD tend to range from 1.2 to 2.5 times ADD, and peaking factors for Peak Demand are typically between 1.2 to 2.5 times the MDD, or 1.5 to 6 times the ADD.

The ADD, MDD, and PHD data discussed above, along with the projected services, were used to project the different demands until 2030. These projections are based on comparing supply and demand, and not the capacity of the distribution system. In 2008, the Company will be developing a hydraulic model to determine the distribution system's ability to deliver the projected ADD, MDD, and PHD. This will be accomplished along with the Water Supply and Facilities Master Plan. The ability of the distribution system to deliver projected future demand needs to be evaluated using a computer-simulation of the hydraulic network. This analysis would indicate if the existing distribution system is

capable of delivering the anticipated maximum day demands while maintaining pressure throughout the system at levels above the approved California Public Utilities Commission standard of 30 psig.

Table 5.5-1 shows the Average Day, Maximum Day, and Peak Demands until 2030 in five-year increments. Comparing the projected demand with supply is shown in Figures 5.5-2 to 5.5-5 for Average Day, Maximum Day, and Peak Demands, respectively.

To determine the capacity of the system to meet the needs of the customers, the projections for the Average Day, Maximum Day, and Peak Hour Demand for three demand scenarios are compared to the pumping capacity of the boosters. These values are used to compare the projected demands of the District and determine if the basic facilities are sufficient to meet this demand.

For Average Day Demand, see Figure 5.5-2, a margin of over 15 MGD exists between the system capacity and highest demand projection. This margin is maintained until 2030. A comparison of historical demand of the District and the allocation given by CMWD is shown in Figure 5.5-3 which shows the demand has exceeded the Tier 1 Annual Maximum several times since 1989 and consistently since 1999.

Figure 5.5-4 shows the comparison of the Maximum Day Demand and system capacity. A margin between the highest demand scenario and pumping capacity is approximately 5 MGD, which exists for the near and long-term period.

Figure 5.5-5 shows the historical and projected peak demand for the District. The projected demands are for the three levels of demand per service that represent the lowest, average, and highest demand per service for the District. A comparison of the total capacity of the booster units to the peak demand shows that the current pump capacity is greater than the current demand and the projected average demand for the long-term. The projected high demand cannot be achieved with the current booster capacity; however, the added capacity of tanks may meet this high consumption rate though it does not appear that the District will approach such this high rate of demand.

Table 5.5-1: Average Day, Maximum Day, and Peak Demands			
Projected Year	Average Day	Maximum Day	Peak Demand
	(MGD)	(MGD)	(MGD)
2005			
Scenario 1	6.2	12.3	18.5
Scenario 2	9.0	17.9	26.8
Scenario 3	12.1	24.0	36.1
2010			
Scenario 1	6.2	12.4	18.6
Scenario 2	9.0	18.0	27.0
Scenario 3	12.2	24.2	36.3
2015			
Scenario 1	6.3	12.5	18.7
Scenario 2	9.1	18.1	27.2
Scenario 3	12.3	24.4	36.6
2020			
Scenario 1	6.3	12.6	18.9
Scenario 2	9.2	18.2	27.4
Scenario 3	12.4	24.6	36.9
2025			
Scenario 1	6.4	12.7	19.0
Scenario 2	9.2	18.4	27.5
Scenario 3	12.5	24.8	37.2
2030			
Scenario 1	6.4	12.7	19.1
Scenario 2	9.3	18.5	27.7
Scenario 3	12.6	25.0	37.5

Figure 5.5-2: Average Day Demand and Projection

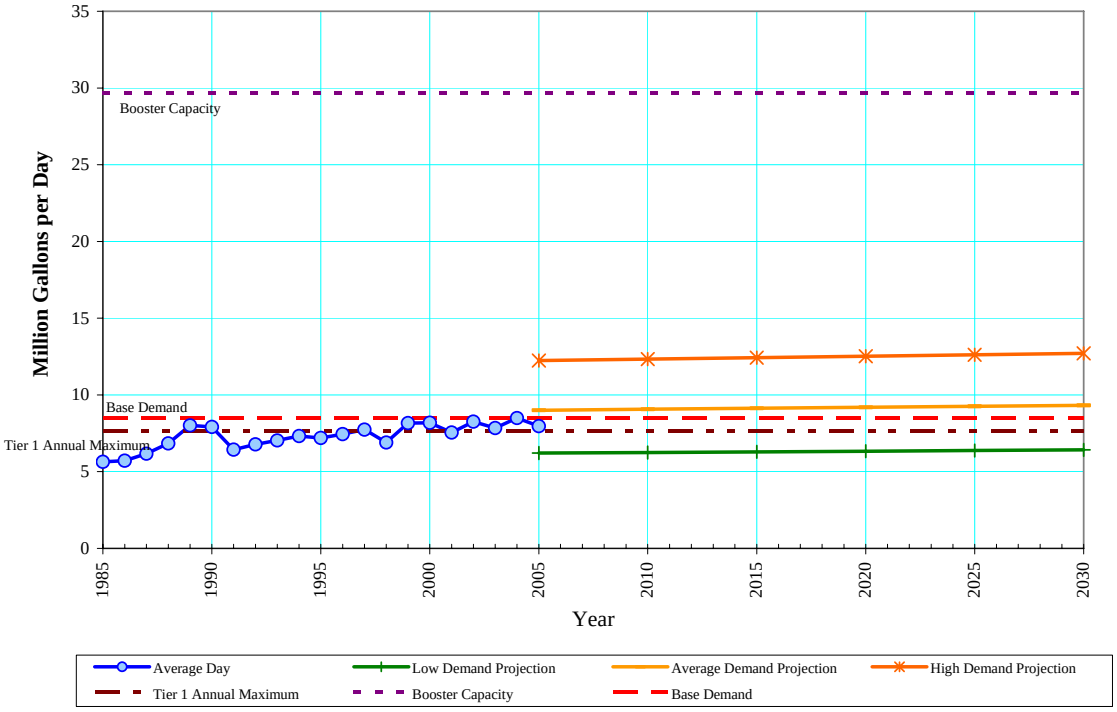


Figure 5.5-3: Historical Average Day Demand
(Excluding recycled water)

