



West Basin Municipal Water District

Urban Water Management Plan



2010





MESSAGE FROM THE BOARD OF DIRECTORS

Since its formation in 1947, West Basin has remained steadfast in its commitment to ensure a safe and reliable water supply for the region. Through the years, West Basin has grown and transformed seeking innovative and viable solutions to meet the changing needs of its communities. All of us at West Basin continue to expand our efforts to meet the growing water demand while preserving our limited and precious water resources. Through our Water Reliability 2020 Program, including recycling, conservation and desalination, West Basin will continue to diversify its local water supplies to ensure a reliable supply of water for future generations.

We are proud to submit this 2010 Urban Water Management Plan to the State Department of Water Resources. The Plan reports all current and projected water supplies and demands within West Basin's service area, demonstrates water reliability for the next 25 years and provides a comprehensive overview of West Basin's various programs.

Value Statement:

"Through various programs and projects, West Basin ensures that its customer agencies have a safe and reliable supply of water to provide to the residents, businesses and industries within its service area."

Directors

Division 1 (Director Ronald C. (Ron) Smith): Cities of Carson, Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills Estates, Rolling Hills and portions of San Pedro ;

Division 2 (Director Gloria D. Gray): Cities of Inglewood, South Ladera Heights, a portion of Lennox and Athens, Howard and Ross-Sexton;

Division 3 (Director Carol W. Kwan): Cities of Hermosa Beach, Lomita, Manhattan Beach, Redondo Beach and a portion of Torrance;

Division 4 (Director Edward C. Little): Cities of Culver City, El Segundo, Malibu, and West Hollywood, Lennox, North Ladera Heights, Del Aire, Topanga, View Park and Windsor Hills; and

Division 5 (Director Donald L. Dear): Cities of Gardena, Hawthorne, Lawndale and portions of El Camino Village.

Mission Statement

To provide a safe and reliable supply of high-quality water to the communities we serve.



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West Basin Municipal Water District 2010 Urban Water Management Plan

Prepared by:



May 2011



TABLE OF CONTENTS

Executive Summary	ES-1
1 West Basin’s Mission.....	ES-1
2 West Basin’s 2010 Urban Water Management Plan	ES-1
3 West Basin Service Area Demands	ES-1
4. Reducing Demand through Water Use Efficiency Planning.....	ES-2
5 West Basin Service Area Supplies.....	ES-4
6 Recycled Water Development.....	ES-5
7 Ocean-Water Desalination Development.....	ES-5
8 Maintaining the Quality of Water Supplies	ES-5
9 Water Rates and Charges	ES-6
Section 1 - Plan Preparation	1-1
1.1 Urban Water Management Planning Requirements	1-1
1.2 Regional Alliance UWMP	1-2
1.3 Plan Adoption.....	1-3
1.4 Agency Coordination.....	1-3
Section 2 West Basin’s Service Area	2-1
2.1 West Basin’s Regional Relationship.....	2-1
2.2 Climate Characteristics.....	2-4
2.3 Demographics.....	2-5
Section 3 Water Demand.....	3-1
3.1 Historical Water Demands.....	3-1
3.1.1 Historical Retail Demand	3-1
3.1.2 Historical Replenishment Demand	3-3
3.2 Current and Projected Water Demands	3-3
3.2.1 Current and Projected Retail Demand	3-4
3.2.2 Current and Projected Additional Water Uses and Losses.....	3-5
3.2.3 Projected Sales to Other Agencies	3-6
3.3 Regional Alliance Baseline and Target Demands.....	3-6
3.3.1 Regional Alliance Membership.....	3-6
3.3.2 Regional Alliance Base Use.....	3-7
3.3.3 Regional Alliance Water Use Targets.....	3-13
3.4 Water Use Reduction Plan.....	3-14



Section 4 Water Supply	4-1
4.1 West Basin Service Area Water Supply Portfolio	4-1
4.2 Imported Water Supply.....	4-3
4.2.1 Colorado River Resources	4-3
4.2.2 State Water Project Resources.....	4-4
4.2.3 Types of MWD Supply	4-5
4.3 Groundwater Supply.....	4-5
4.4 Water Transfers and Exchanges.....	4-8
4.5 Alternative Sources of Supply.....	4-8
Section 5 Water Reliability	5-1
5.1 Potential Impacts to Reliability	5-1
5.1.1 Imported Water Reliability.....	5-1
5.1.2 Groundwater Reliability	5-3
5.1.3 Recycled Water and Ocean-Water Desalination Reliability	5-4
5.1.4 Climate Change	5-4
5.2 Projected Supply Reliability	5-5
5.2.1 Single Dry Year	5-6
5.2.2 Multiple Dry Years.....	5-7
5.3 Water Shortage Contingency Plan.....	5-9
5.3.1 Water Surplus and Drought Management Plan.....	5-9
5.3.2 Drought Management Plan	5-11
5.3.3 West Basin’s Water Shortage Allocation Plan.....	5-13
5.3.4 Catastrophic Supply Interruption	5-15
Section 6 Water Quality.....	6-1
6.1 Imported Water.....	6-1
6.1.1 Source Water Protection	6-1
6.1.2 Support SWP Water Quality Programs	6-2
6.1.3 Water Quality Exchanges	6-2
6.1.4 Water Supply Security	6-2
6.2 Groundwater.....	6-3
6.2.1 West Basin and Customer Retail Agency Programs	6-3
6.2.2 Water Replenishment District Programs	6-3
6.3 Brackish Desalination	6-4



6.4 Recycled Water..... 6-4

6.5 Ocean-Water Desalination 6-5

6.6 Research and Development..... 6-5

6.7 Effects on Water Management Strategies 6-6

6.8 Effects on Supply Reliability 6-6

Section 7 Water Use Efficiency 7-1

7.1 Historical Water Conservation Efforts 7-1

7.2 West Basin and Customer Agency Water Conservation Master Plans..... 7-3

7.3 External Agency Coordination 7-4

7.3.1 Metropolitan Water District 7-4

7.3.2 California Urban Water Conservation Council (CUWCC) 7-5

7.4 CUWCC – New BMPs and Reporting Options 7-5

7.5 Current Water Conservation Programs..... 7-6

7.5.1 BMP #1 - Water Survey Programs for Single-Family Residential and Multi-Family Customers..... 7-7

7.5.2 BMP #2 - Residential Plumbing Retrofit..... 7-8

7.5.3 BMP #3 - System Water Audits, Leak Detection, and Repair..... 7-8

7.5.4 BMP #4 - Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections 7-8

7.5.5 BMP #5 - Large Landscape Conservation Programs and Incentives 7-9

7.5.6 BMP #6 - High-Efficiency Washing Machine Rebate Programs 7-11

7.5.7 BMP #7 - Public Information Programs 7-12

7.5.8 BMP #8 - School Education Programs 7-14

7.5.9 BMP #9 - Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts..... 7-14

7.5.10 BMP #10 - Wholesale Agency Programs 7-15

7.5.11 BMP #11 - Conservation Pricing..... 7-17

7.5.12 BMP #12 - Water Conservation Coordinator..... 7-17

7.5.13 BMP #13 - Water Waste Prohibition 7-17

7.5.14 BMP #14 - Residential Ultra-Low-Flush Toilet (ULFT) Replacement Programs.. 7-18

7.5.15 Additional Conservation Programs 7-19

7.6 Current and Future Education Programs..... 7-20

7.6.1 Current Programs..... 7-20

7.6.2 Future Programs..... 7-22



- 7.7 Conservation Program Partnerships7-23
- Section 8 Water Rates & Charges..... 8-1**
 - 8.1 MWD Rate Structure..... 8-1
 - 8.1.1 Purchase Orders 8-1
 - 8.1.2 Unbundled Rates and Tier 1 & 2 8-2
 - 8.1.3 Replenishment Service 8-3
 - 8.1.4 MWD Capacity Charge..... 8-3
 - 8.1.5 Readiness-to-Serve Charge..... 8-3
 - 8.2 West Basin’s Imported Water Rates 8-4
 - 8.2.1 Purchase Agreements 8-4
 - 8.2.2 Reliability Service Charge 8-4
 - 8.2.3 Readiness-to-Serve Surcharge..... 8-4
 - 8.2.4 Water Service Charge 8-4
 - 8.2.5 West Basin’s Capacity Charge 8-4
 - 8.2.6 Desalter Water Charges 8-5
 - 8.3 Recycled Water Rates..... 8-5
 - 8.3.1 Recycled Water Rates 8-5
 - 8.3.2 Recycled Water Standby Charge 8-6
 - 8.4 Future Water Rate Projections 8-6
 - 8.4.1 Imported Water Rate Projections..... 8-6
 - 8.4.2 Recycled Water Rate Projections..... 8-7
- Section 9 Recycled Water 9-1**
 - 9.1 Recycled Water Supply and Treatment 9-1
 - 9.2 Recycled Water Use 9-3
 - 9.2.1 Existing System..... 9-3
 - 9.2.2 Recycled Water Use by Type 9-5
 - 9.2.3 Historical and Current Sales 9-5
 - 9.2.4 Projected System Expansions 9-7
 - 9.2.5 Projected Recycled Water Use..... 9-9
 - 9.2.6 Encouraging Recycled Water Use 9-10
- Section 10 Desalination 10-1**
 - 10.1 Ocean Desalting Process.....10-1
 - 10.2 West Basin’s Ocean Water Desalination Pilot Project10-2



10.3 Ocean Water Desalination Demonstration Facility Projects.....	10-3
10.4 Future Ocean Water Desalination Projects.....	10-3
10.4.1 Ocean Water Desalination Full-Scale Facility.....	10-3
10.5 Brewer Desalter Treatment Facility.....	10-5

Appendices

Appendix A Urban Water Management Planning Act	A-1
Appendix B 2010 Urban Water Management Plan Checklist.....	A-2
Appendix C Notice of Public Hearing	A-3
Appendix D Resolution of Urban Water Management Plan Adoption.....	A-4
Appendix E Notice of Urban Water Management Plan Preparation.....	A-5
Appendix F Water Shortage Contingency Resolution	A-6
Appendix G Demand Management Measures Annual Reports	A-7

List of Tables

Table ES-1: Projected Water Basin Service Area Demand (AFY)	ES-2
Table ES-2: Regional Alliance 2015 Interim and 2020 Targets (gpcd)	ES-2
Table ES-3: West Basin and Retailer Program Participation	ES-3
Table ES-4: West Basin’s Service Area Projected Water Supply (AFY)	ES-4
Table 1-1: Coordination with Appropriate Agencies.....	1-4
Table 2-1: West Basin Average Climate Characteristics	2-4
Table 2-2: West Basin Service Area Current and Projected Population.....	2-5
Table 3-1: Historical Water Demand per West Basin Customer Agency	3-2
Table 3-2: Historical Replenishment Demand (AFY).....	3-3
Table 3-3: Projected West Basin Service Area Demand (AFY)	3-5
Table 3-4: Projected Retail Water Demand by West Basin Customer Agency (AFY)	3-5
Table 3-5: West Basin Additional Water Uses: Replenishment (AFY)	3-5
Table 3-6: West Basin Water Sales to External Agencies (AFY).....	3-6
Table 3-7: Regional Alliance Recycled Water Deliveries (2008).....	3-7
Table 3-8: Regional Alliance 10- to 15-Year Base Periods.....	3-8
Table 3-9: Regional Alliance 5-Year Base Period	3-8
Table 3-10: California Water Service Company (Hawthorne).....	3-9
Table 3-11: City of El Segundo.....	3-10



Table 3-12: City of Inglewood.....	3-10
Table 3-13: City of Lomita.....	3-11
Table 3-14: City of Manhattan Beach	3-11
Table 3-15: Los Angeles County Waterworks District #29	3-12
Table 3-16: Combined West Basin Regional Alliance.....	3-12
Table 3-17: Regional Alliance 2015 Interim and 2020 Targets (gpcd)	3-13
Table 3-18: West Basin and Retailer Program Participation	3-15
Table 4-1: West Basin Service Area Historical Retail Water Supply (AFY)	4-1
Table 4-2 West Basin’s Service Area Projected Water Supply (AFY).....	4-3
Table 4-3: West Coast Groundwater Basin Pumping Rights (AFY).....	4-6
Table 4-4: Historical Central Basin Groundwater Retail Imported Supply (AF)	4-6
Table 4-5: Historical Groundwater Retail Supply (AF)	4-7
Table 4-6: Historical Groundwater Replenishment Supply	4-7
Table 4-7: Current and Projected Retail Groundwater Supply (AF).....	4-7
Table 4-8: Current and Projected Replenishment Groundwater Supply.....	4-7
Table 5-1: Factors Resulting in Impacts to Reliability.....	5-1
Table 5-2: Basis of Water Years and Historic Conditions	5-6
Table 5-3: Supply Reliability- Current Water Sources	5-6
Table 5-4: Projected Average Year Supply and Demand.....	5-6
Table 5-5: Projected Single-Dry Year Supply and Demand (AF)	5-7
Table 5-6: Projected Multiple Dry-Year (2013-2015) Water Supply and Demand (AF) ..	5-8
Table 5-7: Projected Water Multiple Dry-Year (2018-2020) Supply and Demand (AF) .	5-8
Table 5-8: Projected Water Multiple Dry-Year (2023-2025) Supply and Demand (AF) .	5-8
Table 5-9: Projected Water Multiple Dry-Year (2028-2030) Supply and Demand (AF) .	5-9
Table 5-10: Projected Water Multiple Dry-Year (2033-2035) Supply and Demand (AF) .	5-10
Table 5-11: Example of Initial Minimum Allocation.....	5-13
Table 5-12: West Basin Allocation Penalty Rates	5-15
Table 7-1: Green Garden Program.....	7-7
Table 7-2: Residential Plumbing Retrofits.....	7-8
Table 7-3: Ocean-Friendly Landscape Program since Inception	7-10
Table 7-4: Comprehensive Landscape Survey Program Savings	7-10
Table 7-5: High-Efficiency Washing Machine Rebate Program Savings (2003-2010) ..	7-12
Table 7-6: Summary of CII Programs	7-16



Table 7-7: West Basin Wholesale Agency Program Support	7-17
Table 7-8: ULFT / HET Rebate Program	7-18
Table 7-9: One Day Free HET Replacement Program Savings	7-19
Table 7-10: Multi-Family Residential Device Replacements	7-19
Table 7-11 School Tours at ELCWRF	7-21
Table 8-1: West Basin Purchase Order Terms	8-2
Table 8-2: MWD Rates Adopted for 2011	8-2
Table 8-3: MWD Replenishment Service Rate Adopted for 2011	8-3
Table 8-4: Metropolitan Water District Capacity Charge for 2010	8-3
Table 8-5: 2010-2011 Recycled Water Rates	8-5
Table 9-1: Hyperion Wastewater Collected and Treated (AFY)	9-2
Table 9-2: Comparison of Recycled Water Use Projection (AFY)	9-6
Table 9-3: West Basin Recycled Water Sales FY 2000-2010 (AFY).....	9-8
Table 9-4: Projected Recycled Water Use (AFY)	9-10
Table 9-5: CIMP Coordination	9-11
Table 10-1: Opportunities for Desalinated Water	10-4

List of Figures

Figure ES-1: West Basin Service Area Projected Water Supplies.....	ES-4
Figure 2-1: West Basin Service Area and Recycled Water Facilities.....	2-2
Figure 2-2: West Basin Service Area Water Supplies	2-3
Figure 3-1: West Basin Service Area Historical Retail Water Demand vs. Population.....	3-2
Figure 3-2: Historical & Projected West Basin Demands for Each Supply Resource (AFY)	3-4
Figure 3-3: Regional Alliance Base and Target Use Summary	3-14
Figure 4-1: West Basin Service Area Projected Water Supplies.....	4-2
Figure 5-1: MWD Surplus and Shortage Stages	5-11
Figure 5-2: Example of Allocation Year Imported Water Demand Projection	5-12
Figure 5-3: Example of Initial Minimum Allocation.....	5-13
Figure 7-1: West Basin Conservation Water Savings (1990 – 2010).....	7-3
Figure 7-2: Total Retail Water Demand vs. Population Growth (1990 – 2010).....	7-4
Figure 7-3: Example Audit Report	7-10
Figure 8-1: Projected Imported Water Rates	8-7
Figure 9-1: West Basin’s Water Recycling Facilities	9-4



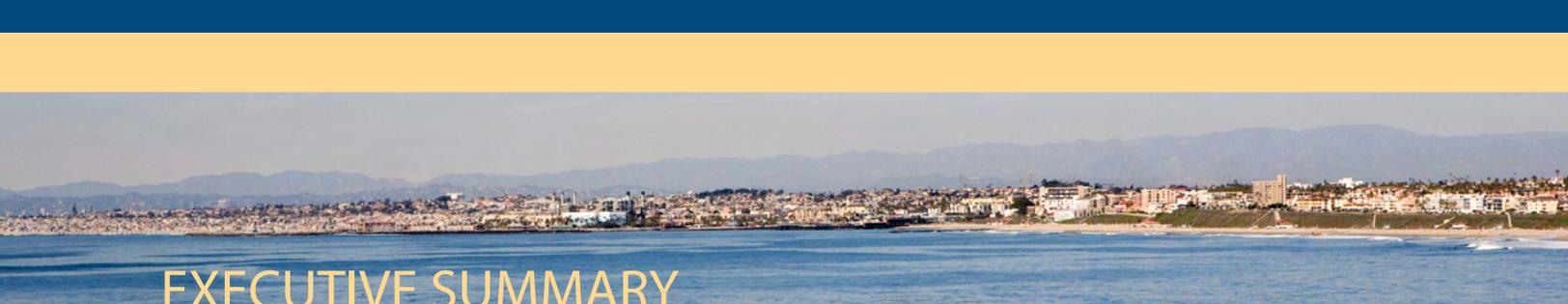
Figure 9-2: Recycled Water Use by Type.....	9-5
Figure 9-3: Historical Recycled Water Sales (FY 2000-2010)	9-6
Figure 10-1: Desalting Process.....	10-2
Figure 10-2: Treatment Technologies Used at West Basin’s Pilot Plant.....	10-2
Figure 10-3: West Basin’s New Desalination Demonstration Facility	10-4
Figure 10-4: Brewer Desalter Facility Equipment.....	10-5

Executive Summary



2010





EXECUTIVE SUMMARY

1 West Basin's Mission

West Basin Municipal Water District (West Basin) was established in 1947 to help mitigate the over pumping of groundwater by providing imported water from the Metropolitan Water District of Southern California (MWD) as replenishment supplies. Today, this imported water is also provided to supplement local supplies including groundwater, desalination, and recycled supplies developed by West Basin or by retailer agencies operating within West Basin's service area. In addition, a combination of recycled water and imported water is introduced into local aquifers through the West Coast Seawater Barrier to both protect the groundwater supplies from seawater contamination and replace, or replenish, what is pumped.

In January 2008, the West Basin Board adopted a Strategic Business Plan to address water supply issues that plague Southern California by focusing on producing new sources of local water, improving its environmentally-sound and innovative technologies, and emphasizing customer service and satisfaction. With a goal to decrease its service area's dependence on imported water by 50 percent between now and 2020, West Basin is expanding its recycled water customer base, exploring the feasibility of taking its ocean-water desalination project to the next level, and broadening its water use efficiency programs and outreach. Through various programs and projects, West Basin ensures that its customer agencies have a safe and reliable supply of water to provide to the residents, businesses and industries within its service area.

2 West Basin's 2010 Urban Water Management Plan

West Basin's 2010 Urban Water Management Plan (UWMP) revises the 2005 UWMP prepared by West Basin and incorporates changes enacted by legislation since 2005. Since 2005, several amendments have been added to the Urban Water Management Act. The most significant being the requirements mandated through the passing of Senate Bill (SB) X7-7 that seeks a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020 and for agencies to calculate individual water use reduction targets to help achieve this goal.

As a water wholesaler, West Basin is not required to provide these targets. However, given its' role as a regional water provider, West Basin has elected, in cooperation with a portion of its customer agencies, to use its 2010 UWMP as a regional alliance UWMP. Although each of West Basin's customer agencies must prepare individual 2010 UWMPs, West Basin's 2010 UWMP provides a regional target that will allow these retailers and West Basin to collaborate on the most effective and efficient programs that will ensure the targeted reductions in demand can be met.

3 West Basin Service Area Demands

While demand in the West Basin service area has historically increased due to increased population growth, recent years have shown a decrease in overall system demand. This decrease has been attributed to aggressive conservation program implementation due to drought conditions in 2007-8, an economic downturn resulting in less consumption beginning in 2009, and subsequent wet seasons in 2009 and 2010.



Table ES-1 and indicates that although West Basin’s service area population is projected to increase, the overall potable demand in acre-feet per year (AFY) is expected to decrease given further water use efficiency and recycled water program implementation.