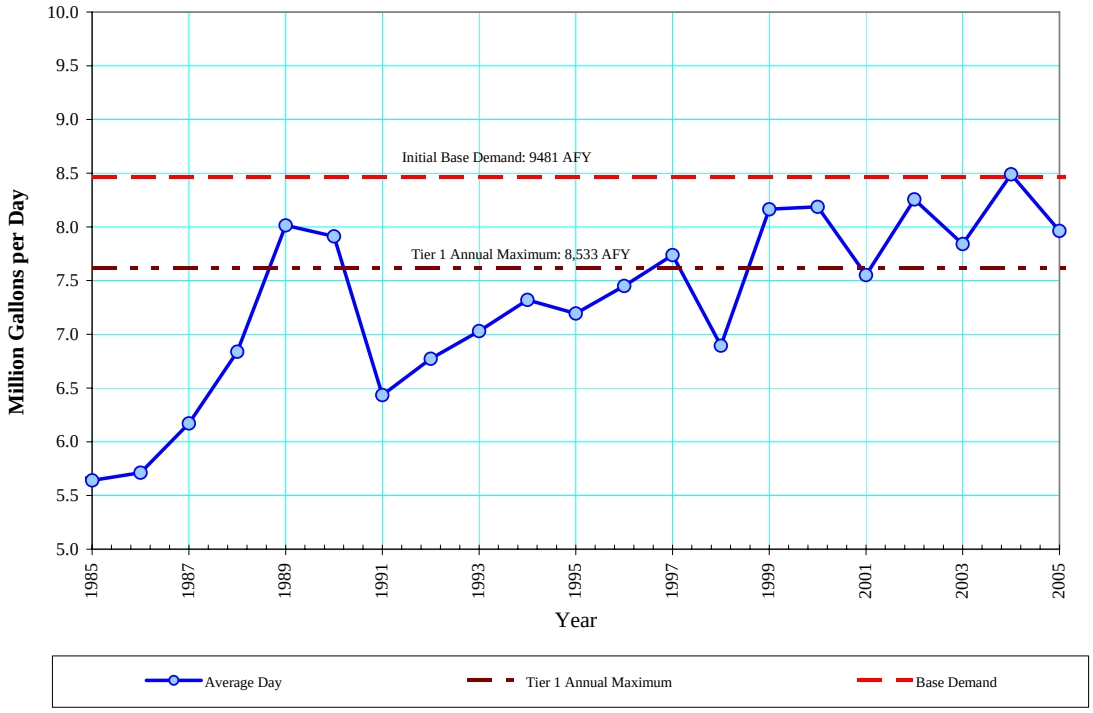


Figure 5.5-4: Maximum Day Demand and Projection

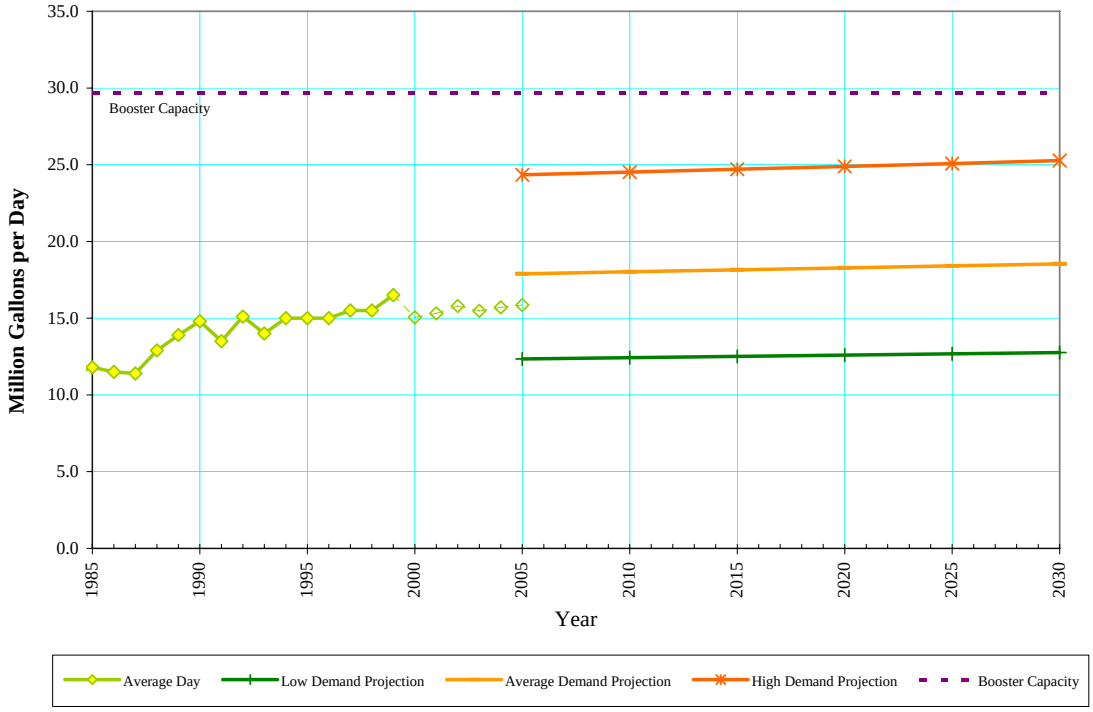
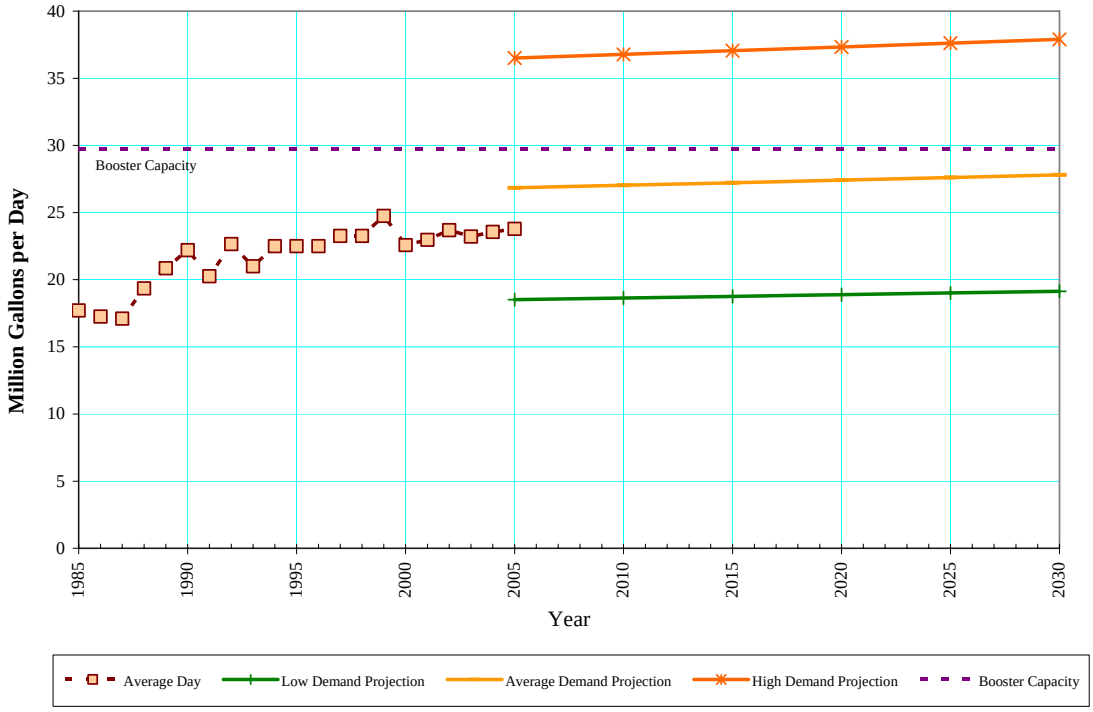


Figure 5.5-5: Peak Hour Demand



5.6 Summary

California Water Service Company does not provide water to other agencies and does not supply water for projects such as saline barriers or groundwater recharge and currently does not plan to supply water in the future.