Table ES-1: Projected West Basin Service Area Demand (AFY)

Year	2010	2015	2020	2025	2030	2035
Baseline Demand ¹	170,527	192,134	198,218	197,408	197,451	197,275
Planned Conservation ²	14,000	15,119	21,039	21,640	22,971	23,632
Final Total Retail Demand	156,527	177,015	177,179	175,768	174,480	173,643
Recycled Water Demand ³	14,182	16,368	33,882	33,882	37,382	37,382
Final Potable Demand	142,345	160,647	143,297	141,886	137,098	136,261

[1] Projections based on Water Demand Forecasting Model, 2010

[2] Water Use Efficiency Plan, Alliance for Water Efficiency Model, 2010

[3] Projections based on the Capital Implementation Master Plan, 2009

In terms of per capita use (in gallons per capita day (gpcd)), the West Basin Regional Alliance baseline and targeted water use for 2015 and 2020 are shown in table ES-2.

TableES-2: Regional Alliance 2015 Interim and 2020 Targets (gpcd)

Member	10-Year Base Water Use	Calculated Water Use Targets		Maximum Allowable Target	Final Targets	
		Method	Target		2015	2020
California Water Service Company Hawthorne	96.5	3	141.6	N/A	119.0	141.6
City of El Segundo	220.6	1	176.5	182.2	198.6	176.5
City of Inglewood	105.3	3	141.6	N/A	123.4	141.6
City of Lomita	123.4	3	141.6	116.2	119.8	116.2
City of Manhattan Beach	175.7	3	141.6	144.9	158.6	141.6
Los Angeles County Waterworks District #29	319.4	1	255.5	298.2	287.5	255.5
Regional Alliance	227.7	1	182.2	160.5	194.1	160.5

4 Reducing Demand through Water Use Efficiency Planning

Since the severe drought of the early 1990s, West Basin has been a leader implementing aggressive water conservation programs to help limit water demand within its service area. West Basin programs have included a strong emphasis on education and the distribution of rebate incentives and plumbing retrofit hardware. The results of these programs, in conjunction with passive conservation measures such as modifications to city ordinances, have resulted in significant reductions in retail water use within



West Basin’s service area. By current estimates, demand management from West Basin’s active and passive conservation efforts have saved over 3 billion gallons of imported water (10,000 AF) since 1991, which is equivalent to the average annual water use of almost 20,000 households.

In order further increase conservation and meet the 2020 and interim 2015 water use targets, West Basin has recently collaborated with its Regional Alliance agencies to develop and implement the future water use efficiency measures shown in Table ES-3.

Table ES-3: West Basin and Retailer Program Participation

Programs	West Basin	Los Angeles County Water-works District #29	City of El Segundo	City of Manhattan Beach	City of Hawthorne	City of Lomita	City of Inglewood
MWD							
Residential Rebate Program	X	X	X	X	X	X	X
Save A Buck Rebate Program	X	X	X	X	X	X	X
West Basin							
High-Efficiency Toilet (HET) Distribution Events	X	X	X	X	X	X	X
Green Living for Apartments and Condos (Direct HET Installations)	X	X	X	X	X	X	X
Ocean Friendly Landscape Program	X	X	X	X	X	X	X
Complete Restroom Retrofit Program	X	X	X	X	X	X	X
Recirc & Save Program	X	X	X	X	X	X	X
Cash for Kitchens	X	X	X	X	X	X	X
Education Programs	X	X	X	X	X	X	X
West Basin Programs (Funding Pending)							
High-Efficiency Nozzle Program	X	X	X	X	X	X	X
Water Star Schools Pilot Program	X	X	X	X	X	X	X
Water & Energy Efficiency in the Motel/Hotel and Schools Sectors	X	X	X	X	X	X	X
Other Water Retailer							
Turf Removal Program	N/A	X	-	-	-	-	-
HET Rebates (CII)	N/A	X	-	-	-	-	-
Landscape Surveys	N/A	X	-	-	-	-	-
Education Programs	N/A	X					
Landscape Incentives	N/A	X	-	-	-	-	-



5 West Basin Service Area Supplies

West Basin has been able to support the diversification of supplies available to its customer agencies by providing access to imported water supplies from MWD as well as through the development of recycled water supplies. These supplies are served directly to its customer agencies and indirectly as the replenishment supplies necessary to maximize groundwater production. Table ES-4 shows, West Basin is projecting to more than double current recycled water supplies as well as invest in over 20,000 AFY of ocean-water desalination supply. Coupled with an additional doubling of conserved supply through water use efficiency programs, the overall imported water use is expected to be cut nearly in half by 2035 as shown in Figure ES-1.

Table ES-4 West Basin’s Service Area Projected Water Supply (AFY)

Supplies	2010	2015	2020	2025	2030	2035
Groundwater ¹	36,360	45,000	45,000	45,000	45,000	45,000
Imported Water ²	104,985	114,647	76,797	75,386	70,598	69,761
Recycled Water ³	14,182	16,368	33,882	33,882	37,382	37,382
Desalination ⁴	500	1,000	21,500	21,500	21,500	21,500
Total	156,027	177,015	177,179	175,768	174,480	173,643
Conservation ⁵	14,000	15,119	21,039	21,640	22,971	23,632
Total	170,027	192,134	198,218	197,408	197,451	197,275

[1] Groundwater production within West Basin service area only.

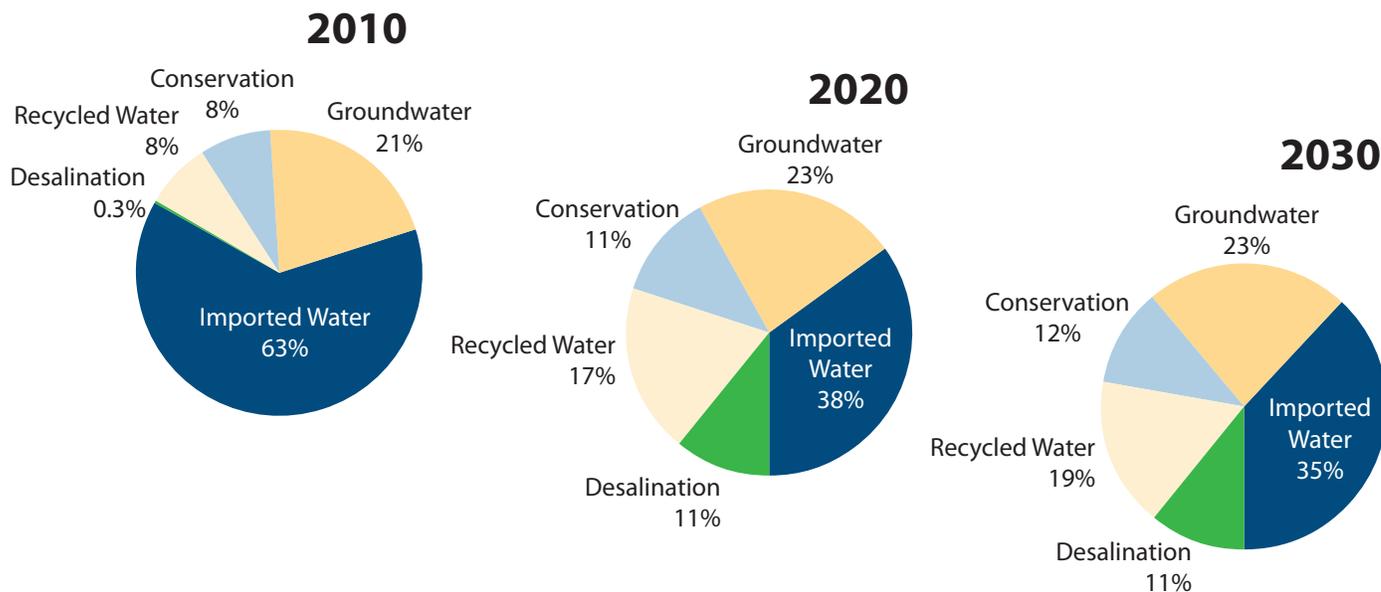
[2] Imported retail use only; does not include replenishment deliveries (i.e. Barrier).

[3] Recycled water does not include replenishment deliveries (i.e. Barrier) and deliveries outside the service area.

[4] Desalination includes both brackish and ocean-water.

[5] Conservation consists of Active and Passive savings according to West Basin’s projected estimates.

Figure ES-1: West Basin Service Area Projected Water Supplies





6 Recycled Water Development

Since planning and constructing its recycled water system in the early 1990s, West Basin has become an industry leader in water reuse. West Basin's recycled water supply is sold to customers for non-potable applications such as landscape irrigation, commercial and industrial processes, and indirect potable uses through groundwater replenishment. While serving to offset imported water supplies, recycled water use also results in less ocean discharge of lesser-treated wastewater into the Santa Monica Bay.

In fiscal year 2009-10, West Basin delivered about 30,400 AF of recycled water to sites inside and outside its service area, saving enough potable water to serve roughly 61,000 households. Within West Basin's service area, municipal and industrial recycled water use totaled about 15,500 AF and seawater barrier about 7,796 AF, which is about 13 percent of the District's current total water supplies. It is projected that recycled water sales could represent 19 percent of total water supplies by 2035.

7 Ocean-Water Desalination Development

In early 2011, West Basin dedicated its Ocean-Water Desalination Demonstration Facility and Water Education Center. West Basin used the data acquired from the pilot project in the planning and development of the demonstration facility that produces 50,000 gallons per day of drinking water. This Ocean-Water Desalination Demonstration Facility will test the viability of a future, full-scale Ocean-Water Desalination Facility capable of providing up to 20,000 AFY, or enough to supply 40,000 families for a year, in the initial phase.

West Basin will perform a Desalination Program Master Plan in 2011 that will evaluate potential siting opportunities within West Basin's service area that could accommodate a full-scale facility. Pending the findings from the demonstration facility, the Master Plan, and subsequent environmental review process, West Basin anticipates permitting, financing, and constructing a full-scale facility by 2017.

8 Maintaining the Quality of Water Supplies

Compliance with water quality regulations is a regional water management priority and a shared responsibility. West Basin is responsible for the quality of the desalination and recycled water supplies generated at the C. Marvin Brewer Desalter and Edward C. Little Water Recycling Facility (ECLWRF) and its satellite facilities: Carson Water Recycling Facility, Chevron Nitrification Plant and Exxon-Mobil Nitrification Plant. MWD is responsible for complying with State and Federal drinking water regulations on its imported potable water sold to West Basin. West Basin's retail customer agencies are responsible for ensuring compliance in their individual distribution systems and at the customer tap.



West Basin has a dedicated program and budget to constantly engage in research projects that evaluate water quality, efficient operations and new pollution prevention technology and methods. Research projects close the environmental loop by addressing both final product water as well as source control issues to prevent pollution and the need for cleanup technology. West Basin leverages its research dollars by participating on the Boards of water industry research organizations such as WaterReuse, American Water Works Associations, National Water Research Institute, Salinity Management Coalition as well as participating with academic institutions in water quality research.

9 Water Rates and Charges

As a water wholesale agency, West Basin does not directly charge residential and other end-use customers for supplies. Instead, West Basin's customer agencies purchase water from West Basin and then combine it with other supplies to deliver to their retail customers at a variety of rates.

West Basin's current potable water rates are primarily based upon the costs of imported supplies purchased from MWD. Imported water purchased by West Basin from MWD carries not only the cost of acquiring, importing, treating and distributing the water throughout the region, but also these costs associated with maintaining MWD reliability and "readiness to serve". The total West Basin rate structure must include the value-added costs associated with distributing to customer agencies the MWD and locally-produced recycled and desalinated groundwater supplies.

SECTION ONE

Plan Preparation



2010





SECTION 1 Plan Preparation

An Urban Water Management Plan (UWMP) is prepared by a water purveyor to ensure an appropriate level of water service reliability sufficient to meet the needs of its customers during normal, single dry or multiple dry years. The California Urban Water Management Planning Act of 1983 (Act), as amended, requires urban water suppliers to develop an UWMP every five years in the years ending in zero and five.

In describing the importance of the Act, the legislature declared that waters of the State are a limited and renewable resource, subject to ever increasing demands as well as the following tenants:

- That the conservation and efficient use of urban water supplies are of statewide concern;
- That successful implementation of plans is best accomplished at the local level;
- That conservation and efficient use of water shall be actively pursued to protect both the people of the State and their water resources;
- That conservation and efficient use of urban water supplies shall be a guiding criterion in public decisions; and
- That urban water suppliers shall be required to develop water management plans to achieve conservation and efficient use.

West Basin Municipal Water District's (West Basin) 2010 UWMP has been prepared in compliance with the requirements of the Act, as amended to 2009 (Appendix A), and includes the following:

- West Basin's Service Area
- Water Demand
- Water Supply
- Water Reliability
- Water Quality
- Water Use Efficiency
- Water Rates & Charges
- Water Recycling
- Desalination

1.1 Urban Water Management Planning Requirements

West Basin's 2010 UWMP revises the 2005 UWMP prepared by West Basin and incorporates changes enacted by legislation since 2005. The UWMP also incorporates water use efficiency efforts West Basin has implemented or is considering implementing pursuant to the Memorandum of Understanding Regarding Urban Water Conservation in California (MOU)¹. West Basin was one of the first agencies to become signatory to the MOU in September 1991.

¹ The Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) was adopted in September 1991 by a large number of water suppliers, public advocacy organizations and other interested groups. It created the California Urban Water Conservation Council and established 16 Best Management Practices (BMPs) for urban water conservation, recently refined to 14 BMPs. West Basin became signatory to the MOU in September 1991.



The sections in this UWMP correspond to the outline of the Act, specifically Article 2, Contents of Plans, Sections 10631, 10632, and 10633. The sequence used for the required information, however, differs slightly in order to present information in a manner reflecting the unique characteristics of West Basin. The most recent version of the Department of Water Resources' (DWR) UWMP Checklist has been completed, which identifies the location of Act requirements in this UWMP and is included as Appendix B.

Since 2005, several amendments have been added to the Urban Water Management Act. The major changes to the Act impacting preparation of the 2010 UWMPs include the following:

- Requirement of at least 60 days advance public notice to city or county prior to public hearing on UWMP;
- Requirement that the UWMP includes water use projects for single-family and multi-family residential housing needed for low income and affordable households (retailers only); and
- Requirement that "indirect potable reuse" of recycled water be described and quantified in the UWMP, including a determination with regard to the technical and economic feasibility of serving those uses.

The most significant impact on 2010 UWMPs was the requirements mandated through the passing of Senate Bill (SB) X7-7. On November 10, 2009, the state legislature passed SB X7-7 (or the Water Conservation Bill of 2009) as a water conservation component to the Delta legislative package that seeks a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. SB X7-7 requires that each retail agency preparing a 2010 UWMP must calculate a baseline water use as well as an interim (for 2015) and final (for 2020) water use reduction target. The methodologies used to calculate both the baseline and targets were outlined in the Draft and Final UWMP guidelines published by DWR in December 2010 and March 2011. Since final guidelines were not released until March 2011, the deadline for retailer UWMP adoption and submittal has been extended to July 1, 2011. In September 2010, SB 1478 was signed by the Governor of California to extend the 2010 UWMP deadline to July 1, 2011 for wholesale agencies as well as retailers.

1.2 Regional Alliance UWMP

As a water wholesaler, West Basin is not required to provide SB X7-7 water use reduction targets. However, given its role as a regional water provider, West Basin has elected, in cooperation with a portion of its customer agencies, to use its 2010 UWMP as a regional alliance UWMP. According to DWR's 2010 UWMP guidelines, a regional demand reduction target can be developed by a regional alliance of multiple agencies to show compliance with SB X7-7. Although each of West Basin's customer agencies must prepare individual 2010 UWMPs with individual baseline and target calculations, West Basin's 2010 UWMP provides a regional target that will allow these



retailers and West Basin to collaborate on the most effective and efficient programs that will ensure that the targeted reductions in demand can be met. Additional information is described in Section 2: Water Demand.

1.3 Plan Adoption

The draft 2010 UWMP was completed in April 2011 and available for a 45 day-public review. The draft UWMP was available at local libraries and on West Basin’s web site to facilitate the involvement of various social, cultural and economic elements of the population. Once finalized, the UWMP was adopted by a Resolution of the West Basin Board of Directors in May 2011, following a public hearing. The UWMP was then submitted to DWR within 30 days of Board approval. Copies of the Notice of Public Hearing and the Resolution of Plan Adoption are included in Appendices C and D, respectively.

The UWMP is intended to serve as a general, flexible, and open-ended document that periodically can be updated to reflect changes in the region’s water supply trends, and conservation and water use efficiency policies. This UWMP, along with West Basin’s other planning documents, will be used by West Basin staff to guide it’s service area’s water use and management efforts through the year 2015, when the UWMP is required to be updated next.

1.4 Agency Coordination

To facilitate the preparation of the draft UWMP, West Basin concurrently developed the West Basin Water Demand Forecasting Model as well as a Water Use Efficiency Master Plan for use by West Basin as well as its customer agencies. During this process, West Basin staff met with all of its customer agencies to discuss the demand model, calculation of SB X7-7 baseline and targets and the 2010 UWMP and offered to provide assistance when requested. West Basin also hosted a stakeholder workshop during the draft UWMP public review period. At the workshop, West Basin provided its customer agencies with consistent information for use in the development of their 2010 UWMPs.

West Basin is a water wholesaler and is fully dependent on the Metropolitan Water District of Southern California (MWD) for its imported water supplies. Therefore, West Basin provided comments and information during development of MWD’s Draft Regional Urban Water Management Plan (RUWMP) which was distributed on June 4, 2010. West Basin staff also attended a June 2010 information meeting for stakeholders and the public from within MWD’s service area.

As a summary of West Basin’s agency coordination, Table 1-1 describes the coordination among West Basin, its customer agencies, the County of Los Angeles and MWD during the review of the draft UWMP.



Table 1-1: Coordination with Appropriate Agencies

Agency	Participation in Regional Alliance	Received Copy of Draft	Attended Customer Workshop	Commented on Draft	Sent Notice of Intention to Adopt
County of Los Angeles - Water Resources		X			X
Metropolitan Water District of Southern California		X		X	X
California American Water Company		X	X		X
California Water Service Company		X			X
City of El Segundo	X	X	X		X
City of Inglewood	X	X			X
City of Lomita	X	X			X
City of Manhattan Beach	X	X	X		X
Golden State Water Company		X	X		X
LA County Waterworks District #29	X	X	X	X	X
Water Replenishment District of Southern California		X			X

SECTION TWO
Service Area



2010



SECTION 2 West Basin's Service Area

Today, West Basin's service area covers approximately 185-square miles and wholesale potable water is distributed to 17 cities, investor-owned utilities and water districts in Los Angeles County.

In addition, West Basin supplies recycled water to over 300 customer sites for municipal, commercial and industrial use as well as for injection into the West Coast Basin Seawater Barrier to halt seawater intrusion and replenish the aquifers.



These facilities and West Basin's service are shown in Figure 2-1. Several of West Basin's customer agencies also pump groundwater supplies from the underlying West Coast Groundwater Basin to help meet their demands. A small amount of water is also used in the California Water Service Company's service area from West Basin's C. Marvin Brewer Desalter, which treats brackish groundwater from the West Coast Groundwater Basin for drinking water use.

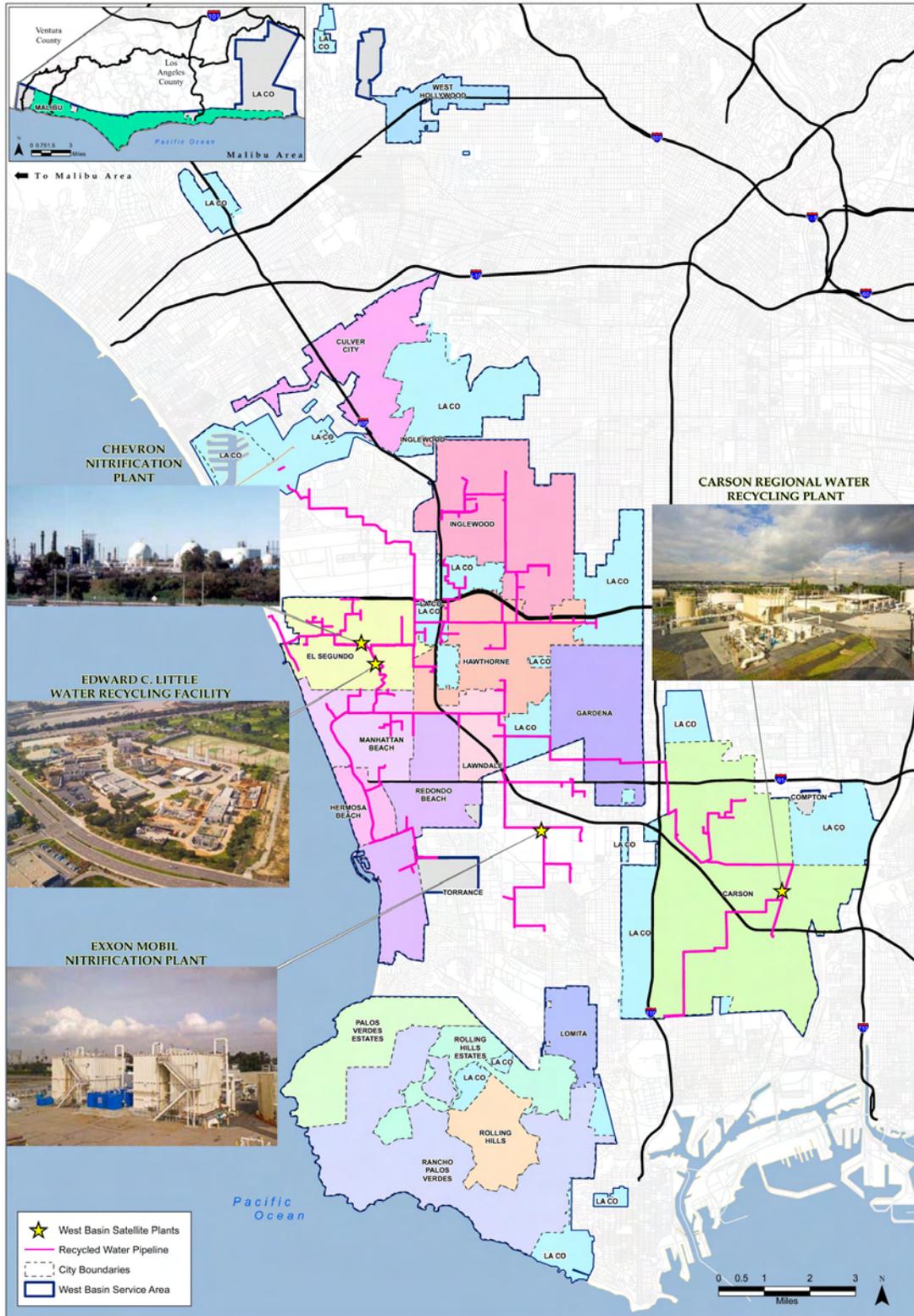
Approximately 1 million people are served within West Basin's service area which is governed by a five member elected Board of Directors. The Board of Directors guides the mission and policy of West Basin and each director serves a four-year term once elected.

2.1 West Basin's Regional Relationship

West Basin was established by a vote of the people in 1947 to help mitigate the over pumping in the West Coast Groundwater Basin (WCGB). West Basin's founders realized they would have to curtail the use of groundwater by providing the growing region with imported water. Therefore, West Basin also became a member agency of the MWD in 1947 to purchase, on a wholesale level, potable water imported from the Colorado River and the State Water Project to sell to local municipalities, investor-owned utilities and smaller water districts.



Figure 2-1: West Basin Service Area and Recycled Water Facilities





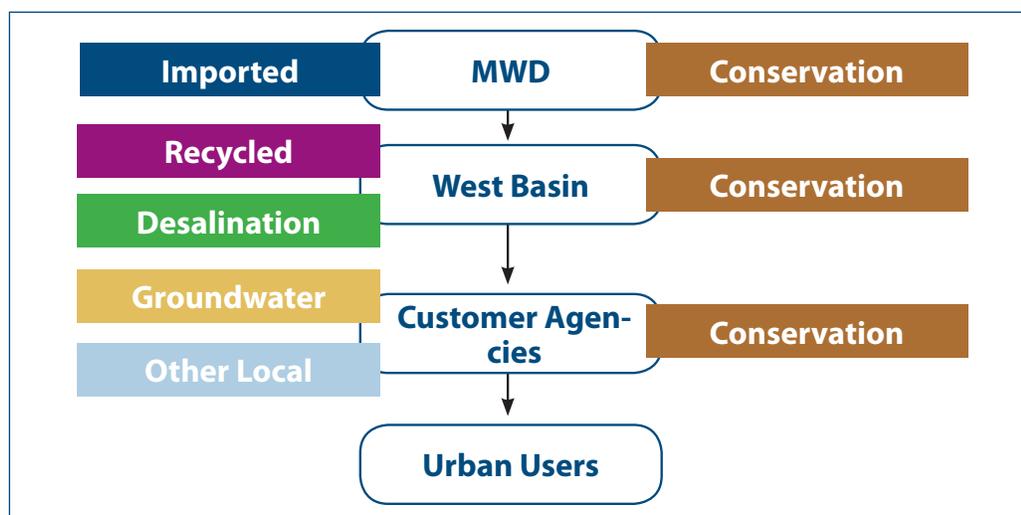
Today, West Basin imports water to supplement local supplies including groundwater, brackish desalination, and recycled water developed by both West Basin and its retail agencies operating within West Basin’s service area. In addition, a blend of recycled and imported water is injected into the West Coast Basin Seawater Barrier to both protect the groundwater supplies from seawater contamination and replenish the aquifers. West Basin remains one of the largest member agencies in MWD’s family of water agencies and representation on the MWD Board is critical to making West Basin’s customer’s voices heard at MWD to shape favorable outcomes on regional water issues. West Basin’s Board of Directors appoints two representatives to serve on the 37-member MWD Board of Directors.

In January 2008, the West Basin Board adopted a Strategic Business Plan to address water supply issues that plague Southern California by focusing on producing new sources of local water, improving its environmentally-sound and innovative technologies, and emphasizing customer service and satisfaction. West Basin affirmed this new vision as an independent agency after concluding its joint operating agreement with Central Basin Municipal Water District, allowing West Basin to focus on the unique needs of its service area.

With a goal to decrease its service area’s dependence on imported water by 50 percent between now and 2020, West Basin is implementing a Water Reliability 2020 Program (WR 2020) that will double its recycled water customer base, explore the feasibility of taking its ocean-water desalination demonstration project to the next level, and double its water use efficiency programs and outreach. Through WR 2020, West Basin ensures that its customer agencies have a safe and reliable supply of water to provide to the residents, businesses and industries within its service area.

Figure 2-2 illustrates the relationship West Basin has between MWD and its customer agencies to provide the region with diversified and integrated water supplies.

Figure 2-2: West Basin Service Area Water Supplies





2.2 Climate Characteristics

West Basin’s service area lies in the heart of Southern California’s coastal plain. The climate is Mediterranean, characterized by typically warm, dry summers and wet, cool winters with an average precipitation level of approximately 12.23 inches per year. The combination of mild climate and low rainfall makes the area a popular residential destination, which creates challenges for water agencies to provide for increased water demands with a tight water supply.

Areas with low precipitation, such as Southern California, are typically vulnerable to droughts. Historically, West Basin has experienced patterns of multiple dry years that have resulted in severe drought periods as was experienced in 1977-78, 1989-92, 1999-2004, and most recently 2007-2009. Excessively dry conditions increase the local demand given that less natural precipitation is available to meet landscaping irrigation needs. Drought conditions typically result in shortages given that this increase in demand is coupled with a decrease in natural supply.

Table 2-1 illustrates the historical average climate conditions for the overall Los Angeles and West Basin region. The potential for changes to the local climate and the resulting impacts are further discussed in Section 4: Water Supply.

Table 2-1: West Basin Average Climate Characteristics

	Standard Monthly Average Eto (inches)	Average Rainfall (inches)	Average Temperature (Fahrenheit)
January	1.83	2.72	65.1
February	2.03	2.75	65.4
March	3.48	1.93	65.2
April	4.21	0.78	67.5
May	4.62	0.17	69.2
June	4.54	0.05	72
July	5.37	0.02	75.2
August	5.06	0.08	76.4
September	4.21	0.16	76.1
October	2.94	0.37	73.6
November	1.83	1.46	70.3
December	1.46	1.74	66.1
Annual	3.47	12.23	70.2

Sources: Temperature and Precipitation: Western Climate Center’s web site at the Los Angeles WSO Airport Station between 1/1/1914 and 12/31/2005 <http://wrcc.dri.edu/cgi-bin/cliMAIN.pl?calosa>. Eto data: California Irrigation Management Information System (CIMIS) at the Long Beach Station for the Los Angeles Region between 1/1/2000 and 12/31/2010. <http://www.cimis.water.ca.gov/cimis/welcome.jsp>



2.3 Demographics

West Basin’s service area encompasses 185 square miles in southwest Los Angeles County and includes 17 cities and several unincorporated areas. Given the dense urban nature of West Basin’s service area, population has and was expected to rise over time. However, current projections show that population is expected to increase minimally through 2035.

Table 2-2 displays the current and projected population within West Basin’s service area over the next 25 years. This population projection shows a more conservative increase in population relative to the projection provided in West Basin’s 2005 UWMP.

Table 2-2: West Basin Service Area Current and Projected Population

Year (FY)	2010	2015	2020	2025	2030	2035
Total Population (# of persons)	853,377	874,219	892,116	909,498	926,592	942,893
Single Family (# of households)	169,843	172,738	175,181	176,760	178,248	179,274
Multi-Family (# of households)	117,020	121,023	124,544	127,360	130,222	132,678
Total Household	286,863	293,761	299,725	304,120	308,470	311,952
Persons Per Household	2.95	2.95	2.95	2.96	2.97	2.99
Employment	386,070	392,203	396,123	400,471	405,666	410,341

Source: Population data from the Department of Finance and Southern California Association of Governments (SCAG) and West Basin Demand Forecasting Model, 2010



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SECTION THREE

Water Demand



2010





SECTION 3 Water Demand

With an estimated current population of approximately 850,000 as well as dense commercial and industrial areas, the total retail water demand within West Basin's service area is currently about 157,000 AFY. West Basin is responsible for meeting both the direct retail demand from its customer agencies through imported (potable) and recycled water, as well as groundwater replenishment / seawater intrusion barrier demand from the Water Replenishment District of Southern California (WRD).

While demand in the West Basin service area has historically increased due to increased population growth, recent years have shown a decrease in overall system demand. West Basins' 2005 UWMP projected a 2010 demand of nearly 40,000 AFY more than what was experienced this past year. This decrease has been attributed to aggressive conservation program implementation due to drought conditions in 2007-09, an economic downturn resulting in less consumption beginning in 2009, and subsequent wet seasons in 2009 and 2010.

These decreases have been experienced throughout Southern California and have come at a time when California has implemented new legislation calling for an overall 20 percent decrease in per capita water use by the year 2020. West Basin's 2010 UWMP provides a regional alliance target for per capita water use reductions by 2020 with an interim target for 2015 that is in compliance with the State's Water Conservation Bill of 2009.

This section will explore in greater detail West Basin's historical, current and projected water demands. As a water wholesaler in the region, West Basin will also provide a regional baseline and demand reduction targets for its customer agencies that are part of the regional alliance.

3.1 Historical Water Demands

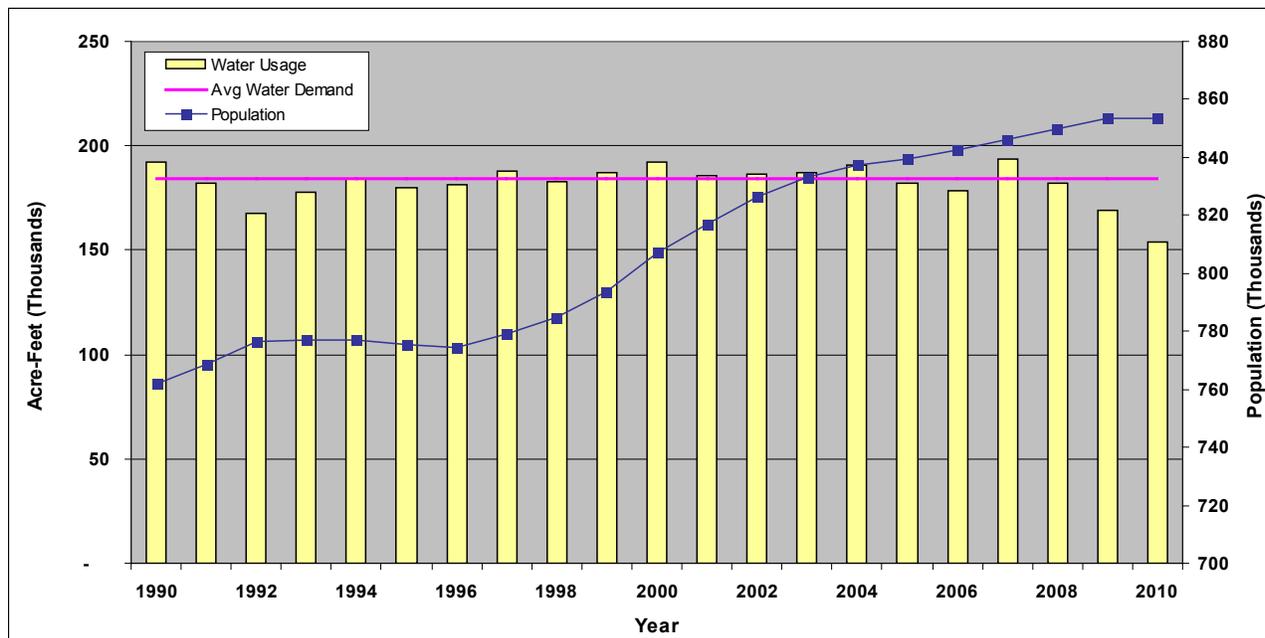
Total water use within West Basin's service area includes retail demand for potable and recycled water, and groundwater replenishment. Retail demand is defined as a population's direct consumption - or all municipal (residential, firefighting, parks, etc.) and industrial uses. Replenishment demand is the supply needed to maintain the groundwater operations in the basin and are not used directly by residences, municipalities or industries.

3.1.1 Historical Retail Demand

Historically, within the West Basin service area, increases in population have not resulted in increases in overall water demand as shown in Figure 3-1. In fact, within the last five years, demand has decreased relative to population increases. This is because other factors such as climate, economics/water rates and conservation programming also impact demand. Water use efficiency is more aggressive in drought years and resulting in decreases in demand during those periods. Once severe droughts have passed, demand will often begin to slightly rise again. While these patterns may represent a fluctuation in per capita usage, the fact that total demand has not risen along with the overall population indicates increases in water use efficiency in average or wet years.



Figure 3-1: West Basin Service Area Historical Retail Water Demand vs. Population



Source: Population data from the Department of Finance and Southern California Association of Governments (SCAG). Water usage data from actual water sales.

Table 3-1 shows the historical demand of each of West Basin’s retail agencies as reported to West Basin by those agencies. Although some agencies have seen some dramatic shifts in water demand, there is an overall decrease of retail agency demand by 3 percent in the last five years relative to 2001-2005.

Table 3-1: Historical Water Demand per West Basin Customer Agency

Retail Agency	2001-2005	2006-2010	% Change
California American Water Co.	3,601	4,063	13%
Cal Water Service Co.- Dominguez	36,636	38,167	4%
Cal Water Service Co. - Hermosa/Redondo	16,022	14,450	-10%
Cal Water Service Co.- Palos Verdes	20,536	21,524	5%
Cal Water Service Co.- Hawthorne	5,216	4,616	-12%
City of El Segundo	17,354	17,577	1%
City of Inglewood	11,899	11,496	-3%
City of Lomita	2,729	2,459	-10%
City of Manhattan Beach	8,547	6,188	-28%
L.A. County Waterworks District #29	11,924	9,738	-18%
Golden State Water	35,657	34,185	-4%
Total	170,121	164,463	-3%

Source: Based upon actual water use sales.

Note: California American Water Co. and California Water Service Co - Dominguez include pumping from the Central Groundwater Basin into the West Basin service area.



3.1.2 Historical Replenishment Demand

The West Coast Groundwater Basin is reliant upon replenishment supplies to not only meet demand but also to maintain water quality levels. Groundwater in this basin is annually extracted beyond the natural level of replenishment, and as a result, seawater begins to intrude into the basin along the coast. The current method in preventing seawater from contaminating the groundwater basin is by injecting freshwater supplies into the West Coast and Dominguez Gap Seawater Intrusion Barriers.

While the Los Angeles County Department of Public Works (LACDPW) maintains these barriers, WRD is responsible for acquiring the supply necessary to meet the protection and replenishment demands. As the wholesaler in the region, West Basin sells treated imported and recycled water to WRD to inject into the seawater barriers. As Table 3-2 shows, WRD's demands over the last five years average about 19,000 annually from West Basin. Water demands at the barriers usually do not shift dramatically due to the limited groundwater production each customer is allowed annually. The LACDPW determines the quantity of injection based on the need to maintain protective elevations along the barrier system. Generally however, less groundwater production from the aquifers translates into less demand for barrier injection.

Table 3-2: Historical Replenishment Demand (AFY)

Retailer	2001-2005	2006-2010
Water Replenishment District	22,295	19,011

Source: Based upon actual water use sales.

3.2 Current and Projected Water Demands

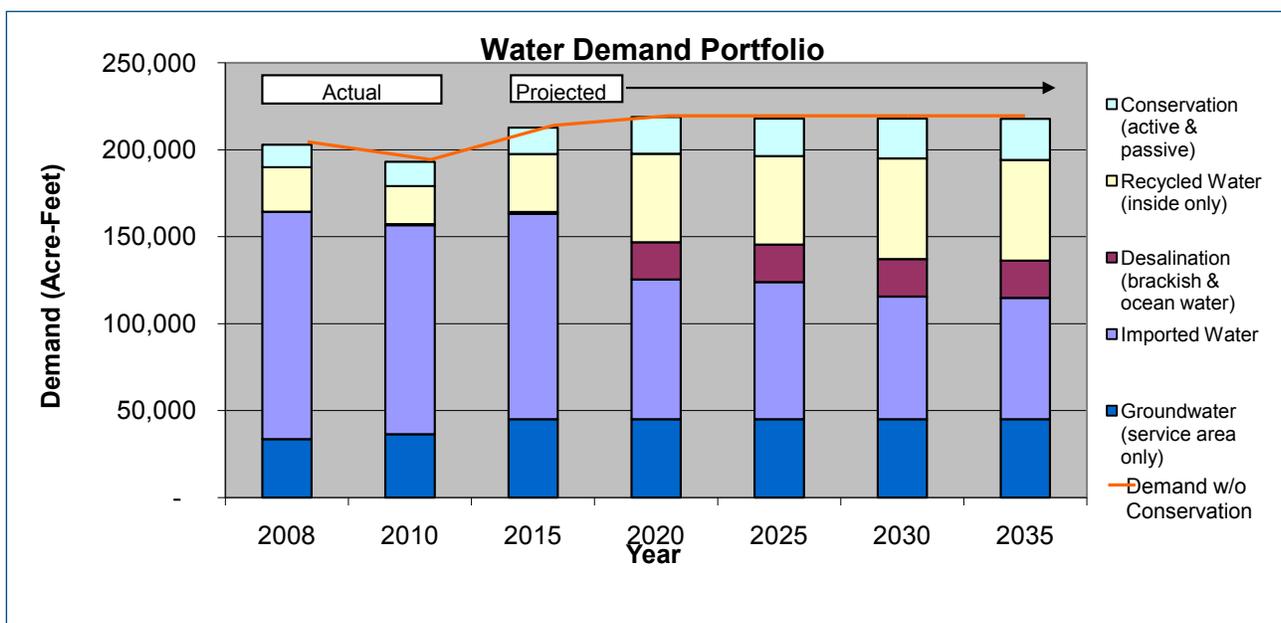
One of the objectives of this plan is to provide some insight into West Basin's expected water demands for the next 25 years. The predictability of water usage is an important element in planning future water supplies. In 2010, West Basin completed the Water Demand Forecasting Model that was used to project demand through 2035 for West Basin's entire service area. The water demand forecasting model produces various scenarios depending on the level of conservation activities anticipated, change in the cost of water, economic recovery and weather changes. These scenarios can be adjusted to determine different projected demand outcomes based on the change in conditions described above.

For example, the model was also used to show the anticipated decrease in demand that could be achieved as a result of the implementation of planned conservation programs by both West Basin and its retail customer agencies. West Basin then used the Alliance for Water Efficiency tracking tool to calculate the gallons per capita per day baseline usage and conservation targets. This per capita analysis for the regional alliance members follows the guidelines for the Water Conservation Bill of 2009 compliance.



Figure 3-2 provides an overview of the anticipated demands divided into supply sources (including conservation as a means to meet the anticipated demand). This figure also reflects the recent decrease in demand since 2008 and the anticipated future increase in natural demand as the economy improves. However, given planned conservation activities as described at the close of this section, conserved supply will actually offset this demand, maintaining a static level of overall demand of less than 200,000 AFY from 2015 through 2035.

Figure 3-2: Historical and Projected West Basin Demands for Each Supply Resource (AFY)



3.2.1 Current and Projected Retail Demand

Table 3-3 provides the projected total retail demand and potable retail demands net recycled water within West Basin’s service area. This table reflects both the baseline demand anticipated if no additional conservation were implemented as well as the final total demand after planned conservation is implemented. A final potable demand is provided that removes the portion of the total demand that is to be met with recycled water supplies as planned and described in Section 4.