The District system losses based on average demand projections are summarized in Table 5.6-1.

Table 5.6-1: Additional Water Uses and Losses - AF Year (Table 13 and 14)							
Water Use	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Sales to Other Agencies	-	-	-	-	-	-	-
Saline barriers	-	-	-	-	-	-	-
Groundwater recharge	-	-	-	-	-	-	-
Conjunctive use	-	-	-	-	-	-	-
Raw water	-	-	-	-	-	-	-
Recycled	See Table 5.4-2						
Unaccounted for system losses	454	473	485	487	489	491	493
Total	454	473	485	487	489	491	493

The past, current, and projected water deliveries based on average projected consumption rate is presented in Table 5.6-2.

Table 5.6-2: Total Water Use - AF Year (Table 15)							
Water Use	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Total of Tables 12, 13, 14	9,708	9,245	10,130	10,202	10,274	10,347	10,421

Figure 5.6-1 graphically displays the past, current, and projected water deliveries for all three scenarios including the unaccounted for system losses.

Figure 5.6-2 shows the historical and average projected water source by type of source. The only current source of water is purchased water.

Figure 5.6-1: Historical & Projected Demand (system losses incorporated)

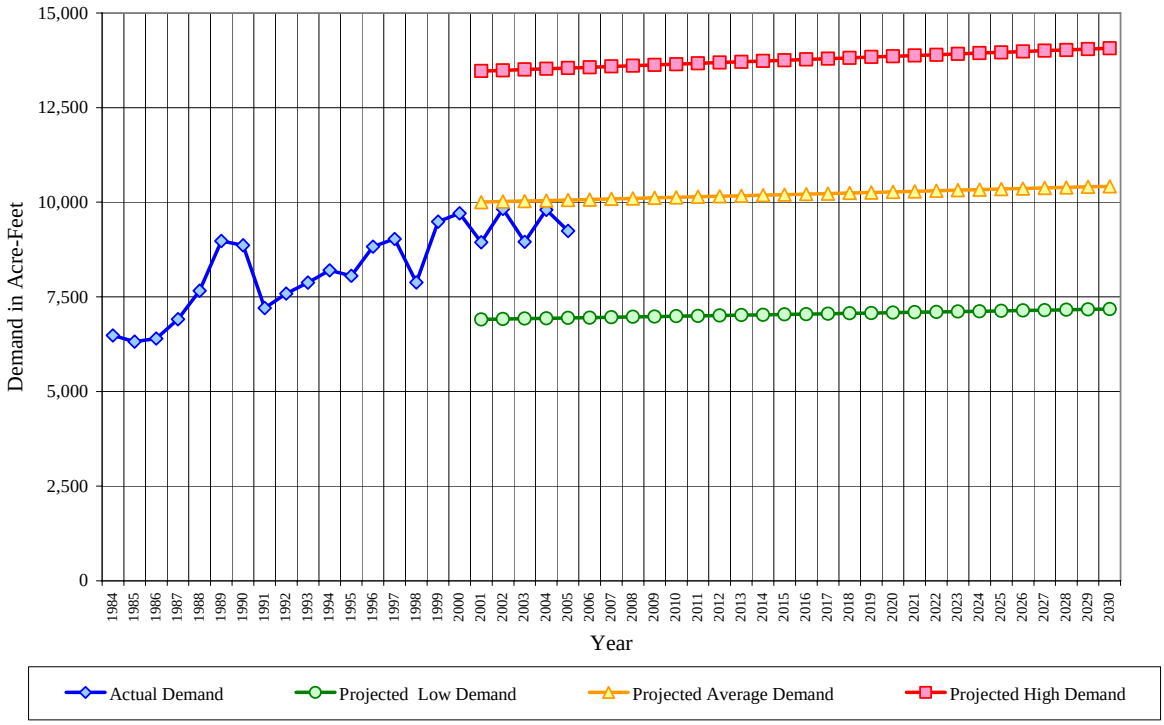
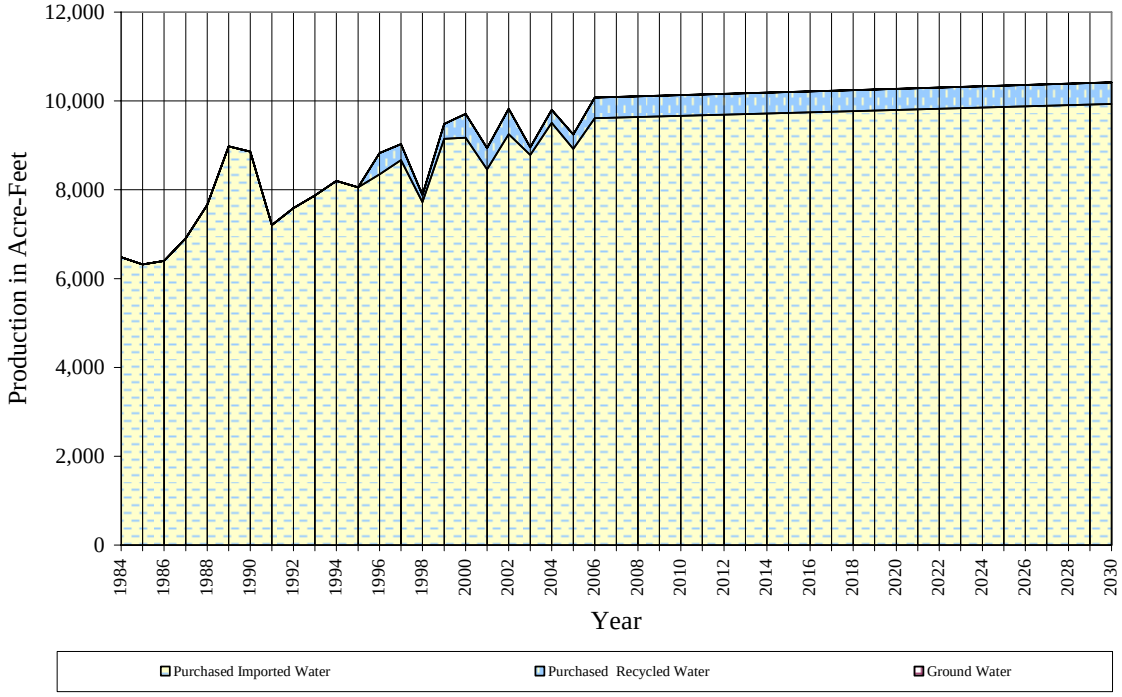


Figure 5.6-2: Historical & Average Projected Sources



The projected demand to be supplied by Calleguas Municipal Water District is shown in Table 5.6-3. The low demand represents the minimum purchase water volume when the potential reduction by conservation by the customers can be met. The average scenario represents the normal amount of the demand provided the 10% conservation goal is maintained. The high demand scenario represents the purchase volume if customer demand patterns returned to pre-drought non-conservation practices.