Table 3-3 does not include groundwater basin replenishment demands so as not to double count groundwater extraction by West Basin customer agencies. These replenishment demands are captured in Table 3-5. The demand projections shown in Table 3-3 and Table 3-4 include projected water use for lower income single-family and multifamily residential housing within West Basin’s service area. As these household demands are served through West Basin’s retail customer agencies, the details about those demands are contained within the individual customer agency UWMPs.



Table 3-3: Projected West Basin Service Area Demand (AFY)

Year	2010	2015	2020	2025	2030	2035
Baseline Demand ¹	170,527	192,134	198,218	197,408	197,451	197,275
Planned Conservation ²	14,000	15,119	21,039	21,640	22,971	23,632
Final Total Retail Demand	156,527	177,015	177,179	175,768	174,480	173,643
Recycled Water Demand ³	14,182	16,368	33,882	33,882	37,382	37,382
Final Potable Demand	142,345	160,647	143,297	141,886	137,098	136,261

[1] Projections based on Water Demand Forecasting Model, 2010 [2] Water Use Efficiency Master Plan, Alliance for Water Efficiency Model, 2010 [3] Projections based on the Capital Implementation Master Plan, 2009

Table 3-4 lists the water use projections for each of West Basin's retail customer agencies net of conservation. These projected demands were estimated by analyzing historical water use for each customer agency and then pro-rated for each projected total demand for their service areas. They may not coincide with the individual retail agency UWMPs.

Table 3-4: Projected Retail Water Demand by West Basin Customer Agency (AFY)

Retail Agency	2010	2015	2020	2025	2030	2035
California American Water Co.	3,737	4,226	4,230	4,196	4,165	4,145
Cal Water Service Co.- Dominguez	35,372	40,002	40,039	39,720	39,429	39,240
Cal Water Service Co.- Hawthorne	4,539	5,134	5,138	5,097	5,060	5,036
Cal Water Service Co. - Hermosa/Redondo	14,188	16,045	16,059	15,932	15,815	15,739
Cal Water Service Co.- Palos Verdes	20,681	23,388	23,410	23,223	23,053	22,942
City of El Segundo	16,739	18,930	18,948	18,797	18,659	18,569
City of Inglewood	10,853	12,273	12,285	12,187	12,097	12,039
City of Lomita	2,411	2,727	2,729	2,707	2,688	2,675
City of Manhattan Beach	6,083	6,879	6,885	6,831	6,781	6,748
L.A. County Waterworks District #29 ²	8,289	11,293	11,220	11,922	12,608	13,266
Golden State Water Company	32,515	36,770	36,805	36,511	36,244	36,070
Total¹	156,527	177,015	177,179	175,768	174,480	173,643

[1] Total projects based on water demand forecasting model [2] Provided by L.A. County Waterworks District #29

3.2.2 Current and Projected Additional Water Uses and Losses

West Basin's replenishment demands (the same as seawater intrusion barrier demands) are captured in Table 3-5. Water system losses and other factors are not included in West Basin's UWMP but are instead described by the retail customer agencies.

Table 3-5: West Basin Additional Water Uses: Replenishment (AFY)

	2010	2015	2020	2025	2030	2035
Imported Water	15,274	3,500	3,500	3,500	-	-
Recycled Water	7,706	16,980	16,980	16,980	20,480	20,480
Total	22,980	20,480	20,480	20,480	20,480	20,480

Source: Projections based on the Capital Implementation Master Plan, 2009.



3.2.3 Projected Sales to Other Agencies

West Basin also sells recycled water supplies to agencies outside of its service area to meet external non-potable demands. These demands are summarized in Table 3-6.

Table 3-6: West Basin Water Sales to External Agencies (AFY)

	2010	2015	2020	2025	2030	2035
City of Los Angeles	719	6,650	6,650	6,650	6,650	6,650
City of Torrance	6,248	10,700	10,700	10,700	10,700	10,700
Total	6,967	17,350	17,350	17,350	17,350	17,350

Source: West Basin Water Demand Forecasting Model, 2010

Note: Sales are only recycled water

3.3 Regional Alliance Baseline and Target Demands

The Water Conservation Bill of 2009 (often referred to as SB X7-7 legislation) requires individual retail water suppliers to set water conservation targets for 2015 and 2020 to support an overall state goal of reducing urban potable per capita water use by 20 percent by 2020. Individual supplier conservation targets must be determined using one of four methods that are based upon a baseline of use that is calculated using the specific guidelines described in DWR’s Guidebook to Assist Water Suppliers to Prepare a 2010 Urban Water Management Plan (DWR Guidebook).

As a regional water supply wholesale agency, West Basin is not required to report baseline or target demands in keeping with the Water Conservation Act of 2009. However, as a regional supplier, West Basin has elected to use its 2010 UWMP as the reporting mechanism for a regional alliance formed by some of its retail customer agencies to meet the per capita baseline and target reporting requirements of the Water Conservation Bill of 2009. Since not all of West Basin’s retail agencies elected to participate in the regional alliance, the overall historical and projected demand within West Basin’s service area described in Section 3.1 and 3.2 will be greater than the regional alliance per capita baseline described in this Section 3.3.

The decision for the investor-owned companies (California American Water Company, California Water Service Company, and Golden State Water Company) to not participate in the regional alliance is because much of their jurisdictions are outside West Basin’s service area. Therefore, they each elected to comply as their own agency including their respective service areas across the State.

3.3.1 Regional Alliance Membership

The West Basin regional alliance members include the following West Basin retail customer agencies:



- California Water Service Company (Hawthorne region)
- City of El Segundo
- City of Inglewood
- City of Lomita
- City of Manhattan Beach
- Los Angeles County Waterworks District #29

As a regional alliance, these agencies worked with West Basin to establish a regional baseline of water use and conservation targets for 2015 and 2020. They will also collaborate on implementing the recycled water and conservation programs and projects that will be required to meet these targets.

3.3.2 Regional Alliance Base Use

The regional alliance members used the step by step process called out in the DWR Guidebook to determine the base daily water use for each member. That process and the resulting calculations are described in this section.

Step 1: Determine Supplier Base Period Year Ranges

Table 3-7 provides the recycled water deliveries in 2008 for each member of the regional alliance. The resulting analysis shows that the cities of El Segundo, Inglewood and Manhattan Beach meet over 10 percent of their demand through recycled water deliveries. Therefore these cities are allowed to use a range of 10 to 15 years from which to calculate their baseline water use. Since California Water Service Company (Hawthorne), City of Lomita and Los Angeles County Waterworks District #29 have less than 10 percent of their supply met with recycled water deliveries; they can only use a 10 year range to calculate their baseline use.

Table 3-7: Regional Alliance Recycled Water Deliveries (2008)

Regional Alliance Members	Total Water Deliveries	Total Recycled Water Deliveries	% Recycled Water Deliveries
California Water Service Company - Hawthorne	4,682	94	2%
City of El Segundo	12,765	8,986	70%
City of Inglewood	11,716	2,621	22%
City of Lomita	2,501	7	0%
City of Manhattan Beach	6,697	848	13%
Los Angeles County Waterworks District #29	10,310	0	0%
Regional Alliance Total	57,394	12,556	22%

Table 3-8 shows the resulting 10- to 15-year base period and Table 3-9 shows the five-year base period that will be used for each regional alliance member. The base periods were selected by determining the most appropriate set of years to represent each regional alliance member’s baseline use given the methodologies available through DWR.



Table 3-8: Regional Alliance 10- to 15-Year Base Periods

Regional Alliance Members	Number of Years in Base Period	Beginning Year	Ending Year
California Water Service Company - Hawthorne	10	1995	2004
City of El Segundo	10	1995	2004
City of Inglewood	10	1995	2004
City of Lomita	10	1998	2007
City of Manhattan Beach	10	1995	2004
Los Angeles County Waterworks District #29	10	1999	2008

Table 3-9: Regional Alliance 5-Year Base Period

Regional Alliance Members	Number of Years in Base Period	Beginning Year	Ending Year
California Water Service Company - Hawthorne	5	2003	2007
City of El Segundo	5	2005	2009
City of Inglewood	5	2003	2007
City of Lomita	5	2003	2007
City of Manhattan Beach	5	2003	2007
Los Angeles County Waterworks District #29	5	2005	2009

Step 2: Estimate Distribution System Area and Population

The composition of the regional alliance member distribution system boundaries does not match the West Basin service area. Therefore, the distribution service area descriptions and maps for each member of the regional alliance are provided as part of their individual agency 2010 UWMPs and not within West Basin’s 2010 UWMP.

The service area population for each agency was determined independently as part of the demand forecasting model development. The service area populations used came from the Southern California Association of Government and Department of Finance projections based upon 2000 census data and predicted economic growth. The population for each regional alliance member for each of the base years is provided in Table 3-10 through Table 3-17.

Step 3: Calculate Gross Water Use

Gross water use for each year within the base year range was provided by each agency. The gross water use for each alliance member was calculated using DWR’s Methodology 1 and is described in more detail within each of the alliance member 2010 UWMPs.



Step 4: Calculate Base Per Capita Demand

An annual per capita use was determined by dividing the actual potable water produced for each regional alliance member by the corresponding service area populations that were determined in Step 3 for each of the base year ranges. A final base gross water use is calculated by taking the average per capita use for all years within the selected 10-year range. These calculations are shown in Table 3-10 through Table 3-17.

The five-year base range was used to calculate average gross water use more recently to determine if any regional alliance members are already below the DWR 100 gpcd threshold. Those members with use lower than 100 gpcd, would not be required to meet any further demand reductions.

**Table 3-10: California Water Service Company (Hawthorne)
Base Daily Per Capita Water Use**

Year	Calendar Year	Population	Gross Water Use (mgd*)	Per Capita Use (gpcd**)
1	1995	42,503	4.2	99.9
2	1996	42,784	4.1	95.4
3	1997	43,065	4.4	101.6
4	1998	42,980	4.3	99.4
5	1999	42,957	4.1	96.0
6	2000	43,088	4.3	98.9
7	2001	46,217	4.2	91.2
8	2002	46,175	4.2	91.4
9	2003	45,147	4.3	95.4
10	2004	46,175	4.4	95.7
10 Year Base Daily Per Capita Use				96.5
1	2003	45,147	4.3	96.0
2	2004	46,175	4.6	98.9
3	2005	46,190	4.2	91.2
4	2006	46,174	4.2	91.4
5	2007	46,199	4.4	95.4
5 Year Base Daily Per Capita Use				94.6

* mgd = millions of gallons per day

** gpcd = gallons per capita per day



Table 3-11: City of El Segundo - Base Daily Per Capita Water Use

Year	Calendar Year	Population	Gross Water Use (mgd)	Per Capita Use (gpcd)
1	1995	15,525	3.8	241.9
2	1996	15,497	3.7	238.0
3	1997	15,543	3.8	241.5
4	1998	15,636	3.7	236.0
5	1999	15,766	3.7	233.9
6	2000	16,033	3.7	228.3
7	2001	16,292	3.4	209.2
8	2002	16,475	3.2	195.6
9	2003	16,663	3.2	191.5
10	2004	16,810	3.2	190.5
10 Year Base Daily Per Capita Use				220.6
1	2005	16,904	3.0	178.5
2	2006	16,901	3.1	186.2
3	2007	16,912	3.2	188.4
4	2008	16,877	3.4	199.9
5	2009	16,937	3.5	206.3
5 Year Base Daily Per Capita Use				191.8

Table 3-12: City of Inglewood - Base Daily Per Capita Water Use

Year	Calendar Year	Population	Gross Water Use (mgd)	Per Capita Use (gpcd)
1	1995	89,156	11.1	124.8
2	1996	89,432	10.2	114.0
3	1997	89,709	10.1	112.2
4	1998	89,987	8.3	92.0
5	1999	90,266	8.6	95.7
6	2000	90,545	9.4	103.6
7	2001	90,545	8.8	97.1
8	2002	90,545	9.1	100.2
9	2003	90,545	9.6	106.4
10	2004	90,545	9.7	106.7
10 Year Base Daily Per Capita Use				105.3
1	2003	90,545	9.6	106.4
2	2004	90,545	9.7	106.7
3	2005	94,212	9.4	100.2
4	2006	94,704	9.0	94.7
5	2007	95,199	8.2	86.2
5 Year Base Daily Per Capita Use				98.8



Table 3-13: City of Lomita - Base Daily Per Capita Water Use

Year	Calendar Year	Population	Gross Water Use (mgd)	Per Capita Use (gpcd)
1	1998	19,416	2.3	119.0
2	1999	19,477	2.4	125.7
3	2000	19,538	2.5	126.5
4	2001	19,538	2.4	122.5
5	2002	19,538	2.5	129.2
6	2003	19,538	2.5	128.1
7	2004	19,538	2.5	127.5
8	2005	19,830	2.4	119.0
9	2006	19,867	2.3	116.6
10	2007	19,905	2.4	120.3
10 Year Base Daily Per Capita Use				123.4
1	2003	19,538	2.5	128.1
2	2004	19,538	2.5	127.5
3	2005	19,830	2.4	119.0
4	2006	19,867	2.3	116.6
5	2007	19,905	2.4	120.3
5 Year Base Daily Per Capita Use				122.3

Table 3-14: City of Manhattan Beach - Base Daily Per Capita Water Use

Year	Calendar Year	Population	Gross Water Use (mgd)	Per Capita Use (gpcd)
1	1995	32,516	5.7	175.6
2	1996	32,399	7.6	233.1
3	1997	32,656	5.9	179.6
4	1998	32,806	5.5	166.9
5	1999	32,981	5.9	179.1
6	2000	33,852	5.8	172.3
7	2001	34,557	5.6	163.2
8	2002	35,427	5.8	163.1
9	2003	36,198	5.8	160.0
10	2004	36,464	6.0	164.2
10 Year Base Daily Per Capita Use				175.7
1	2003	36,198	5.8	160.0
2	2004	36,464	6.0	164.2
3	2005	36,581	5.5	151.5
4	2006	36,364	5.3	144.6
5	2007	36,240	5.2	142.1
5 Year Base Daily Per Capita Use				152.5



Table 3-15: Los Angeles County Waterworks District #29 - Base Daily Per Capita Water Use

Year	Calendar Year	Population	Gross Water Use (mgd)	Per Capita Use (gpcd)
1	1999	27,200	8.3	306.6
2	2000	27,473	8.4	307.1
3	2001	27,473	8.2	298.3
4	2002	27,473	9.0	327.4
5	2003	27,473	9.0	328.3
6	2004	27,473	9.4	341.4
7	2005	27,650	8.6	310.5
8	2006	28,056	8.8	315.1
9	2007	28,467	9.7	340.8
10	2008	28,885	9.2	318.6
10 Year Base Daily Per Capita Use				319.4
1	2005	27,650	8.6	310.5
2	2006	28,056	8.8	315.1
3	2007	28,467	9.7	340.8
4	2008	28,885	9.2	318.6
5	2009	29,308	8.3	284.7
5 Year Base Daily Per Capita Use				313.9

Table 3-16: Combined West Basin Regional Alliance - Base Daily Per Capita Water Use

Year	Calendar Year	Population	Gross Water Use (mgd)	Per Capita Use (gpcd)
1	1995	225,069	56.2	249.6
2	1996	225,804	59.7	264.5
3	1997	226,990	57.1	251.5
4	1998	227,755	53.8	236.4
5	1999	228,647	54.8	239.6
6	2000	230,529	54.0	234.2
7	2001	234,622	51.1	217.7
8	2002	235,633	49.9	211.8
9	2003	235,564	43.2	183.5
10	2004	237,005	44.6	188.2
10 Year Base Daily Per Capita Use				227.7
1	2003	235,564	43.2	183.5
2	2004	237,005	44.6	188.2
3	2005	241,367	43.0	178.3
4	2006	242,067	41.7	172.2
5	2007	242,923	42.5	175.1
5 Year Base Daily Per Capita Use				179.5



3.3.3 Regional Alliance Water Use Targets

The regional alliance water use targets were calculated by first determining which of the four allowable target calculation methods would be used for each member of the regional alliance. These methods are:

- Method 1: 80 percent of ten-year baseline per capita use
- Method 2: Applying performance standards
- Method 3: 95 percent of the DWR South Coast Region target of 149
- Method 4: Applying savings by water sector

These selected methods were applied to the 10-year base per capita water use calculated in Tables 3-10 through 3-16 to determine a target per capita water use level for 2020. Once these targets were determined, they were confirmed by comparing them against DWR’s maximum allowable target. The maximum allowable target is equivalent to 95 percent of each alliance member’s five-year base per capita use calculated in Tables 3-10 through Table 3-16.

If the five-year base per capita use was less than 100 gpcd, then there is no maximum target for that supplier since they would be considered by DWR to be sufficiently efficient in water use. If the 2020 calculated target is greater than the maximum allowable target, then the maximum allowable target must be used instead of the calculated 10-year base targets.

Table 3-17 provides the final per capita targets for each member of the Regional Alliance as well as the overall targets for the combined Regional Alliance. Cells highlighted in gold indicate whether the calculated or maximum allowable target was used to determine the final 2020 target. Once the final 2020 water use target has been calculated, then an interim target is created by calculating the median between the 10-year base per capita use and the final 2020 target.

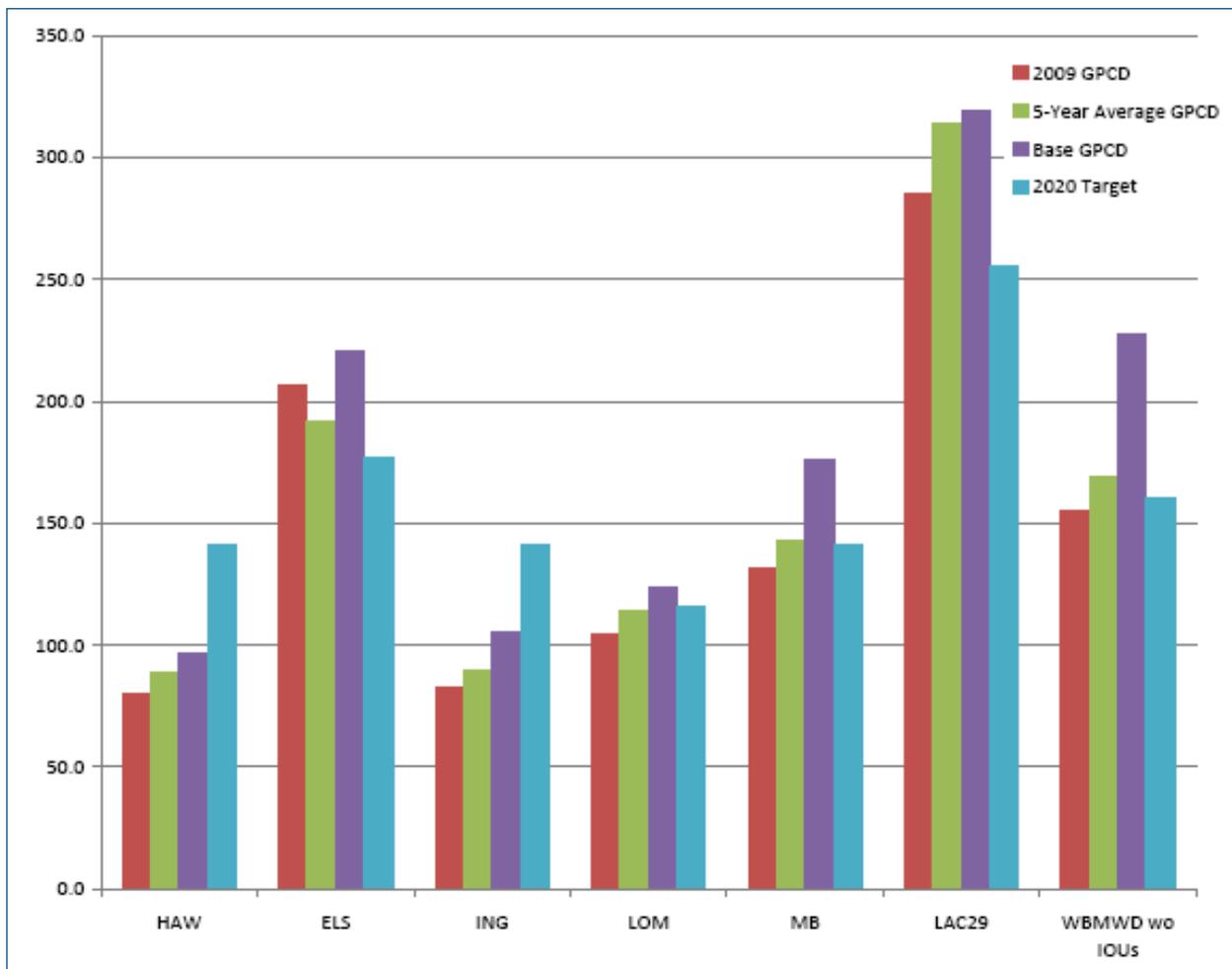
Table 3-17: Regional Alliance 2015 Interim and 2020 Targets (gpcd)

Member	10-Year Base Water Use	Calculated Water Use Targets		Maximum Allowable Target	Final Targets	
		Method	Target		2015	2020
California Water Service Company Hawthorne	96.5	3	141.6	N/A	119.0	141.6
City of El Segundo	220.6	1	176.5	182.2	198.6	176.5
City of Inglewood	105.3	3	141.6	N/A	123.4	141.6
City of Lomita	123.4	3	141.6	116.2	119.8	116.2
City of Manhattan Beach	175.7	3	141.6	144.9	158.6	141.6
Los Angeles County Waterworks District #29	319.4	1	255.5	298.2	287.5	255.5
Regional Alliance	227.7	1	182.2	160.5	194.1	160.5



Figure 3-3 represents a comparison of the 2009, 5-year base, 10-year base and 2020 target water use for each regional alliance member.