Table 5.6-3: Agency Demand Projections To Wholesale Supplier – AFY (Table 19)

Wholesaler	Demand		2010	2015	2020	2025	2030
Calleguas Municipal Water District	Low	Import	6,822	6,866	6,911	6,957	7,003
		Recycle	167	169	171	173	175
		Total	6,989	7,035	7,083	7,130	7,178
	Average	Import	9,664	9,730	9,796	9,863	9,932
		Recycle	466	472	478	484	489
		Total	10,130	10,202	10,274	10,347	10,421
	High	Import	13,009	13,104	13,201	13,298	13,396
		Recycle	638	646	654	662	670
		Total	13,647	13,750	13,855	13,960	14,066

6 Supply and Demand Comparison

6.1 Normal-Year Comparison

Tables 6.1-1, 6.1-2, and 6.1-3 compare the current and projected water supply and demand based on average consumption (Scenario 2). The projected increase in demand is 13% at year 2030 when compared to a normal year.

The CMWD Supply is based on the projections provided by CMWD in the Urban Water Management Plan as presented in Appendix J.

The recycled water supply and demand are equivalent because supply projections are not available. The recycled water demand was based on using the 5-year projected service connections with the average recycled water demand per service.

The tables show that CMWD projected supply is slightly higher (2 to 3%) when compared to the projected demand by Cal Water. This comparison shows that when average demand is maintained, for a normal water year, a sufficient supply is available.

Table 6.1-1: Projected Normal Water Supply - AF Year (Table 40)

	2010	2015	2020	2025	2030
CMWD Supply	9,793	9,910	10,029	10,149	10,271
Recycled Water Supply	466	472	478	484	489
% of Normal Year	116%	118%	119%	120%	122%

Table 6.1-2: Projected Normal Water Demand - AF Year (Table 41)

	2010	2015	2020	2025	2030
Demand	9,664	9,730	9,796	9,863	9,932
Recycled Water Demand	466	472	478	484	489
% of year 2005	110%	110%	111%	112%	113%

Table 6.1-3: Projected Supply and Demand Comparison - AF Year (Table 42)

	2010	2015	2020	2025	2030
Supply totals	10,259	10,382	10,507	10,633	10,760
Demand totals	10,130	10,202	10,274	10,347	10,421
Difference	129	180	233	286	339
Difference as % of Supply	1.26%	1.74%	2.22%	2.69%	3.15%
Difference as % of Demand	1.27%	1.77%	2.27%	2.76%	3.25%

6.2 Single Dry-Year Comparison

Typically, the demand increases during a single-dry year when compared to normal years. The water demand would increase due to maintenance of landscape and other high water uses that would normally be supplied by precipitation. The case of Westlake District, the highest demand per service for the past 10 years for the District shows the highest overall demand per service occurred in 2002, which was also the single dries year in this 10-year period. The historical demand was limited to the past 10 years because of the recycled service was incorporated in 1996.

Tables 6.2-1, 6.2-2, and 6.2-3 compare the current and projected water supply and demand. The tables indicate that the supply would be cut back by 4% while the demand would remain nearly the same.

Table 6.2-1: Projected Single Dry-year Water Supply - AF Year (Table 43)

	2010	2015	2020	2025	2030
CMWD Supply	9,279	9,391	9,504	9,617	9,733
Recycled Water Supply	572	579	586	593	600
% of Normal Year	96%	96%	96%	96%	96%

Table 6.2-2: Projected Single Dry-year Water Demand - AF Year (Table 44)

	2010	2015	2020	2025	2030
Demand	9,310	9,345	9,377	9,413	9,447
Recycled Water Demand	572	579	586	593	600
% of projected normal	98%	97%	97%	97%	96%

Table 6.2-3: Projected Single Dry-year Supply and Demand Comparison - AF Year (Table 45)

	2010	2015	2020	2025	2030
Supply totals	9,851	9,970	10,090	10,210	10,333
Demand totals	9,882	9,924	9,964	10,006	10,047
Difference	(31)	46	127	204	286
Difference as % of Supply	-0.3%	0.5%	1.3%	2.0%	2.8%
Difference as % of Demand	-0.3%	0.5%	1.3%	2.0%	2.8%

6.3 Multiple Dry-Year Comparison

During a multiple dry-year, supply and demand will be cut-back and will be met by stricter enforcement of conservation methods as outlined in Section 4.

Tables 6.3-1, 6.3-2, and 6.3-3 compare the projected water supply and demand for the period of 2006 to 2010 based on low consumption rates that occurred during 1996 to 2005. The lowest overall demand per service occurred in 1998. The supply is projected to be reduced by 16%, whereas the demand has been projected to be reduced by 20%, yielding approximately 2% greater supply when compared to demand.

Table 6.3-1: Projected Supply During Multiple Dry Year To 2010 (Table 46)
AFY

	2006	2007	2008	2009	2010
CMWD Supply	7,741	7,760	7,779	7,798	7816.5
Recycled Water Supply	434	435	436	438	439
% of Normal Year	84%	84%	84%	84%	84%

Table 6.3-2: Projected Demand Multiple Dry Year To 2010 (Table 47)
AFY

	2006	2007	2008	2009	2010
Demand	7,609	7,615	7,620	7,626	7,631
Recycled Water Demand	434	435	436	438	439
% of projected normal	80%	80%	80%	80%	80%

Table 6.3-3: Projected Supply And Demand Comparison To 2010 (Table 48)
During Multiple Dry Year Period - AFY

	2006	2007	2008	2009	2010
Supply totals	8,175	8,195	8,215	8,235	8,255
Demand totals	8,044	8,050	8,057	8,063	8,070
Difference	132	145	158	172	185
Difference as % of Supply	1.6%	1.8%	1.9%	2.1%	2.2%
Difference as % of Demand	1.6%	1.8%	2.0%	2.1%	2.3%

Tables 6.3-4, 6.3-5, and 6.3-6 compare the projected water supply and demand for 2011 to 2015 based on lowest overall demand per service for the period of 1996 to 2005.

Table 6.3-4: Projected Supply During Multiple Dry Year To 2015 (Table 49) AFY					
	2011	2012	2013	2014	2015
CMWD Supply	7,835	7,854	7,873	7,892	7,911
Recycled Water Supply	440	441	442	443	444
% of Normal Year	84%	84%	84%	84%	84%

Table 6.3-5: Projected Demand Multiple Dry Year To 2015 (Table 50) AFY					
	2011	2012	2013	2014	2015
Demand	7,637	7,643	7,648	7,654	7,659
Recycled Water Demand	440	441	442	443	444
% of projected normal	79%	79%	79%	79%	79%

Table 6.3-6: Projected Supply And Demand Comparison To 2015 (Table 51) During Multiple Dry Year Period - AFY					
	2011	2012	2013	2014	2015
Supply totals	8,275	8,295	8,315	8,335	8,355
Demand totals	8,077	8,083	8,090	8,097	8,103
Difference	198	212	225	238	251
Difference as % of Supply	2.4%	2.6%	2.7%	2.9%	3.0%
Difference as % of Demand	2.5%	2.6%	2.8%	2.9%	3.1%

Tables 6.3-7, 6.3-8, and 6.3-9 compare the projected water supply and demand for 2016 to 2020 based on lowest overall demand per service for the period of 1996 to 2005.

Table 6.3-7: Projected Supply During Multiple Dry Year To 2020 (Table 52) AFY					
	2016	2017	2018	2019	2020
CMWD Supply	7,930	7,949	7,967	7,986	8,005
Recycled Water Supply	445	446	447	448	449
% of Normal Year	84%	84%	84%	84%	84%

Table 6.3-8: Projected Demand Multiple Dry Year To 2020 (Table 53) AFY					
	2016	2017	2018	2019	2020
Demand	7,665	7,671	7,676	7,682	7,687
Recycled Water Demand	445	446	447	448	449
% of projected normal	79%	79%	79%	79%	79%

Table 6.3-9: Projected Supply And Demand Comparison To 2020 (Table 54) During Multiple Dry Year Period - AFY					
	2016	2017	2018	2019	2020
Supply totals	8,375	8,395	8,415	8,435	8,455
Demand totals	8,110	8,117	8,123	8,130	8,137
Difference	265	278	291	304	318
Difference as % of Supply	3.2%	3.3%	3.5%	3.6%	3.8%
Difference as % of Demand	3.3%	3.4%	3.6%	3.7%	3.9%

Tables 6.3-10, 6.3-11, and 6.3-12 compare the projected water supply and demand for 2021 to 2025 based on lowest overall demand per service for the period of 1996 to 2005.

Table 6.3-10: Projected Supply During Multiple Dry Year To 2025 (Table 55) AFY					
	2021	2022	2023	2024	2025
CMWD Supply	8,024	8,043	8,062	8,081	8,099
Recycled Water Supply	451	452	453	454	455
% of Normal Year	84%	84%	84%	84%	84%

Table 6.3-11: Projected Demand Multiple Dry Year To 2025 (Table 56) AFY					
	2021	2022	2023	2024	2025
Demand	7,693	7,699	7,704	7,710	7,716
Recycled Water Demand	451	452	453	454	455
% of projected normal	79%	79%	79%	79%	79%

Table 6.3-12: Projected Supply And Demand Comparison To 2025 (Table 57) During Multiple Dry Year Period - AFY					
	2021	2022	2023	2024	2025
Supply totals	8,474	8,494	8,514	8,534	8,554
Demand totals	8,144	8,150	8,157	8,164	8,171
Difference	331	344	357	370	384
Difference as % of Supply	3.9%	4.1%	4.2%	4.3%	4.5%
Difference as % of Demand	4.1%	4.2%	4.4%	4.5%	4.7%

Tables 6.3-13, 6.3-14, and 6.3-15 compare the projected water supply and demand for 2026 to 2030 based on lowest overall demand per service for the period of 1996 to 2005.

Table 6.3-13: Projected Supply During Multiple Dry Year To 2030 (Table 55) AFY					
	2026	2027	2028	2029	2030
CMWD Supply	8,100	8,099	8,099	8,098	8,098
Recycled Water Supply	456	457	458	459	461
% of Normal Year	80%	80%	80%	80%	80%

Table 6.3-14: Projected Demand Multiple Dry Year To 2030 (Table 56) AFY					
	2026	2027	2028	2029	2030
Demand	7,721	7,727	7,733	7,738	7,744
Recycled Water Demand	456	457	458	459	461
% of projected normal	79%	79%	79%	79%	79%

Table 6.3-15: Projected Supply And Demand Comparison To 2030 (Table 57) During Multiple Dry Year Period - AFY					
	2026	2027	2028	2029	2030
Supply totals	8,556	8,556	8,557	8,557	8,559
Demand totals	8,177	8,184	8,191	8,198	8,205
Difference	379	372	366	360	354
Difference as % of Supply	4.4%	4.3%	4.3%	4.2%	4.1%
Difference as % of Demand	4.6%	4.5%	4.5%	4.4%	4.3%

7 Water Demand Management

7.1 California Urban Water Conservation Council

California Water Service Company is a CUWCC member. Annual reports are attached in Appendix G. The reports are considered complete by CUWCC website.

7.2 Water Conservation Best Management Practices

Water conservation is a method available to reduce water demands, thereby reducing water supply needs for the Westlake District. This chapter presents an analysis of water conservation best management practices (BMPs) and a description of the methods and assumptions used to conduct the analysis.

The unpredictable water supply and ever increasing demand on California's complex water resources have resulted in a coordinated effort by the Department of Water Resources (DWR), water utilities, environmental organizations, and other interested groups to develop a list of urban BMPs for conserving water. This consensus-building effort resulted in a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), as amended September 16, 1999, among parties, which formalizes an agreement to implement these BMPs and makes a cooperative effort to reduce the consumption of California's water resources. Table 7.2-1 presents the BMPs as defined by the MOU. The California Urban Water Conservation Council (CUWCC) administers the MOU.

The MOU requires that a water utility implement only the BMPs that are economically feasible. If a BMP is not economically feasible, the water utility may request an economic exemption for that BMP. The BMPs as defined in the MOU are generally recognized as standard definitions of water conservation measures. California Water Service Company (Cal Water) is a signatory of the MOU. As a signatory of the MOU, Cal Water has agreed to implement the BMPs as defined in Exhibit 1 of the MOU that are cost beneficial and complete such implementation in accordance with the schedule assigned each BMP.

Table 7.2-1: Water Conservation Best Management Practices	
No.	**BMP Name**
1.	Water survey programs for single-family residential and multifamily residential connections.
2.	Residential plumbing retrofit.
3.	System water audits, leak detection and repair.
4.	Metering with commodity rates for all new connections and retrofit of existing connections.
5.	Large landscape conservation programs and incentives.
6.	High-efficiency washing machine rebate programs.
7.	Public information programs.
8.	School education programs.
9.	Conservation programs for commercial, industrial, and institutional accounts.
10.	Wholesale agency assistance programs.
11.	Conservation pricing.
12.	Conservation coordinator.
13.	Water waste prohibition.
14.	Residential ULFT replacement programs.