Figure 3-3: Regional Alliance Base and Target Use Summary



3.4 Water Use Reduction Plan

In order to meet the 2020 and interim 2015 water use targets calculated in Table 3-17, West Basin has collaborated with its regional alliance agencies to develop individual Water Use Efficiency Master Plans. These plans are anticipated to be completed in May 2011. Table 3-18 identifies several key programs already identified for implementation that will help the regional alliance achieve or even go beyond the required water use targets.

Table 3-18: West Basin and Retailer Conservation Program Participation

Programs	West Basin	Los Angeles County Waterworks District #29	City of El Segundo	City of Manhattan Beach	City of Hawthorne	City of Lomita	City of Inglewood
MWD							
Residential Rebate Program	X	X	X	X	X	X	X
Save A Buck Rebate Program	X	X	X	X	X	X	X
West Basin							
High-Efficiency Toilet (HET) Distribution Events	X	X	X	X	X	X	X
Green Living for Apartments and Condos (Direct HET Installations)	X	X	X	X	X	X	X
Ocean Friendly Landscape Program	X	X	X	X	X	X	X
Complete Restroom Retrofit Program	X	X	X	X	X	X	X
Recirc & Save Program	X	X	X	X	X	X	X
Cash for Kitchens	X	X	X	X	X	X	X
Education Programs	X	X	X	X	X	X	X
West Basin Programs (Funding Pending)							
High-Efficiency Nozzle Program	X	X	X	X	X	X	X
Water Star Schools Pilot Program	X	X	X	X	X	X	X
Water & Energy Efficiency in the Motel/Hotel and Schools Sectors	X	X	X	X	X	X	X
Other Water Retailer							
Turf Removal Program	N/A	X	-	-	-	-	-
HET Rebates (CII)	N/A	X	-	-	-	-	-
Landscape Surveys	N/A	X	-	-	-	-	-
Education Programs	N/A	X	-	-	-	-	-
Landscape Incentives	N/A	X	-	-	-	-	-



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SECTION FOUR

Water Supply



2010





SECTION 4 Water Supply

It is West Basin's mission to ensure a safe, adequate and reliable supply of water for the communities it serves. An increasing population and recent restrictions on imported supplies, have challenged West Basin to continue to diversify its supply portfolio to meet new demands through expanded recycled water production and distribution, new ocean-water desalination supply development, and increased conservation programming through its WR 2020 Program.

This section provides an overview of the current and future water supplies needed to meet the expected demands within the West Basin service area. Although West Basin does not provide all of the supplies needed to meet these demands, this 2010 UWMP provides a complete picture of all of the historical and projected supplies to be used by its customer agencies to meet the overall demand within West Basin's service area.

While this section provides a discussion of the more traditional imported and groundwater supplies, alternative supplies such as recycled water and desalination are discussed within Sections 9 and 10 respectively. Water quality for all supplies is discussed in Section 6.

4.1 West Basin Service Area Water Supply Portfolio

Since its formation in 1947, West Basin has fulfilled its responsibility of providing its customer agencies with supplemental imported and recycled water supplies to meet increasing regional demands. Prior to West Basin, the average customer agency operating within the area relied completely on groundwater.

Today, these agencies rely on an increasingly diverse mix of water resources: 22% groundwater, 62% imported, 8% non-potable recycled water, and 8% conserved supply through water use efficiency measures. It is projected that by 2030, the resource mix on average will be 23% groundwater, 36% imported, 19% non-potable recycled water, 10% ocean water desalination and 12% conservation as shown in Figure 4-1.

Table 4-1 provides West Basin's historical annual water supply in its service area from 2005 to 2009.

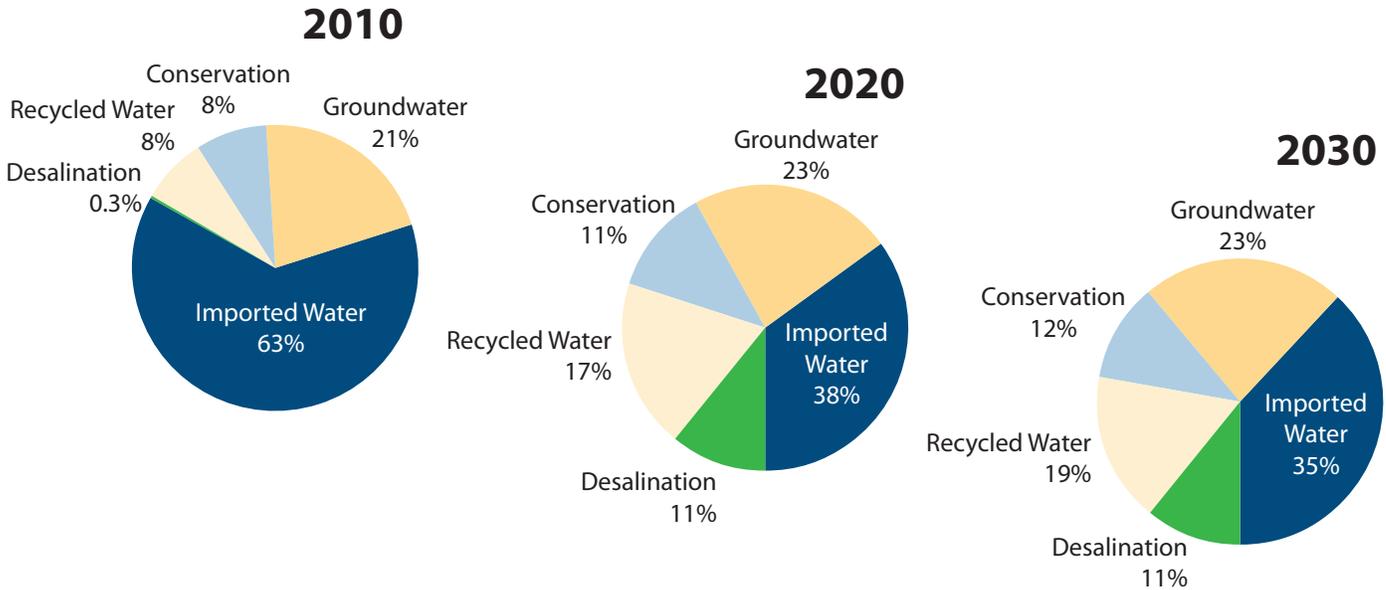
Table 4-1: West Basin Service Area Historical Retail Water Supply (AFY)

Supplies	2005	2006	2007	2008	2009
Groundwater ¹	34,304	31,469	31,773	33,849	38,307
Imported Water ²	130,782	129,060	132,209	122,520	108,145
Recycled Water ³	16,971	17,859	28,956	25,651	21,897
Desalination ⁴	0	89	461	158	620
Total	182,057	178,477	193,399	182,178	168,969

[1] Groundwater production within West Basin service area only (includes West Coast Groundwater Basin and pumping from the Central Groundwater Basin into the West basin service area). [2] Imported retail use only; does not include replenishment deliveries (i.e. Barrier). [3] Recycled water does not include replenishment deliveries (i.e. Barrier) [4] Desalination includes brackish only.



Figure 4-1: West Basin Service Area Projected Water Supplies



West Basin has been able to support the diversification of supplies available to its customer agencies by providing access to imported water supplies from MWD as well as through the development of recycled and conserved water supplies. These supplies are served directly to its customer agencies and indirectly as the replenishment supplies necessary to maximize groundwater production. Historically, West Basin’s primary supply source was imported water from MWD. However, given recent concerns over future reliability of these imported supplies, West Basin has been increasing its development of local supplies.

As Table 4-2 shows, West Basin is projecting to more than double current recycled water supplies as well as invest in over 20,000 AFY of ocean-water desalination supply. Coupled with an additional doubling of conserved supply through water use efficiency programs, the overall imported water use is expected to be cut nearly in half from the start of West Basin’s WR 2020 Program in 2008, by 2020.



Table 4-2 West Basin’s Service Area Projected Water Supply (AFY)

Supplies	2010	2015	2020	2025	2030	2035
Groundwater ¹	36,360	45,000	45,000	45,000	45,000	45,000
Imported Water ²	104,985	114,647	76,797	75,386	70,598	69,761
Recycled Water ³	14,182	16,368	33,882	33,882	37,382	37,382
Desalination ⁴	500	1,000	21,500	21,500	21,500	21,500
Total	156,027	177,015	177,179	175,768	174,480	173,643
Conservation ⁵	14,000	15,119	21,039	21,640	22,971	23,632
Total	170,027	192,134	198,218	197,408	197,451	197,275

[1] Groundwater production within West Basin service area only.

[2] Imported retail use only; does not include replenishment deliveries (i.e. Barrier).

[3] Recycled water does not include replenishment deliveries (i.e. Barrier), and deliveries outside the service area.

[4] Desalination includes both brackish and ocean-water.

[5] Conservation consists of Active and Passive savings according to West Basin’s projected estimates.

4.2 Imported Water Supply

West Basin has historically relied on approximately 150,000 AFY of imported water from MWD to meet customer demand. MWD supplies originate from the Colorado River and State Water Project (SWP) to meet West Basin’s retail and replenishment demands. In recent years, MWD’s imported supplies have become increasingly restricted given protracted droughts and recent environmental rulings and restrictions that limited the amount of SWP water available for use.

These restrictions have resulted in partial allotments for West Basin and the unavailability of lower cost surplus water for in-lieu basin replenishment use. As a result, West Basin has been challenged to maximize the efficient use of this supply as well as explore ways to develop alternative supplies. This challenge has resulted in West Basin’s goal of reducing its projected need for imported water supplies in half by 2020 through the development of local and conserved supplies.

4.2.1 Colorado River Resources

MWD owns and operates the Colorado River Aqueduct (CRA), which connects the Colorado River to MWD’s regional distribution system. The CRA has a capacity of 1.25 Million AFY (MAF) to transport MWD’s current contracted entitlement of 550 Thousand AFY (TAF) of Colorado River water. MWD also holds a priority for an additional 662 TAF and 180 TAF when surplus flows are available.

MWD and the State of California have acknowledged that they could obtain less water from the Colorado River in the future. The U.S. Secretary of Interior asserted that California had to limit its use of Colorado River supplies to 4.4 MAF per year, plus any available surplus water. California’s Colorado River Water Use Plan characterizes how California would develop a combination of programs to meet this limit as well as how to use any available surplus water. In 2003, the Quantification Settlement Agreement



Lake Mead

(QSA) among California agencies with Colorado River rights established the baseline water use for each of the agencies and facilitates the transfer of water from agricultural agencies to urban uses. The QSA is currently ruled as invalid due to multiple legal proceedings that have taken place over the past eight years. MWD has filed appeals that will stay the ruling until the outcome of the appeal. If the ruling stands, it could delay and potentially increase the cost of the QSA's supply development programs.

An extended drought from 2000-2007 within the Colorado River Basin has also decreased supply reserves to 50 percent capacity. Even in light of these challenges, according to MWD's 2010 Draft Regional Urban Water Management Plan, MWD intends to maximize the use of the California Aqueduct by obtaining a full 1.25 MAFY through the use of exchanging water rights purchases from agricultural and other holders.



Colorado River Aqueduct

4.2.2 State Water Project Resources

California's SWP is MWD's second main source of imported water and is the nation's largest state-built water and power development and conveyance system. It includes facilities, such as pumping and power plants; reservoirs, lakes, and storage tanks; and canals, tunnels, and pipelines, that capture, store, and convey water from Northern California to 29 water agencies in Central and Southern California.

Operated and maintained by DWR, the SWP provides water supplies for 25 million Californians and for 750,000 acres of irrigated farmland. The original State Water Contract called for an ultimate delivery capacity of 4.2 MAF, with MWD holding a contract for 1.9 MAF. Since that time there have been significant challenges to meeting those delivery goals.

More than two-thirds of California's drinking water, including all of the water supplied by SWP, passes through the San Francisco-San Joaquin Bay-Delta (Bay-Delta). For decades, the Bay-Delta system has experienced water quality and supply reliability challenges and conflicts due to variable hydrology and environmental standards that limit pumping operations.

Most recently, the State experienced a critically dry period from 2008 to 2009 (including the driest ever spring in 2008) that produced some of the lowest reservoir levels recorded for SWP facilities. During this drought period, a biological opinion regarding the dwindling populations of Bay-Delta Smelt (2008) and salmonid species (2009) resulted in legal rulings that have been estimated to reduce average SWP deliveries from approximately 3.3 MAF to 2.3 MAF. DWR released a Water Allocation Analysis in 2010 that has resulted in an MWD estimated reduction in SWP supplies of 150 – 200 TAF for 2010 MWD UWMP 2010.



Although challenges to the SWP exist, MWD has developed plans to meet imported water needs for West Basin and other member agencies through the implementation of several exchange and storage programs as well as working towards a project that will fix the Bay-Delta issues and resume normal deliveries. These supply development programs will be implemented in concert with MWD's ongoing collaboration with member agencies to more efficiently use the supplies to meet increasing demands and potential climate change impacts.



State Water Project System

4.2.3 Types of MWD Supply

MWD offers different types of imported water to its member agencies depending on the ultimate use. Among them, West Basin has delivered Non-Interruptible Water (treated full-service) and Seasonal Treated Replenishment Water (in-lieu replenishment).

Non-Interruptible Water is the treated firm supply that is available all year and not subject to interruption. Historically, West Basin has delivered an average of about 150,000 AFY of non-interruptible water. It is used as the main supplemental supply to cities and water agencies, and the Dominguez Gap Seawater Barrier and 25% of the supply for the West Coast Basin Seawater Barrier.

Seasonal Treated Replenishment Water, when available, is delivered to customer agencies that are eligible to offset groundwater production with imported water. This program incentivizes customer agencies to take imported surplus water when available, which indirectly replenishes the groundwater basin. This surplus water is purchased at a discount rate in exchange for leaving groundwater in the basin for no less than a year so that it can be used subsequently during dry years.

4.3 Groundwater Supply

West Basin does not supply groundwater to retail agencies. However, retail agencies operating within West Basin's service area rely on groundwater production to meet just over 20 percent of retail demand and this is expected to continue through 2035. There are, however, a few jurisdictions within the West Basin's service area that rely exclusively on imported water to meet all their current water needs.

West Basin overlies nearly all of the adjudicated WCGB. In the early 1940s, extensive over pumping of the WCGB had led to critically low groundwater levels, which resulted in seawater intrusion along the coast. This situation precipitated an adjudication that limits the allowable extraction that could occur in any given year and assigned water rights to basin pumpers. The adjudicated water rights (as shown in Table 4-3) that were developed are, however, in excess of the safe operating basin yield.



Table 4-3: West Coast Groundwater Basin Pumping Rights (AFY)

Retail Agencies	2009-2010 Pumping Rights
Cal Water Service Co. (Dominguez)	10,417
Cal Water Service Co. (Hawthorne)	1,882
Cal Water Service Co.(Hermosa/Redondo)	4,070
City of Inglewood	4,450
City of El Segundo	953
City of Lomita	1,352
City of Manhattan Beach	1,131
Golden State Water Company	7,502
Non-Retail Water Pumpers ¹	32,711
Total	64,468

Source: West Basin Watermaster Report, DWR: 2009-2010

[1] Water right holders that are not water retail agencies: i.e. Nurseries, Cemeteries, Industries, and Refineries

To allow full WCGB rights to be pumped while limiting seawater intrusion, WRD purchases non-interruptible imported and recycled water supplies from West Basin for injection by the Los Angeles County Department of Public Works at the West Coast and Dominguez Gap Seawater Intrusion Barriers. WRD is the entity responsible for maintaining and replenishing the WCGB. WRD is a special district created by the State and governed by a 5-member elected body to replenish and protect the groundwater basin with imported water and recycled water.

Two of West Basin’s customer retailers also import groundwater from outside the West Basin service area from the adjacent Central Groundwater Basin to meet their demand (California American Water Co. and California Water Service Co. – Dominguez). Although rights have been bought, sold, exchanged, or transferred through the years, the total amount of groundwater projected to be extracted over the next 25 years will be fairly consistent due to the adjudication of both the West Coast and Central basins. The financial costs to pump groundwater have been and are projected to remain less than the cost to purchase imported water so it can safely be assumed that water retailers will continue to maximize their groundwater rights.

Table 4-4 shows the historical amounts of Central Basin Groundwater Basin groundwater supplies that were purchased by West Basin’s retail customer agencies.

Table 4-4: Historical Central Basin Groundwater Retail Imported Supply (AF)

Retail Agency	2005	2006	2007	2008	2009
California American Water Co.	3,042	2,708	1,977	1,787	3,537
Cal Water Service (Dominguez)	1,242	2,374	2,815	2,344	1,647
Total	4,284	5,082	4,792	4,131	5,184

Source: DWR Watermaster Reports, 2004-2009



Table 4-5 shows the historical groundwater supplies for West Basin’s retail customer agencies (not including the non-retail or private rights holders) from both basins.

Table 4-5: Historical Groundwater Retail Supply (AF)

Basin name(s)	2005	2006	2007	2008	2009
West Coast Basin	30,020	26,387	26,981	29,717	33,123
Central Basin	4,284	5,082	4,792	4,132	5,184
Total	34,304	31,469	31,773	33,849	38,307

Source: DWR Watermaster Reports, 2004-2009

Table 4-6 shows the historical groundwater replenishment supplies for the West Coast and Dominguez Gap Barriers.

Table 4-6: Historical Groundwater Replenishment Supply

	2005	2006	2007	2008	2009
West Coast Barrier Supplies	8,555	6,035	4,228	3,978	4,231
Dominguez Gap Barrier Supplies	5,327	5,828	4,027	4,049	7,927
Total	13,882	11,863	8,255	8,027	12,158

Source: DWR Watermaster Reports, 2004-2009

Table 4-7 shows the projected retail groundwater production to meet West Basin service demands through 2035.

Table 4-7: Current and Projected Retail Groundwater Supply (AF)

Basin name(s)	2010	2015	2020	2025	2030	2035
West Coast Basin	28,993	40,000	40,000	40,000	40,000	40,000
Central Basin	5,256	5,000	5,000	5,000	5,000	5,000
Total	34,249	45,000	45,000	45,000	45,000	45,000

Source: [1] Based upon actual water use sales.

Table 4-8 shows the projected replenishment (or seawater intrusion barrier) supplies to be met by West Basin’s retail agencies through 2035.

Table 4-8: Current and Projected Replenishment Groundwater Supply

	2010	2015	2020	2025	2030	2035
Imported Water	15,274	3,500	3,500	3,500	-	-
Recycled Water	7,706	16,980	16,980	16,980	20,480	20,480
Total	22,980	20,480	20,480	20,480	20,480	20,480

[1] Barrier water deliveries to both the West Coast and Dominguez Gap Barriers



4.4 Water Transfers and Exchanges

Water transfers and exchanges are management tools to address increased water needs in areas of limited supply. Although transfers and exchanges of water do not generate new supply, these management tools distribute water where it is abundant to where it is limited.

MWD has played an active role statewide in securing water transfers and exchanges as part of their planning goals. Although West Basin is a member of MWD, there has not been a compelling reason or opportunity to pursue transfers directly.

4.5 Alternative Sources of Supply

As shown in Figure 4-1, West Basin is planning on increasing the diversity of its water supply portfolio through the further development of alternatives to the more traditional imported water and groundwater supplies. This 2010 UWMP has dedicated entire sections to discuss the planned projects and programs to develop alternative supplies such as Recycled Water (Section 9) and Desalination (Section 10) as well as the increased water use efficiency programs discussed in Section 7. West Basin is pursuing these alternative supplies as part of its WR2020 initiative.

SECTION FIVE

Water Reliability



2010



SECTION 5 Water Reliability

West Basin’s supply reliability can be greatly impacted by many factors including changes in the availability of supplies due to climatic or infrastructure changes as well as the ability to use those supplies more efficiently in both average and dry periods. These factors can result in immediate (facility failures), near-term (SWP limitations), or long-term (climate change) impacts to reliability and must therefore be considered in future planning.