7.3 Economic Analysis Methodology and Assumptions

An economic analysis was conducted for six of the 14 BMPs that are described in the MOU (i.e. BMP nos. 1, 2, 5, 6, 9, and 14). Economic analyses were not done for BMPs 3, 7, 8, 10, 11, 12, and 13 because they are essentially non-quantifiable, but essential to the success of those BMPs that are quantifiable. An economic analysis was not done for BMP 4 since this BMP has been fully implemented.

Assumptions used in the economic analysis for each BMP are described in Table E-1 of Appendix H. Directly beneath each assumption is a brief description of the rationale and/or supporting evidence for that assumption. Common assumptions for all BMPs are the value of conserved water ($1,299/ac-ft), the real discount rate (6.15%), and the overhead rate (13%). The real discount rate is calculated from the assumed real cost of money (8.82%) and the assumed long-term inflation rate (2.52%) using the precise conversion method[8] (page A-2 of Ref.). Housing information and a breakdown of the number of connections for each connection category used for the economic analysis are presented in Table 7.3-1 and 7.3-2.

Table 7.3-1: Housing Estimates and Projections (1997)		
Year	Single family dwelling units	Multifamily dwelling units
1991	5,934	999
1997	6,097	1,062
2000	6,211	--
2005	6,370	--
2010	6,534	--
2015	6,701	--
2020	6,873	--

Table 7.3-2: Connections by Classifications (1997)	
Classification	Connections
Single family	6,097
Multifamily	65
Commercial	396
Industrial	14
Institutional	82
Irrigation/landscaping	0
Total	6,654

The economic analysis was performed using a spreadsheet model. Each BMP economic analysis spreadsheet projects, on an annual basis, the number of interventions and the dollar values of the benefits and costs that would result from implementing a particular BMP. Terms and formulas that are common to all the worksheets are defined in Table 7.3-3.

Table 7.3-3: Definition of Terms Used in the Economic Analysis		
Term	**Definition**	**Comments**
BENEFITS:		
Avoided Capital Costs	Capital costs that are avoided by implementing the BMP.	An example is the cost of a well that would not have to be installed due to implementation of the BMP.
Avoided Variable Costs	Variable costs that are avoided by implementing the BMP.	An example is the cost of electricity that would be saved if the BMP were implemented.
Avoided Purchase Costs	Purchase costs that are avoided by implementing the BMP.	An example is the cost of purchasing water that would not be needed due to implementation of the BMP.
Total Undiscounted Benefits	The sum of avoided capital costs, avoided variable costs and avoided purchase costs.	
Total Discounted Benefits	The present value of the sum of avoided capital costs, avoided variable costs and avoided purchase costs.	An annual percentage rate consisting of the cost of borrowing money minus the inflation rate.
COSTS:		
Capital Costs	Capital costs incurred by implementing the BMP.	For example, the cost to purchase and install meters for BMP 4.
Financial Incentives	The cost of financial incentives paid to connections.	Copay or distribution for purchasing low-flow plumbing devices or washing machines are examples of financial incentives.
Operating Expenses	Operational expenses incurred during implementation of the BMP.	
Total Undiscounted Costs	The sum of capital costs, financial incentives, and operating expenses.	
Total Discounted Costs	The present value of the sum of capital costs, financial incentives, and operating expenses.	The discount rate is used to calculate discounted costs from undiscounted costs.
NET PRESENT VALUE	Total discounted benefits minus total discounted costs.	A value greater than zero indicates an economically justifiable BMP.
RESULTS:		
Benefit / Cost Ratio	The sum of the total discounted benefits divided by the sum of the total discounted costs.	A ratio greater than one indicates an economically justifiable BMP.
Simple Pay-Back Period	The number of years required for the benefits to pay back the costs of the BMP, calculated as the sum of the total discounted costs divided by the average annual total discounted benefits.	A low value is considered economically attractive.
Discounted Cost / Water Saved	The present-value cost to save one acre-foot of water, calculated as the sum of the total discounted costs divided by the total acre-feet of water saved over the study period.	A low value is considered economically attractive because it indicates a low implementation cost. Value must be less than the marginal cost of new water to be cost effective.
Net Present Value / Water Saved	The net value of saving one acre-foot of water, calculated as the sum of the net present value divided by the total acre-feet of water saved over the study period.	A high value is considered economically attractive.

7.4 Economic Analysis Results

Table 7.4-1 summarizes the results of the economic analysis in terms of the benefit/cost (B/C) ratio, the simple payback period, the discounted cost per ac-ft of water saved, and the net present value (NPV) per ac-ft of water saved for each BMP.

Table 7.4-1: Results Of Economic Analysis

BMP No.	BMP Name	Total discounted cost over study period ($)	Total water saved [a] (ac-ft)	Benefit / cost ratio	Simple payback period (years)	Discounted cost / water saved ($/ac-ft)	Net present value / water saved ($/ac-ft)
1	Water survey programs for single family residential and multifamily residential connections.	162,196	199	1.3	10	815	212
2	Residential plumbing retrofits.	55,691	217	3.5	4	257	654
4	Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections	37,504	100	2.6	5	376	591
5	Large landscape conservation programs and incentives.	58,540	259	2.9	7	226	1,299
6	High-efficiency washing machine rebate programs.	133,532	569	3.3	7	235	532

[a] Total water saved over study period.

Annual water costs and savings for each of the BMPs with a B/C ratio equal to or greater than one are presented graphically on Figures 7.4-1 and 7.4-2 and summarized in Table 7.4-2. Table 7.4-2 also presents the number of annual interventions required for each BMP for the water system to be in compliance with the MOU for all cost effective BMPs. Interventions and costs shown for BMPs for prior year of 1998, 1999, and 2000, if not yet completed, would have to be implemented in future years.

Figures 7.4-1 and 7.4-2 and Table 7.4-2 do not include the water savings and costs associated with BMPs 3, 7, 8, 10, 11, 12, and 13 since no specific level of effort is defined in the MOU for these BMPs. BMP 4, 11, and 14 are already implemented and, therefore, have no cost associated with it. BMP 13 is covered by CPUC General Order 103, and has no cost unless triggered by a water shortage condition.

Figure 7.4-1: Westlake BMP Implementation Costs

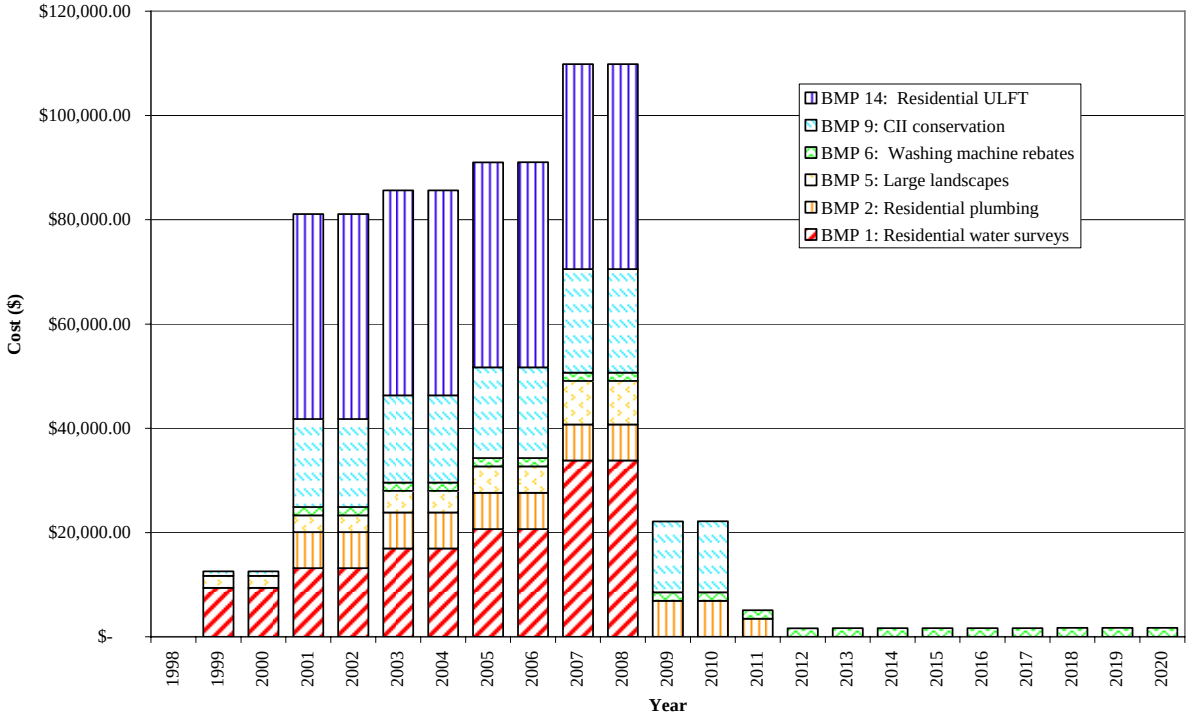


Figure 7.4-2: Westlake BMP Water Savings

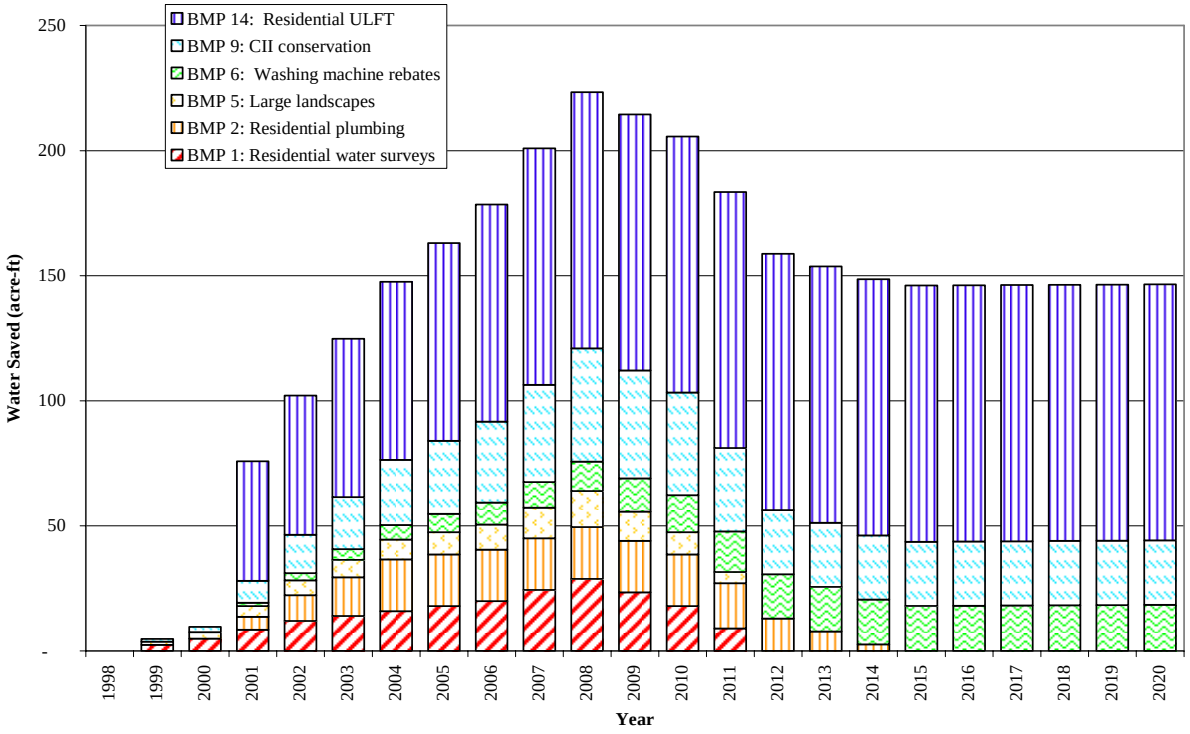


Table 7.4-2: Summary Of BMP Annual Interventions, Water Saved, Cost

	BMP 1: Residential water surveys			BMP 2: Residential plumbing			BMP 4: Metering new and retrofit connections			BMP 5: Large landscapes		
Year	Interventions	Water saved (ac-ft/yr)	Cost ($/yr)	Interventions	Water saved (ac-ft/yr)	Cost ($/yr)	Interventions	Water saved (ac-ft/yr)	Cost ($/yr)	Interventions	Water saved (ac-ft/yr)	Cost ($/yr)
1998							n/a	n/a	n/a			
1999	54	2	9,396							4	1	2,306
2000	54	5	9,396							4	2	2,306
2001	75	8	13,155	347	5	6,933				5	4	3,229
2002	75	12	13,155	347	10	6,933				5	6	3,229
2003	97	14	16,913	347	15	6,933				7	7	4,151
2004	97	16	16,913	347	21	6,933				7	8	4,151
2005	118	18	20,672	347	21	6,933				8	9	5,074
2006	118	20	20,672	347	21	6,933				8	10	5,074
2007	193	24	33,826	347	21	6,933				13	12	8,303
2008	193	29	33,826	347	21	6,933				13	14	8,303
2009		23		347	21	6,933					12	
2010		18		347	21	6,933					9	
2011		9		173	18	3,467					4	
2012					13							
2013					8							
2014					3							
2015												
2016												
2017												
2018												
2019												
2020												
Total	1,074	199	187,924	3,640	217	72,797	0	0	0	74	100	46,125

Note: B/C<1 indicates a benefit to cost ratio less than one.