The impacts of these factors on reliability increase under single dry and multiple dry year hydrologic patterns. Historically, dry years result in increases in demands as well as decreases in surface supplies that result in shortages if not managed effectively. Although not all shortages can be prevented, West Basin’s WR 2020 goal to expand and further diversify its supply portfolio is the most important step toward improving the immediate, near- and long-term reliability of supplies. If shortages do occur, West Basin has completed comprehensive water shortage contingency planning to provide reliability during these situations.

5.1 Potential Impacts to Reliability

Reliability within the West Basin service area is a composite of the reliability of each source of supply. Table 5-1 summarizes the factors that impact each resource’s supply reliability. Of all of the supplies shown in Table 5-1, imported supply has the greatest number of factors that will impact its reliability. It is because of this, that West Basin is moving forward with its plans to expand water use efficiency, further develop recycled water and add ocean-desalination supplies. Further explanation of each impact category on reliability is described in the subsections below.

Table 5-1: Factors Resulting in Impacts to Reliability

Water Sources	Legal	Environmental	Water Quality	Climatic
Imported Water	X	X	X	X
Groundwater	X		X	X
Recycled Water			X	
Ocean Water Desalination			X	

5.1.1 Imported Water Reliability

As discussed in Section 4, MWD has and will continue to contend with considerable challenges to maintaining a reliable source of imported supply for its member agencies. After learning from the droughts of 1977-78 and 1989-92, MWD instituted a resources planning process that has resulted in the following documents:



- **1996, 2004 and 2010 Integrated Resources Plans (IRP):** MWD's IRP process assessed potential future regional demand projections based upon anticipated population and economic growth as well as conservation potential. The IRP also includes regional supply strategies and implementation plans to better manage resources, meet anticipated demand, and increase overall system reliability.
- **1999 Water Surplus and Drought Management Plan (WSDM):** The WSDM provides the policy guidance to manage the region's water supplies to achieve the reliability goals of the IRP. This is achieved by integrating the operating activities of surplus and shortage supplies through a series of stages and principles.
- **2008 Water Supply Allocation Plan (WSAP):** The WSAP includes the specific formula for calculating member agency supply allocations and the key implementation elements needed for administering the allocation. The need for the WSAP arose after the 2008 Bay-Delta biological opinions and rulings that limited SWP supplies to its contractors including MWD. The WSAP formula seeks to balance the impacts of a shortage at the retail level while maintaining equity on the wholesale level for shortages of MWD supplies up to 50%.

Since the 2008 Bay-Delta reductions, MWD has been using the WSAP formulas to contend with the reduction in available imported supplies. Although it is anticipated that the WSAP will continue to be in effect in the near-term, MWD states in its 2010 Draft UWMP that there will be sufficient supply to meet member agency demands in single and multiple dry years from 2015 through 2035. This is assuming that MWD storage levels are at or above average levels prior to those cycles.

MWD also is planning as part of the 2010 IRP to further support member agency local resource development as well as investigate potentially generating its own local resources for distribution to member agencies. The development of local resources as well as furthering existing conservation goals to meet the Water Conservation Act of 2009 targets are anticipated to provide a supply buffer for member agencies to rely upon in times of drought and longer-term climatic changes.

The factors affecting reliability for imported water supplies include legal, environmental, water quality and climactic. The legal factor includes policies and contracts on the SWP with the Department of Water Resources and on the Colorado River system with the Department of the Interior and other Colorado River basin states. Legal actions can impact supplies from these two sources in various ways as experienced recently with a federal district court decision limiting SWP supplies due to perceived impacts on specific fish in the Delta estuary. This example also shows how environmental factors such as endangered species, their habitat, and other related concerns must be taken into account in decisions that can curtail supplies. Likewise, the quality of these imported source waters can impact availability of supplies due to treatment, remediation or otherwise to ensure drinking water standards are fully met. In terms of impacts from climatic factors, imported water supplies rely heavily on runoff from rainfall and



snowpack in the State Water Project and Colorado River watersheds. If the amount of snowpack and rainfall changes significantly in these two water supply systems, the quantity of water in any given year is subject to fluctuations. With the uncertainty of the impacts from long-term climate changes, imported water supplies may become more or less reliable in the future, depending on the availability of storage.

5.1.2 Groundwater Reliability

The reliability of groundwater supplies dictates how much supplemental supply West Basin will need to provide its customer agencies to meet their demands. Groundwater is traditionally considered a highly reliable supply since it is not immediately susceptible to changes in climate and surface flows. However, the two main factors that impact the reliability of groundwater supplies are legal and water quality.

Because the WCGB is an adjudicated basin, pumping rights are established for particular entities. However, changes to basin operation including allocation of pumping rights, opportunities to utilize the basin in other ways including storage, remediation of contaminated plumes, and pumping expansion for further extraction, are all considered legal impacts because it would require addressing the existing court-ordered judgment.

The LACDPW owns and maintains the seawater barrier system. They also monitor and work with WRD to determine how much barrier injection water is required in order to maintain protective levels to protect the aquifer from seawater intrusion. WRD also determines how much water is needed to replenish the WCGB to support pumping and orders this amount of water from West Basin who then delivers a combination of recycled and imported water.

The water quality of groundwater supplies is a factor in its reliability because the water needs to meet drinking water standards and sometimes requires expensive treatment at each pumping location.

During the time in which groundwater pumping was exceeding recharge and replenishment, seawater intruded into the WCGB. Once the intrusion barriers were brought on-line, the intrusion was stopped, but a large plume of saline water has remained trapped within the basin. The groundwater supply projections have already considered the presence of the plume and therefore anticipate no change in supply reliability as a result of its existence. The saline plume and the methods being employed by West Basin and its customer and neighboring agencies to manage the plume are further discussed in Section 6: Water Quality.



5.1.3 Recycled Water and Ocean-Water Desalination Reliability



Edward C. Little Water Recycling Facility

Recycled water is often considered as having one of the highest reliabilities of any supply given that there is a consistent source of supply for treatment. Ocean-water desalination is a newer form of supply in California but is also considered highly reliable given the abundance of ocean-water adjacent to West Basin's service area. West Basin has completed a pilot study and is now operating a demonstration facility to further determine environmental safeguards, energy and cost savings possible prior to a full scale program slated for completion by 2017. The planned recycled water and ocean-water desalination projects that West Basin is intending to use to meet future demand are further detailed in Sections 9 and 10 respectively.

5.1.4 Climate Change

Climate change adds its own new uncertainties to the challenges of planning. As a MWD member agency, West Basin is contributing to MWD's activities to better understand and plan for potential long-term climate change impacts.

According to the MWD RUWMP, MWD uses historical hydrological data to forecast both the frequency and the severity of future drought conditions, as well as the frequency and abundance of above-normal rainfall. However, weather patterns can be expected to shift dramatically and unpredictably in a climate driven by increased concentrations of carbon dioxide in the atmosphere. MWD is committed to performing its due diligence with respect to climate change.

While uncertainties remain regarding the exact timing, magnitude, and regional impacts of these temperature and precipitation changes, researchers have identified several areas of concern for California water planners. These include:

- Reduction in Sierra Nevada snowpack
- Increased intensity and frequency of extreme weather events
- Rising sea levels resulting in:
 - Increased risk of damage from storms, high-tide events, and the erosion of levees
 - Potential pumping cutbacks on the SWP and Central Valley Project
 - Increased threats to coastal groundwater basins

Other important issues of concern due to global climate change include:

- Changes in urban and agricultural demand levels and patterns
- Impacts to human health from water-borne pathogens and water quality degradation
- Declines in ecosystem health and function
- Alterations to power generation and pumping regimes



In March 2002, the MWD Board adopted policy principles on global climate change as related to water resource planning. The Principles stated in part that MWD supports further research into the potential water resource and quality effects of global climate change, and supports flexible “no regret” solutions that provide water supply and quality benefits while increasing the ability to manage future climate change impacts. To date MWD has completed the following actions to meet these Principles:

- Membership in the Water Utility Climate Alliance that has resulted in completion of several activities including:
 - Letter of support for Western Water Assessment’s continued funding as a Regional Integrated Sciences and Assessments team under the National Oceanic and Atmospheric Administration (NOAA)
 - Letter of support for the 2009 Kerry-Boxer Water Utilities Mitigation and Adaptation Partnerships congressional bill addendum
 - Regular communication and consultations with federal agencies on the U.S. Environmental Protection Agency’s Climate Ready Water Utility Working Group
 - NOAA Climate Service and January 2010 International Climate Change Forum
 - Released “Options for Improving Climate Modeling to Assist Water Utility Planning for Climate Change”
- Working with local water supply agencies, state and federal agencies and non-governmental organizations to collaborate on climate change related planning issues.
- Using MWD’s IRP process to incorporate climate change science into regional plans by providing adaptive management strategies, creating buffer supplies, and encouraging the more efficient use of existing supplies.

5.2 Projected Supply Reliability

West Basin has experienced several examples of single dry and multiple dry year cycles within its historical hydrologic record. For the purposes of this UWMP, West Basin will use the years called out in Table 5-2 as the best representative examples of the single and multiple dry years. Table 5-3 provides an estimate of current (2010) water supply reliability from all four of West Basin’s water sources. The table estimates supply reliability for 2011 if it were a single dry year and through a multiple dry period from 2011 to 2013. The average year supply projections shown in Table 5-4 are the average of all years within the 100 year hydrologic record and were previously reported in Section 4: Water Supply.



Table 5-2: Basis of Water Years and Historic Conditions

	Single Dry Water Year	Normal Water Year	Multiple Dry Water Years		
	Year 1		Year 1	Year 2	Year 3
	2001	1999	2001	2002	2003
Percent of Normal Year	4%	0%	4%	4.5%	5.0%

Table 5-3: Supply Reliability- Current Water Sources

Water Supply Sources ¹	Average/Normal Water Year Supply (2010)	Single Dry Water Year Supply (2011)	Multiple Dry Water Years Supply		
			2011	2012	2013
Groundwater	36,360	36,360	38,088	39,816	41,544
Imported Water	104,985	111,246	113,342	116,262	119,223
Recycled Water	14,182	14,182	14,619	15,056	15,494
Desalination	1,000	1,000	1,000	1,000	1,000
Total Supply	156,527	162,788	167,050	172,135	177,261
Percent of Normal Year	0%	4%	4%	4.5%	5%

[1]Supply reliability covers only retail water demand; does not include replenishment/barrier deliveries.

Table 5-4: Projected Average Year Supply and Demand

Supplies ¹	2010	2015	2020	2025	2030	2035
Groundwater ¹	36,360	45,000	45,000	45,000	45,000	45,000
Imported Water ²	104,985	114,647	76,797	75,386	70,598	69,761
Recycled Water ³	14,182	16,368	33,882	33,882	37,382	37,382
Desalination ⁴	1,000	1,000	21,500	21,500	21,500	21,500
Total Supply	156,527	177,015	177,179	175,768	174,480	173,643
Total Demand	156,527	177,015	177,179	175,768	174,480	173,643
Surplus/(Shortage)	0	0	0	0	0	0

[1] Groundwater production within West Basin service area only.

[2] Imported retail use only; does not include replenishment deliveries (i.e. Barrier).

[3] Recycled water does not include replenishment deliveries (i.e. Barrier) and deliveries outside the service area.

[4] Desalination includes both brackish and ocean-water.

5.2.1 Single Dry Year

Table 5-5 shows the projected reliability of water supplies under single dry year conditions for five year increments between 2010 and 2035.

The overall demand is estimated to increase by 4 percent over average year to account for increases in irrigation needs. The scenario selected in the demand forecasting model projects that demands will increase by 4 percent in a single dry year based on the following set of assumptions:



- Economic cycle and restrictions (4-year rebound)
- Growth in connections (normal)
- Population (normal)
- Effects of price of water (MWD projected increases)
- Long-term climate change conditions (normal)
- Water use efficiency (doubling current efforts)
- Short-term weather changes (hot and dry)

The extra demand can readily be met with slight increase to imported water purchases given that West Basin is gradually reducing its dependence on imported supplies in average year and therefore should have imported water allocations available to meet these slight increases in demand.

Table 5-5: Projected Single-Dry Year Supply and Demand (AF)

Supplies ¹	2010	2015	2020	2025	2030	2035
Groundwater	36,360	45,000	45,000	45,000	45,000	45,000
Imported Water	111,246	121,728	83,884	82,417	77,577	76,707
Recycled Water	14,182	16,368	33,882	33,882	37,382	37,382
Desalination	1,000	1,000	21,500	21,500	21,500	21,500
Total Supply	162,788	184,096	184,266	182,799	181,459	180,589
Total Demand²	162,788	184,096	184,266	182,799	181,459	180,589
Surplus/(Shortage)	0	0	0	0	0	0

[1] Supply reliability covers only retail water demand; does not include replenishment/barrier deliveries

[2] Reflects demand after planned conservation and assumes a 4% increase in demand from average year

5.2.2 Multiple Dry Years

Table 5-6 through 5-10 show the projected reliability of supplies under multiple (three-year) dry year conditions for five year increments between 2010 and 2035. It was assumed in all tables that demand will increase by 5 percent over the average year in the third year of multiple dry year conditions. This projected increase was determined through the assumptions used in the demand forecasting model process and in previous dry-year conditions.

As under single dry year conditions, imported supplies will be purchased to meet any annual increase in demand. As a result, there are no anticipated shortages under any multiple dry year scenarios. Any shortfall in supplies will be met through imported water so long as MWD manages its supply and demand balance through its Water Surplus and Drought Management Plan, which includes specific actions such as storage withdrawals and implications of their WSAP. This is discussed in further detail in section 5.3.1.



Table 5-6: Projected Multiple Dry-Year (2013-2015) Water Supply and Demand (AF)

Supplies	2013	2014	2015
Groundwater	40,700	42,850	45,000
Imported Water	117,501	115,788	114,078
Recycled Water	15,494	15,931	16,368
Desalination	1,000	1,000	1,000
Total Supply¹	174,695	175,569	176,446
Total Demand²	174,695	175,569	176,446
Surplus/(Shortage)	0	0	0

[1] Supply reliability covers only retail water demand; does not include replenishment/barrier deliveries.

[2] Reflects demand after conservation and assumes a 5% increase from average to dry year 3.

Table 5-7: Projected Water Multiple Dry-Year (2018-2020) Supply and Demand (AF)

Supplies	2018	2019	2020
Groundwater	45,000	45,000	45,000
Imported Water	99,022	92,340	85,662
Recycled Water	26,876	30,379	33,882
Desalination	13,300	17,400	21,500
Total Supply¹	184,198	185,119	186,044
Total Demand²	184,198	185,119	186,044
Surplus/(Shortage)	0	0	0

[1] Supply reliability covers only retail water demand; does not include replenishment/barrier deliveries.

[2] Reflects demand after conservation and assumes a 5% increase from average to dry year 3.

Table 5-8: Projected Water Multiple Dry-Year (2023-2025) Supply and Demand (AF)

Supplies	2023	2024	2025
Groundwater	45,000	45,000	45,000
Imported Water	83,003	83,920	84,842
Recycled Water	33,882	33,882	33,882
Desalination	21,500	21,500	21,500
Total Supply¹	183,385	184,302	185,224
Total Demand²	183,385	184,302	185,224
Surplus/(Shortage)	0	0	0

[1] Supply reliability covers only retail water demand; does not include replenishment/barrier deliveries.

[2] Reflects demand after conservation and assumes a 5% increase from average to dry year 3.



Table 5-9: Projected Water Multiple Dry-Year (2028-2030) Supply and Demand (AF)

Supplies	2028	2029	2030
Groundwater	45,000	45,000	45,000
Imported Water	79,513	79,723	79,937
Recycled Water	35,982	36,682	37,382
Desalination	21,500	21,500	21,500
Total Supply¹	181,995	182,905	183,819
Total Demand²	181,995	182,905	183,819
Surplus/(Shortage)	0	0	0

[1]Supply reliability covers only retail water demand; does not include replenishment/barrier deliveries.

[2] Reflects demand after conservation and assumes a 5% increase from average to dry year 3.

Table 5-10: Projected Water Multiple Dry-Year (2033-2035) Supply and Demand (AF)

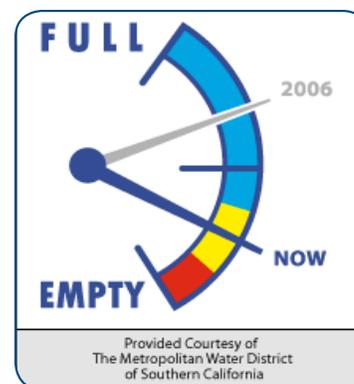
Supplies	2033	2034	2035
Groundwater	45,000	45,000	45,000
Imported Water	77,055	77,960	78,869
Recycled Water	37,382	37,382	37,382
Desalination	21,500	21,500	21,500
Total Supply¹	180,937	181,842	182,751
Total Demand²	180,937	181,842	182,751
Surplus/(Shortage)	0	0	0

[1]Supply reliability covers only retail water demand; does not include replenishment/barrier deliveries.

[2] Reflects demand after conservation and assumes a 5% increase from average to dry year 3.

5.3 Water Shortage Contingency Plan

DWR requires that each urban water supplier provide a water shortage contingency analysis within its UWMP. West Basin completed its WSAP in 2008 as a result of MWD’s WSAP. West Basin’s WSAP is only implemented after MWD reaches the appropriate stage. MWD has captured this planning in its WSDM Plan which guides MWD’s planning and operations during both shortage and surplus conditions. Furthermore, MWD developed their WSAP which provides a standardized methodology for allocating supplies during times of shortage.



5.3.1 MWD Water Surplus and Drought Management Plan

In April 1999, MWD’s Board adopted the WSDM Plan. It provides policy guidance for managing regional water supplies to achieve the reliability goals of the IRP and identifies the expected sequence of resource management actions that MWD will execute during surpluses and shortages to minimize the probability of severe shortages and reduce the possibility of extreme shortages and shortage allocations. Unlike MWD’s previous shortage management plans, the WSDM Plan recognizes the link between surpluses and shortages, and it integrates planned operational actions with respect to both conditions.



WSDM Plan Implementation

Each year, MWD evaluates the level of supplies available and existing levels of water in storage to determine the appropriate management stage. Each stage is associated with specific resource management actions designed to (1) avoid an Extreme Shortage to the maximum extent possible and (2) minimize adverse impacts to retail customers if an Extreme Shortage occurs. The current sequencing outlined in the WSDM Plan reflects anticipated responses based on detailed modeling of MWD's existing and expected resource mix.

Surplus Stages

MWD's supply situation under the WSDM Plan is considered to be in surplus as long as net annual deliveries can be made to water storage programs. The WSDM Plan further defines five surplus management stages that guide the storage of surplus supplies in MWD's storage portfolio. Deliveries for storage in the Diamond Valley Lake and in the State Water Project terminal reservoirs continue through each surplus stage provided there is available storage capacity. Withdrawals from Diamond Valley Lake for regulatory purposes or to meet seasonal demands may occur in any stage. Deliveries to other storage facilities may be interrupted, depending on the amount of the surplus.

Shortage Stages

The WSDM Plan distinguishes between Shortages, Severe Shortages, and Extreme Shortages. Within the WSDM Plan, these terms have specific meaning relating to Metropolitan's ability to deliver water to its customers.

Shortage: MWD can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfers as necessary.

Severe Shortage: MWD can meet full service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program deliveries.

Extreme Shortage: MWD must allocate available supply to full-service customers.

The WSDM Plan also defines seven shortage management stages to guide resource management activities. These stages are not defined merely by shortfalls in imported water supply, but also by the water balances in MWD's storage programs. Thus, a ten percent shortfall in imported supplies could be a stage one shortage if storage levels are high. If storage levels are already depleted, the same shortfall in imported supplies could potentially be defined as a more severe shortage.

When MWD must make net withdrawals from storage to meet demands, it is considered to be in a shortage condition. Under most of these stages, it is still able to meet all end-use demands for water. For shortage stages 1 through 4, MWD will meet demands by withdrawing water from storage. At shortage stages 5 through 7, MWD may undertake additional shortage management steps, including issuing public calls



for extraordinary conservation, considering curtailment of Interim Agricultural Water Program deliveries in accordance with their discounted rates, exercising water transfer options, or purchasing water on the open market.

Figure 5-1 shows the actions under surplus and shortage stages when a Water Supply Allocation Plan would be necessary to enforce mandatory cutbacks. The overriding goal of the WSDM Plan is to never reach Shortage Stage 7, an Extreme Shortage. At shortage stage 7 MWD will implement its Water Supply Allocation Plan to allocate available supply fairly and efficiently to full-service customers.

Figure 5-1: MWD Surplus and Shortage Stages

Surplus Stages					Actions	Surplus Stages						
Surplus						Shortage			Severe Shortage		Extreme Shortage	
5	4	3	2	1		1	2	3	4	5	6	7
					Make Cyclic Deliveries Fill Central Valley Storage Store supplies in SWP Carryover Fill In-Basin Conjunctive Use Fill SWP Flexible Storage Fill Diamond Valley Conduct Public Affairs Program							

5.3.2 Drought Management Plan

When MWD is operating under a shortage stage, West Basin would take the following stages of action:

Stage 1: West Basin would request for a voluntary effort among its customers to reduce imported water deliveries. In addition, West Basin would pursue an aggressive Public Awareness Campaign to encourage residents and industries to reduce their usage of water.