Table 7.4-2: Summary Of BMP Annual Interventions, Water Saved, Cost (cont)

	BMP 6: Washing machine rebates			BMP 9: CII conservation			BMP 14: Residential ULFT			Total		
Year	Interventions	Water saved (ac-ft/yr)	Cost ($/yr)	Interventions	Water saved (ac-ft/yr)	Cost ($/yr)	Interventions	Water saved (ac-ft/yr)	Cost ($/yr)	Interventions	Water saved (ac-ft/yr)	Cost ($/yr)
1998										0	0	0
1999				1	1	871				59	5	12,574
2000				1	2	871				59	10	12,574
2001	62	1	1,561	5	9	16,899	312	48	39,321	806	76	81,097
2002	63	3	1,569	5	15	16,899	312	56	39,321	806	102	81,105
2003	63	4	1,577	4	21	16,725	312	63	39,321	830	125	85,620
2004	63	6	1,585	4	26	16,725	312	71	39,321	830	148	85,628
2005	64	7	1,593	5	29	17,422	312	79	39,321	854	163	91,014
2006	64	9	1,601	5	32	17,422	312	87	39,321	854	179	91,022
2007	64	10	1,609	9	39	19,862	312	95	39,321	939	201	109,853
2008	65	12	1,617	9	45	19,862	312	102	39,321	939	223	109,862
2009	65	13	1,625	0	43	13,588		102		412	214	22,146
2010	65	15	1,634	0	41	13,588		102		412	206	22,154
2011	66	16	1,642		33			102		239	183	5,108
2012	66	18	1,650		26			102		66	159	1,650
2013	66	18	1,659		26			102		66	154	1,659
2014	67	18	1,667		26			102		67	149	1,667
2015	67	18	1,675		26			102		67	146	1,675
2016	67	18	1,684		26			102		67	146	1,684
2017	68	18	1,692		26			102		68	146	1,692
2018	68	18	1,701		26			102		68	146	1,701
2019	68	18	1,710		26			102		68	146	1,710
2020	69	18	1,718		26			102		69	147	1,718
Total	1,311	259	32,767	49	569	170,732	2,497	1,829	314,569	8,644	3,173	824,912

Note: B/C<1 indicates a benefit to cost ratio less than one.

7.5 Additional Issues

Non-economic factors, including environmental, social, health, customer impacts, and technological are not thought to be significant in deciding which BMPs to implement. No water supply projects are currently planned that would supply water at a higher unit cost. Cal Water has the legal authority to implement the BMPs. However, the costs of implementing these BMPs are subject to CPUC approval.

7.6 Previous Water Management Program Accomplishments

Cal Water has conducted conservation programs in the Westlake District for several years. The Company believes that managing demand is an important element in the overall management of water supply and has made efforts to promote conservation through educational, informational, and customer assistance activities. However, as a result of the February 1994 CPUC Decision 94-02-1-043 ordering that conservation memorandum accounts be closed, conservation activities have been significantly curtailed in all Cal Water districts.

7.6.1 External Measures to Achieve Public Support

Table 7.6-1 indicates implementation levels in the Cal Water Westlake service area.

Table 7.6-1: Conservation Measure

Conservation Measure		Date Implemented	Program End Date
BMP-1	Residential Survey	2000/2001	n/a at this time
BMP-2	Residential Plumbing Retrofits	1991	Ongoing
BMP-5	Large Landscape Conservation Programs and Incentives	Proposing	n/a
BMP-6	High-efficiency Washing Machine Rebate Programs	Proposing	n/a
BMP-7	Public Education	1991	Ongoing
BMP-8	School Education	1991	Ongoing
BMP-9	Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts	Proposing	n/a
BMP-14	Residential ULFT Replacement Programs	Proposing	n/a

7.6.2 Internal Measures to Achieve Efficient Water Management

Cal Water currently implements internal measures that are intended to achieve efficient water management; these are discussed below:

<u>Distribution System Water Audit and Leak Detection Program</u>
Cal Water implemented an in-house water audit and leak detection program for its distribution systems. The program was administered by a company employee equipped with state-of-the-art leak detection equipment and trained in the methodology such as that

described in the American Water Works Association's *Manual of Water Supply Practices: Water Audits and Leak Detection*. It was expected that each district would be audited once every three years.

The most recent survey in Westlake was completed in June 1999. Thirty-three miles of main were surveyed, detecting 6 leaks. These leaks totaled 2.90 kgal of water loss per day.

Water Efficient Landscape Guidelines

In 1992, water efficient landscape guidelines were developed (See Appendix F). These guidelines apply to all landscapes designed for Cal Water properties including renovations. For ease of adoption by districts with a multitude of climates and microclimates, the guidelines are generic. They do, however, adhere to water efficient landscape (Xeriscape) principles.

7.7 Overall District Goals

Cal Water recognizes the importance of conservation in managing its own water resources. While economic and regulatory constraints of integrating conservation into supply management have proven challenging, Cal Water is participating in efforts to develop demand management strategies, standards, and criteria by working with the California Urban Water Conservation Council. This Council was formed as part of the MOU primarily to oversee the implementation of the BMPs and to improve water conservation practices and analyses. Cal Water is committed to this process and the development of an integrated resource plan.

Cal Water's conservation programs are intended to assist customers in their efforts to use water efficiently as well as to educate them about their water supply overall. This will lead them to make informed decisions concerning the efficient use of water and enable them to better respond to required reductions in water use should a water shortage or emergency occur. During periods of water shortages, the Company's conservation programs can be expanded and may include more restrictive measures such as mandatory reductions, rationing, and penalties.

7.8 Implementation

Cal Water proposes to run six conservation programs in the Westlake District at an annual cost of $97,958.95. Before implementing any conservation program, Cal Water must receive approval from the CPUC.

Table 7.8-1: Proposed Annual Conservation Program Budget 2006 – 2008					
Program		**2006**	**2007**	**2008**	**Total**
BMP-2	Residential Plumbing Retrofits	$5,339.24	$5,339.24	$5,339.24	$16,017.72
BMP-5	Large Landscape Conservation Programs and Incentives	$40,625.00	$40,625.00	$40,625.00	$121,875.00
BMP-6	High-efficiency Washing Machine Rebate Programs	$6,134.00	$6,134.00	$6,134.00	$18,402.00
BMP-7	Public Education	$4,893.00	$4,893.00	$4,893.00	$14,679.00
BMP-8	School Education	$4,893.00	$4,893.00	$4,893.00	$14,679.00
BMP-9	Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts	$2,437.50	$2,437.50	$2,437.50	$7,312.50
BMP-14	Residential ULFT Replacement Programs	$33,637.21	$33,637.21	$33,637.21	$100,911.63
	Total	$97,958.95	$97,958.95	$97,958.95	$293,876.85

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