Stage 2: In addition to the stage above, West Basin would work with its customer agencies to review and update as needed water waste prohibitions and ordinances to discourage unnecessary water usage.

Stage 3: In addition to all the stages above, West Basin would implement its adopted Water Shortage Allocation Plan which calls for a curtailment of imported water for each of its customer agencies. This plan includes an adopted allocation methodology and is enforced by a penalty structure. A draft resolution is included in Appendix F.



5.3.3 West Basin’s Water Shortage Allocation Plan

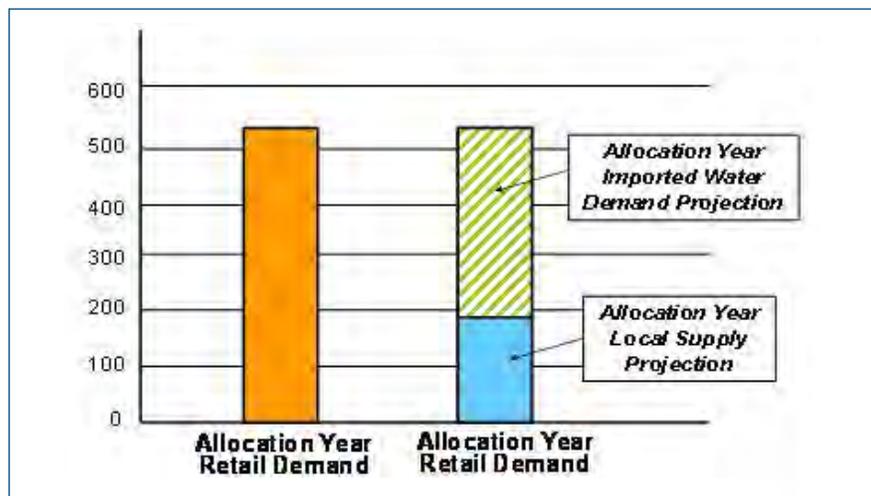
The purpose of West Basins’ WSAP is to provide a method for determining allocations for its member agencies relative to the amount of supplies available when MWD has implemented its WSAP to determine West Basin’s imported supply allocation. Like MWD, West Basin is a regional wholesaler and can’t enforce end user restrictions – it can only impose allocations relative to its supply. Each of West Basin’s member agencies must then determine how to meet its WSAP allocation of imported water to avoid over-use penalties.

This section provides an overview of West Basins’ allocation formula and the requirements contained within its 2010 WSAP. The full 2010 WSAP is attached as Appendix B.

Establishing Retail Customer Agency Allocations

West Basin first calculates each customer agencies’ baseline use by taking the average of total supply use (including both local and imported supplies) over a longer period of 1997-2007 (prior to the implementation of the Plan). The baseline is then projected forward to reflect changes in demand from population trends. This becomes the agency’s allocation year demand and is shown in Figure 5-2.

Figure 5-2: Example of Allocation Year Imported Water Demand Projection



As shown in Table 5-11 and Figure 5-3, the projected imported water demand is what is allocated according to the declared MWD regional shortage level (Level 2 for the FY 2010-11 Allocation). The following concepts help explain the allocation further:

- **Regional Shortage Levels:** Each level from one to ten represents a five percent increment of Regional Shortage Percentage from 5 to 50 percent.
- **Regional Shortage Percentage:** The percentage difference between available supplies and allocation year demands, in 5 percent increments from 5 to 50.

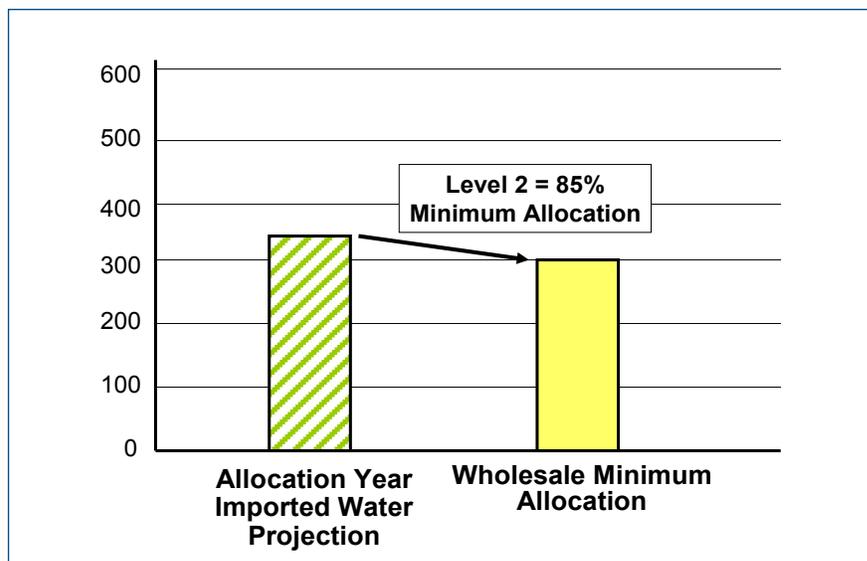


- **Wholesale Minimum Allocation:** ensures that customer agencies will not experience shortages on the wholesale level (from West Basin) that are greater than one-and-a-half times the Regional Shortage Percentage, according to Table 5-11.

Table 5-11: Example of Initial Minimum Allocation

Regional Shortage Level	Regional Shortage Percentage	Wholesale Minimum Allocation
1	5%	92.5%
2	10%	85.0%
3	15%	77.5%
4	20%	70.0%
5	25%	62.5%
6	30%	55.0%
7	35%	47.5%
8	40%	40.0%
9	45%	32.5%
10	50%	25.0%

Figure 5-3: Example of Initial Minimum Allocation



Unequal impacts of an across-the-board allocation at the retail level can be dramatic depending primarily on the amount of local supplies, if any, held by each customer agency. That is why the allocation methodology assigns additional water supplies based on the following adjustments and credits:



- **Retail Impact Adjustment:** Previously used only in Regional Shortage Level 3 and above, the addition of this adjustment to Levels 1 and 2 was made, to ensure that customer agencies with a high level of dependence on imported water do not experience disparate shortages at the retail level compared to other agencies. Agencies that are 100% dependent on imported water, for example, are allocated at the Regional Shortage Percentage instead of the Wholesale Minimum Percentage.
- **Conservation:** Based on each customer agency's pro-rated share of MWD's modeled estimate of West Basin's conservation in 2006, including active, passive and avoided system losses. It is preferable to use the most recent year, rather than a three-year average, for demand hardening considerations.
- **Qualifying Conservation Rate Structure:** Additional credit added to those customer agencies that have a conservation rate structure. To qualify, a retail customer agency's rate structure must have at least two tiers of volumetric rates, with a price differential between the top and bottom tiers of at least 10 percent. Upon verification of the retail rate structures by MWD, West Basin is given a credit of 0.5% for the total volume subject to these rate structures.

As a member agency of MWD, West Basin is provided the opportunity to request changes to its allocation through an appeals process. Likewise, customer agencies of West Basin are provided the opportunity to appeal to their individual allocations from West Basin based on new or corrected information. Grounds for requesting a change can include, but are not limited to:

- Errors in historical data used in base period calculations
- Unforeseen losses or gains in local supplies
- Extraordinary increases in local supplies
- Adjustments in credits for conservation, including qualifying conservation water rates

In some cases, West Basin has no flexibility to change a customer agency's allocation unless it results in a change to West Basin's total allocation with MWD. West Basin staff will, however, work with customer agencies to determine whether appeals to MWD are warranted, and if so, to prepare an appeal for review by MWD.

Allocation Penalty Rates

West Basin will enforce customer agency allocations through a penalty rate structure similar to what West Basin is subject to in MWD's allocation plan. Penalty rates will only be assessed to the extent that an agency's total annual usage exceeds its total annual allocation. No billing or assessment of penalty rates will take place until the end of the twelve-month allocation period. Penalty rates are in addition to the base rate of the water purchased. The most recent change to the fiscal year 2010-11 WSAP is that there are two penalty rate scenarios.



Table 5-12 demonstrates the two penalty rate structure scenarios. If West Basin is under its MWD allocation but a customer agency is over its individual allocation, it will be assessed the penalty structure reflected in Column B. However, if West Basin is over its allocation to MWD, West Basin will assess penalties reflected in Column C to those customer agencies that exceed their individual allocation.

Table 5-12: West Basin Allocation Penalty Rates

A	B	C
	Customer Agency Penalties*	
	West Basin Under Allocation to MWD	West Basin Over Allocation to MWD
Customer Agency up to 15% above allocation	1 x Tier 2	1 x Tier 2
Customer Agency over 15% above allocation	1 x Tier 2	3 x Tier 2

* The Tier 2 penalty rate excludes the Treatment Surcharge (“Full Service Untreated Tier 2 Rate”)

The actual penalty rates shall be based on the official MWD Untreated Tier 2 water rate in effect the last day in June of the twelve-month allocation period.

Use of Penalty Revenues

According to the WSAP policy adopted by the West Basin Board, any penalty funds collected by West Basin from customer agencies will first be applied to any penalty owed to MWD. Any “net penalty revenues” remaining can then be applied towards investments in water reliability projects and programs that benefit the West Basin service area as a whole, as approved by the board.

5.3.4 Catastrophic Supply Interruption

In the event imported water supplies are interrupted from a catastrophic event, West Basin, through coordination with MWD, can respond at both a regional and a local level.

In the event that an emergency such as an earthquake, system failure, or regional power outage, etc. affected the entire southern California region, MWD would take the lead and activate its Emergency Operation Center (EOC). The EOC coordinates MWD’s and West Basin’s responses to the emergency and concentrate efforts to ensure the system can begin distributing potable water in a timely manner.

If circumstances render the Southern California’s aqueducts to be out of service, MWD’s Diamond Valley Lake can provide emergency storage supplies for its entire service area’s firm demand for up to six months. With few exceptions, MWD can deliver this emergency supply throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted. Furthermore, should additional



supplies be needed, MWD also has surface reservoirs and groundwater conjunctive use storage accounts that can be drawn upon to meet additional demands. The WSDM plan guides MWD's management of available supplies and resources during an emergency to minimize the impacts of a catastrophic event.

Locally, the District has the Member Agency Response System (MARS) to immediately contact its customer agencies and MWD during an emergency about potential interruption of services and the coordination of critical resources to respond to the emergency, also known as mutual aid. The MARS is a radio communication system developed by MWD and its member agencies to provide an alternative means of communication in extreme circumstances. The District is currently in the process of enhancing its communication system in order to provide a more rapid response. Additionally, a contingency plan has been developed for both planned and unplanned electrical outages which includes back-up generation for all water treatment plants, transporting mobile generators to key locations, and maintaining water supply through gravity feed in regional reservoirs (i.e. Lake Mathews, Castaic Lake, and Silverwood Lake).

SECTION SIX

Water Quality



2010



SECTION 6 Water Quality

Providing a safe drinking water supply to consumers is a task of paramount importance to West Basin. All prudent actions are taken to ensure that water delivered throughout its service area meets or surpasses drinking water standards set by the California Department of Public Health (CDPH).



Compliance with water quality regulations is a regional water management priority and a shared responsibility. West Basin is responsible for the quality of the desalination and recycled water supplies generated at the C. Marvin Brewer Desalter and Edward C. Little Water Recycling Facility (ECLWRF) and its satellite facilities: Carson Water Recycling Facility, Chevron Nitrification Plant and Exxon-Mobil Nitrification Plant. MWD is responsible for complying with State and Federal drinking water regulations on its imported potable water sold to West Basin. West Basin's retail customer agencies are responsible for ensuring compliance in their individual distribution systems and at the customer tap. As a result of these measures, there are no anticipated water quality impacts that will decrease the supply available for use.

6.1 Imported Water

West Basin's imported water comes from the SWP and Colorado River via MWD pipelines and aqueducts. MWD is proactive in its water quality efforts, protecting its water quality interests through active participation in the regulatory arena and in treatment processes that provide the highest water quality from both sources. MWD has one of the most advanced laboratories in the country where water quality staff can examine the efficacy of existing treatment by performing tests and reviewing results as well as researching new treatment technologies. MWD tests its water for microbial, organic, inorganic, and radioactive contaminants as well as pesticides, herbicides and emerging contaminants of concern. Although not required, MWD also monitors for constituents that are not yet regulated but have captured scientific and/or public interest.

MWD has a strong record of identifying water quality issues early on and developing the water management strategies to minimize their impact on water supplies through their involvement in the following programs as described in MWD's 2010 Regional UWMP.

6.1.1 Source Water Protection

Source water protection is the first step in a multi-barrier approach to provide safe and reliable drinking water. In accordance with California's Surface Water Treatment Rule, Title 22 of the California Code of Regulations, CDPH requires large utilities delivering surface water to complete a Watershed Sanitary Survey every five years to identify possible sources of drinking water contamination, evaluate source and treated water quality, and recommend watershed management activities that will protect and improve source water quality. The most recent sanitary surveys for MWD's water sources were completed in 2005 and 2006.



The next Sanitary Surveys for the watersheds of the Colorado River and the SWP will report on water quality issues and monitoring data through 2010. MWD has an active source water protection program and continues to advocate on behalf of numerous SWP and Colorado River water quality protection issues.

6.1.2 DWR SWP Water Quality Programs

MWD supports DWR's policies and programs aimed at maintaining or improving the quality of SWP water delivered to MWD. In particular, MWD supported the DWR policy to govern the quality of non-project water conveyed by the California Aqueduct. In addition, MWD has supported the expansion of DWR's Municipal Water Quality Investigations Program beyond its Bay-Delta core water quality monitoring and studies to include enhanced water quality monitoring and forecasting of the Delta and SWP. These programs are designed to provide early warning of water quality changes that will affect treatment plant operations both in the short-term (hours to weeks) as well as seasonally. The forecasting model is currently suitable for use in a planning mode. It is expected that with experience and model refinement, it will be suitable to use as a tool in operational decision making.

6.1.3 Water Quality Exchanges

MWD has implemented selective withdrawals from the Arvin-Edison storage program and exchanges with the Kern Water Bank to improve water quality. Although these programs were initially designed to provide dry-year supply reliability, they can also be used to store SWP water at periods of better water quality so the stored water may be withdrawn at times of lower water quality, thus diluting SWP water deliveries. Although elevated arsenic levels have been a particular concern in one groundwater banking program, there are also short-term water quality benefits that can be realized through other storage programs, such as groundwater pump-ins into the California Aqueduct with lower total organic carbon (TOC) levels, as well as lower bromide and total dissolved solids (TDS), in some programs.

6.1.4 Water Supply Security

Changes in national and international security have led to increased concerns about protecting the nation's water supply. In coordination with its member agencies, MWD added new security measures in 2001 and continues to upgrade and refine procedures. Changes have included an increase in the number of water quality tests conducted each year (MWD now conducts over 300,000 analytical tests on samples collected within its service area and source waters), as well as the development of contingency plans that coordinate with the Homeland Security Office's multicolored tiered risk alert system.



6.2 Groundwater

Although West Basin does not serve traditional groundwater supplies, it works to support its customer agencies and WRD to protect and promote the quality of groundwater supplies within its service area.

6.2.1 West Basin and Customer Retail Agency Programs

As part of West Basin’s customer service, the Water Quality Department works closely with regulatory agencies to assist retail agencies in meeting State and Federal drinking water regulations through the *Cooperative Basin-Wide Title 22 Groundwater Quality Monitoring Program*. Title 22 refers to the section of the California Code of Regulations pertaining to both domestic drinking water and recycled water standards.



This voluntary program offers water quality testing to customer agencies and is funded through an annual assessment. Three agencies in West Basin’s service area participate in the monitoring program. West Basin’s water quality staff coordinates wellhead and reservoir water quality testing at approximately eight groundwater wells in the service area to ensure high quality of the local supply of drinking water. Under the program, a contract laboratory provides sampling as well as analytical and reporting services. Laboratory results are reported to West Basin, retail agencies, and the CDPH. The program helps retail agencies save time and expense while providing a valuable service for public health.

Another service provided under the program is the production of an annual Customer Water Quality report if requested by a customer agency. The Customer Water Quality Report is required by State and Federal law and West Basin’s water quality staff has prepared them for several agencies for over 15 years.

6.2.2 Water Replenishment District Programs

As the regional groundwater management agency for the Central and West Coast Groundwater Basins, WRD has several active programs to monitor, evaluate and mitigate water quality issues.

Groundwater Quality Program: WRD continually evaluates current and proposed water quality compliance in agency production wells, monitoring wells, and recharge/injection waters of the groundwater basins. If non-compliance is identified, WRD staff develops a recommended course of action and associated cost estimates to address the problem and to achieve compliance. WRD also monitors and evaluates the impacts of pending drinking water regulations and proposed legislation.

Regional Groundwater Monitoring Program: This program has a network of over 250 WRD and USGS-installed monitoring wells at nearly 50 locations throughout West Basin’s service area. Monitoring well data is supplemented with information from production wells to capture the most accurate information available. WRD staff, comprised



of certified hydrogeologists and registered engineers, provides the in-house capability to collect, analyze and report groundwater data. This information is stored in WRD's GIS database and provides the basis to better understand the characteristics of the Central and WCGB.

Safe Drinking Water Program: This program is intended to promote the cleanup of groundwater resources at specific well locations. Through the installation of wellhead treatment facilities at existing production wells, WRD hopes to remove contaminants from the underground supply and deliver the extracted water for potable purposes. Projects implemented through the program are accomplished through direct input and coordination with well owners. The current program focuses on the removal of volatile organic compounds (VOCs) and offers financial assistance for the design and equipment of the selected treatment facility.

WRD provides extensive information on groundwater quality in its Engineering and Survey Reports as well as Regional Groundwater Monitoring Reports. Both reports have a section devoted solely to groundwater quality management, and can be accessed through WRD's website, www.wrd.org.

6.3 Brackish Desalination

Although construction of seawater barriers was effective in halting the intrusion of seawater into the WCGB, historic plumes of brackish water still remain in the WCGB behind the barriers. In the early 1990s, West Basin completed the C. Marvin Brewer Desalter facility as a demonstration project for removing and treating the brackish water using two existing drinking water wells that were impacted by the seawater intrusion. In 2005, enhancements were made to the desalter program that replaced the two wells with a new, more productive well. This well has the capability to pump 1,600 to 2,400 AFY of brackish ground water to be treated at the desalting facility for use by West Basin's customers.

Since 2002, WRD has also been operating the Robert W. Goldsworthy Desalter, located adjacent to West Basin's desalter. Product water from the Goldsworthy Desalter is delivered for potable use to the City of Torrance's water distribution system.

6.4 Recycled Water

West Basin's ECLWRF, located in El Segundo, has been in continuous operation since 1995 and has conserved over 120 billion gallons of imported water by serving reliable supplies of recycled water for a wide variety of non-potable uses. A full description of West Basin's recycled water program is provided in the Water Recycling section of this report.

West Basin is committed to monitoring and maintaining the high quality of recycled water produced for injection at the West Coast Seawater Barrier and the surrounding groundwater from migrating contamination sources. In addition, groundwater quality



within the aquifer is monitored through more than a dozen monitoring wells inland of the Barrier. These wells represent the quality of the groundwater down-gradient of the Barrier, are essential in providing critical water quality data for the surrounding groundwater. Annual water quality data reports and groundwater modeling are submitted to both the CDPH and the Los Angeles Regional Water Quality Control Board to ensure compliance and security.

6.5 Ocean-Water Desalination

West Basin has been actively researching the feasibility of an ocean water desalination program as part of the drinking water supply. From 2002 to 2009, West Basin operated the Desalination Pilot Project, which marked the first use of microfiltration as a pretreatment to reverse osmosis for ocean-water desalination.

To ensure that this process was effectively treating the ocean water, West Basin performed extensive water quality research at the pilot plant. The water produced at the pilot project consisted of approximately 350 parts per million (ppm) of salt, lower than typical tap water in southern California. The pilot project's analytical test results indicated that the quality of the desalinated ocean water meets current State and Federal drinking water standards set by CDPH and the Environmental Protection Agency (EPA). Along with 500 analytical tests that were performed monthly, additional water quality studies were completed under the auspices of the American Water Works Association Research Foundation.

The research and testing conducted at the Pilot Project informed the design of the Ocean-Water Desalination Demonstration Facility, dedicated in November 2010. The Demonstration Facility will be operational for a minimum of two years while West Basin evaluates the feasibility of permitting and siting of a full-scale desalination plant capable of providing 20,000 AFY of potable water, enough to supply 40,000 families for a year.

While the Demonstration Facility is operational, West Basin will pursue a program master plan in partnership with MWD. The master plan effort will evaluate all water quality and other aspects necessary to develop a full-scale desalination facility with the option of integrating product water into the MWD distribution system. More information on West Basin's ocean-water desalination efforts is included in Section 10.

6.6 Research and Development

West Basin has a dedicated program and budget to constantly engage in research projects that evaluate water quality, efficient operations and new pollution prevention technology and methods. Research projects close the environmental loop by addressing both final product water as well as source control issues to prevent pollution and the need for cleanup technology. West Basin leverages its research dollars by participating on the Boards of water industry research organizations such as WateReuse, American Water Works Associations, National Water Research Institute, Salinity Management Coalition as well as participating with academic institutions in water quality research.



6.7 Effects on Water Management Strategies

Retail water agencies in densely populated southern California are acutely aware of the economic impact of water quality on a public water system. Management strategies must be developed to maintain a safe, reliable supply at reasonable cost without jeopardizing water quality and public health. Water quality, pressure, and supply are maintained through operational practices that can include wellhead treatment for contaminated groundwater sources, or blending down contaminated groundwater with purchased imported surface water from MWD or high quality groundwater from adjacent purveyors.

6.8 Effects on Supply Reliability

Poor water quality makes a water source unreliable, affects overall supply and increases the cost of serving water to the public. More importantly, it results in a loss of customer confidence, which can be very difficult to overcome, even after water quality is restored. A water source that fails drinking water regulations must be taken out of service. The source can be restored through treatment or other management strategies.

Groundwater can become impaired through leaching of contaminants into an aquifer, or by excessive concentrations of naturally-occurring constituents that impact quality, such as arsenic. Surface water sources become contaminated from human activities in the watershed or through deliberate contamination.

SECTION SEVEN

Water Use Efficiency



2010



SECTION 7 Water Use Efficiency



Water Use Efficiency (WUE), or conservation, continues to play an important role in West Basin's water supply portfolio. Between 2005 and 2010, there were several new key developments that occurred in the area of water use efficiency policy.

- In 2008, as a result of State Water Project supply limitations and multiple year drought conditions, MWD instituted water supply allocations (or imposed conservation) that sought to reduce member agencies' imported water demand.
- In 2008, the California Urban Water Conservation Council (CUWCC) began restructuring its 14 BMPs and reporting process.
- In 2009, AB 1420 came into effect requiring agencies to provide up-to-date information on CUWCC BMP compliance as part of grant or loan applications to the State DWR.
- In 2009, the Governor of the State of California signed into law SBX 7-7, which calls for a state-wide 20 percent reduction in per capita water use by 2020. Individual agencies are required to provide water use reduction targets of gallons per capita per day as part of the 2010 UWMP update.
- In 2009, a key piece of water efficiency legislation called AB 1881 was entered into law that updated the Model Landscape Ordinance AB 325 of 1990. This new law stated that as of January 1, 2010, all local cities were required to adopt the new Model Landscape Ordinance or stricter versions of it. West Basin, along with other stakeholders, provided input to DWR for the development of the new ordinance.

At the local level, in 2008 West Basin launched a new program to help meet these challenges, called WR 2020 Program. The main goal of this program is to increase local water supplies by doubling recycled water production, doubling water conservation savings and by bringing responsible ocean-water desalination on-line.

7.1 Historical Water Conservation Efforts

Since the severe drought of the early 1990s, West Basin has been a leader implementing aggressive water conservation programs to help limit water demand within its service area. West Basin programs have included a strong emphasis on plumbing retrofit hardware, education and the distribution of rebate incentives. The results of these programs, in conjunction with passive conservation measures such as modifications to city ordinances, have resulted in significant reductions in retail water use within West Basin's service area. By current estimates, demand management from West Basin's active and passive conservation efforts have saved over 3 billion gallons of imported water (10,000 AF) since 1991, which is equivalent to the average annual water use of almost 20,000 households. This section will present the past and current water conservation efforts West Basin has undertaken since the last update to this plan in 2005.



West Basin’s conservation efforts have been comprised of a wide array of cost-effective programs that contribute to conserving water, improving water quality, reducing imported water needs and increasing the region’s water supply reliability.

West Basin prides itself in the partnerships it has created with Federal, State, and local entities to offer water efficiency programs. By developing integrated programs with its partners, West Basin has been able to leverage funding and resources to provide effective programs throughout its region. As a result, West Basin has been successful in obtaining more than \$4 million in local, state and federal grant funds for conservation program implementation since 2005. Due to its successes with acquiring grants, West Basin has leveraged its funding and today provides \$7 worth of programs to the public for every \$1 it invests.

The effect of Water Conservation is defined by two main elements: Active and Passive. Below is a brief description of these two.

Active Conservation: Water savings produced from incentive based programs: rebates, giveaways, retrofits, etc.

Passive Conservation: Water savings produced from building and plumbing codes, consumer behavioral changes, and responses to price shifts.



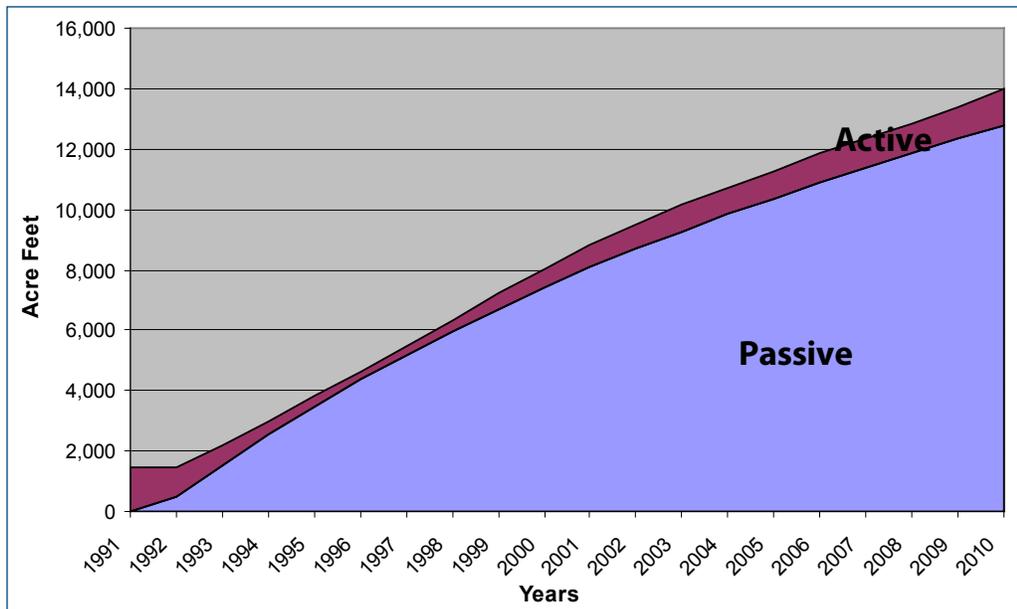
West Basin’s current conservation programs target water conservation efforts in the residential, commercial, industrial, institutional and large landscape areas. These programs were identified as part of the 2006 Conservation Master Plan and are available to residents, businesses, and institutional customers within West Basin’s service area. Below is a list of the conservation programs that were launched over the last five years:

- Region-wide Residential Rebate Program
- Ocean Friendly Landscape Program
- Green Living for Apartments & Condos
- Green Garden Program
- Complete Restroom Retrofit Program
- Region Wide Commercial Rebates
- High-Efficiency Toilet Distribution Events
- Cash for Kitchens Program
- Recirc & Save Program
- School Kit Program
- Zero Run-off Street Median Program
- School Education Programs
- Public Outreach Program
- Water Star Program

It is estimated that West Basin has distributed and installed over 300,000 devices from 1990 to 2010. As a result, it is estimated that West Basin currently saves, from active and passive (code-based) conservation combined, over 10,000 AF (three billion gallons), or five percent annually, of West Basin’s total water demand. Figure 7-1 shows the total Active and Passive Savings from 1990- to 2010 on an annual basis.



Figure 7-1: West Basin Conservation Water Savings (1990 – 2010)



Source: Estimated total active and passive water savings from West Basin's Alliance for Water Efficiency Tracking Tool, 2011.

Conservation savings can further be verified by comparing West Basin's water usage versus population. As shown in Figure 7-2, average water demand has remained relatively consistent while population has escalated by an annual average of 1%.

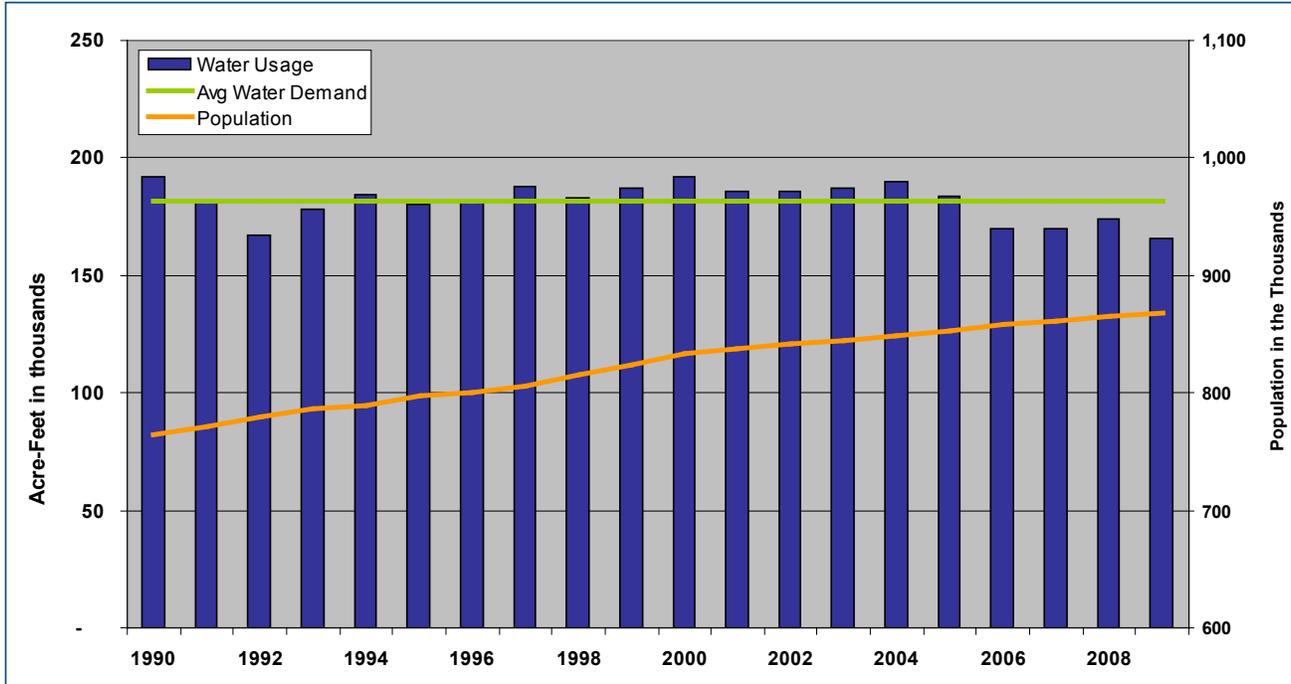
7.2 West Basin and Customer Agency Water Conservation Master Plans

In 2006, West Basin developed its first Conservation Master Plan (CMP). In developing the CMP, West Basin worked closely with its water retailers, local cities, environmental groups and others to develop meaningful programs that were targeted and effective. The CMP included a five year timeline for cost-effective program implementation. Since adoption of the CMP, West Basin has been successfully implementing programs described in this section below.

As the regional water wholesaler, West Basin spear-headed an effort to ensure the region is working together to meet the State's goal of a 20 percent reduction in water demand by the year 2020. Begun in 2009, it was a unique program that allowed West Basin to work with its local water retailers to update the water conservation master planning efforts that were completed in 2006. West Basin (on behalf of its retailers) applied for and was awarded a \$100,000 grant by the USBR to develop eight Local Water Use Efficiency Plans and to update West Basin's 2006 CMP. In addition to the grant, the retailers and West Basin provided a cost-share of \$130,000. In 2010, West Basin began this project with the intent to help the agencies develop water use baselines and conservation targets to help meet the SBX 7-7 targets in 2015 and 2020.



Figure 7-2: Total Retail Water Demand vs. Population Growth (1990 – 2010)



Source: Information based on MWD Demographic Data, 2005

Note: Total retail demand includes groundwater production but not replenishment demands for use at seawater barriers.

West Basin and its partners used a GPCD target calculator and the Alliance for Water Use Efficiency Water Conservation Tracking Tool to develop the information for the Conservation Master Plans. West Basin worked closely with each water retailer through bi-monthly meetings to collaborate, share ideas and discuss challenges. The plans will be completed by May 2011 and include a five year and a ten year timeline for implementation of various programs. The retailers will be able to use the information from their individual plans to report their conservation targets in their UWMPs.

7.3 External Agency Coordination

As a part of conservation planning and implementation, West Basin also works with other regional and statewide agencies and groups such as MWD, and the CUWCC.

7.3.1 Metropolitan Water District

In 2010, MWD adopted an updated Integrated Resources Plan (IRP) that includes a strong commitment to water conservation. MWD’s 2010 IRP establishes water supply targets for Southern California through 2035, specifically a potable demand reduction of 1.7 MAF. This target represents MWD’s goal of achieving a 20% reduction in per capita water use across its service area. MWD is currently developing a long-term conservation plan to implement the IRP conservation target. This plan focuses on conducting more research, providing device incentives and funding, assisting with market transformation and legislation and helping to support its member agencies with conservation efforts.



As a member agency of MWD, West Basin actively participated in both the IRP Working Group and the Long Term Conservation Plan development, and will benefit from the conservation implementation strategies outlined in the plan.

7.3.2 California Urban Water Conservation Council

In 1991, the CUWCC was created to increase water use efficiency by integrating urban water conservation BMPs into the planning and management of California water agencies. It is a partnership of agencies and organizations concerned with water supply and conservation of natural resources in California.

To encourage water use efficiency, the CUWCC asked water agencies and organizations to sign a MOU regarding urban water conservation in California, which committed participating urban water suppliers to use their “good faith efforts” to implement the CUWCC’s 14 BMPs.

West Basin was one of the first urban water suppliers to become signatory to the CUWCC’s MOU. Every two years, water agency signatories, including West Basin, must submit their BMP reports to the CUWCC. West Basin has submitted BMP Wholesaler Water Agency Reports to the CUWCC that detail West Basin’s progress in implementing the 14 BMPs as currently specified in the MOU. In Appendix F, West Basin has attached its most recent 2007-08 CUWCC Report.

7.4 CUWCC – New BMPs and Reporting Options

In 2008/09, the CUWCC completed an ambitious project to revamp, streamline and improve the 14 BMPs and to develop several ways that an agency can report their water conservation targets and savings. Along with this process, the CUWCC created a new reporting database that agencies can use to report their achievements. Agencies must report to the CUWCC every two years, and the next reporting period will take place in 2011, when the new reporting database has been completed.

The CUWCC 14 BMPs are now organized into five categories. Two of the categories, Utility Operations and Education, are called Foundational BMPs because they are essential water conservation activities for any utility and therefore must be adopted by all signatories to the CUWCC MOU. The Residential, Commercial, Industrial, and Institutional (CII), and Landscape BMP categories are now called Programmatic BMPs.

Foundational

- Utility Operations
 - **BMP 3 System Water Audits:** Unaccounted for water calculated annually, and distribution system audits as required
 - **BMP 4 Metering with Commodity Rates:** Metering of consumption and billing by volume



- **BMP 10 Wholesale Agency Assistance:** Support by wholesalers for conservation programs of retail water suppliers
- **BMP 11 Conservation Pricing:** Uniform or increasing block rate structure, volume related water charges, and service cost recovery
- **BMP 12 Conservation Coordinator:** Designation of staff coordination of agency conservation programs
- **BMP 13 Water Waste Prohibition:** Enforced prohibition of wasteful use of water
- Education
 - **BMP 7 Public Information:** Public information to promote water conservation
 - **BMP 8 School Education:** Provision of education materials and services to schools

Programmatic

- Residential
 - **BMP 1 Residential Water Surveys:** Indoor and outdoor audits of residential water use and distribution of water-saving devices
 - **BMP 2 Residential Plumbing Retrofits:** Distribution or installation of water-saving devices in pre-1992 residences
 - **BMP 6 High Efficiency Clothes Washers:** Rebates for efficient washing machines
 - **BMP 14 Residential Ultra-Low Flush Toilet Replacement:** Programs promoting replacement of high-water-using toilets with ultra-low flush toilets
- Landscape
 - **BMP 5 Large-Landscape Conservation:** ET-based water budget for large landscape irrigators
- Commercial, Industrial, and Institutional
 - **BMP 9 Commercial, Industrial, and Institutional Conservation:** Programs to increase water use efficiency in CII sectors

7.5 Current Water Conservation Programs

As the water wholesaler for 8 water retail agencies and one groundwater agency, West Basin has collaborated with many important stakeholders and leveraged funding to develop and implement cost-effective programs that conserve water and energy, reduce runoff and provide other important environmental benefits.

All of these programs combined are being used to help West Basin and its retailers meet the 14 BMPs. West Basin has provided programs and activities that have assisted its retailers to help meet the BMPs listed here.



7.5.1 BMP #1 - Water Survey Programs for Single-Family Residential and Multi-Family Customers

Water surveys provide residents with valuable information about their water use. Trained conservation professionals test the water flow rates using devices inside the home, such as showerheads, toilets, and sink aerators to make sure they are water efficient. They also check for leaks and teach the resident how to read the water meter correctly. A comprehensive evaluation is conducted on the outdoor landscape to identify inefficiencies and recommend ways the resident can save water outdoors.

Several of West Basin’s water retailers have hired companies to provide this service to their customers. As the regional water wholesaler, West Basin supports these efforts and provides further resources as necessary.

In 2007, West Basin designed a residential landscape program called the Green Garden Program and received a grant for \$231,000 from USBR. In addition, West Basin received local funding through a partnership with MWD and several of its local retail water agencies. The Green Garden Program focused on providing qualified residents with free landscape surveys, “smart” irrigation controllers and rotating sprinkler nozzles. The program contained three steps:

- **Step 1:** Residents first contacted West Basin’s Program vendor to pre-qualify.
- **Step 2:** West Basin’s vendor provided a free landscape survey and if the resident had an older, inefficient irrigation controller, they were invited to a free sprinkler controller exchange event.
- **Step 3:** Residents brought their old irrigation controllers to the exchange event, and at the event the resident would be provided with a “smart” irrigation controller and rotating sprinkler nozzles. They would also receive one hour of training on how to install and program the controller.

Upon completion of the program in September 2010, West Basin conducted a water use study to compare the pre-controller installation water use with the post-installation water use and found an overall water savings of 14 percent. This percentage translates to about 47 gallons saved per day. Table 7-1 shows the total conserved savings from the Green Garden Program.

Table 7-1: Green Garden Program

	Number Completed	Water Use Saved (AF)
Landscape Surveys	958	N/A
Controllers Distributed	580	30
Rotating Sprinkler Nozzles	4,845	32
Total	6,383	62



7.5.2 BMP #2 - Residential Plumbing Retrofit

This BMP recommends the distribution and retrofit of low-flow showerheads, toilet displacement devices, and faucet aerators, as well as the adoption of enforceable ordinances. As Table 7-2 shows, it is estimated that since 1990, West Basin has distributed over 2,000 faucet aerators and over 220,000 low-flow showerheads.

In mid 2000, several of West Basin’s retail water agencies began working with a company called Resource Action Program. This company developed a water and energy conservation kit geared for elementary school kids. As a way to provide local support and increase the program, West Basin partnered with several local water agencies and was awarded a DWR grant of \$261,000 to be used for the purchase and implementation of 20,000 school kits. Through the use of these kits, a total of 588 acre-feet of water and 62 million kilowatts of electricity will be saved.

Table 7-2: Residential Plumbing Retrofits

Devices	1990-2000		2000-2005		2005-2010		Total	
	# of Units	AF Saved						
Faucet Aerators	954	3	0	0	1,133	3	2,087	6
Low-Flow Showerheads	215,563	1,014	7,500	35	152	.68	223,215	1,049

7.5.3 BMP #3 - System Water Audits, Leak Detection, and Repair

In May 2009, the American Water Works Association published the 3rd Edition *M36: Manual Water Audits and Loss Control Programs*. Included, was a new BMP 1.2 to replace the old BMP 3 and incorporated new water loss management procedures as they apply to California.

As a result, retail water agencies are expected to use the AWWA Free Water Audit Software to complete their standard water audit and water balance. Implementation shall consist of actions such as standard water audit and water balance, validation, and economic values, among others. While West Basin is required to comply with BMP 3 as a wholesale water agency, the agency is exempt due to the fact that the agency neither owns nor operates a potable water distribution system.

7.5.4 BMP #4 - Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections

Since West Basin is a water wholesaler, this BMP does not directly apply. However, every water agency within West Basin’s service area bills their retail customers according to meter consumption. By encouraging the installation of dedicated landscape meters, agencies will be able to recommend the appropriate irrigation schedules through future landscape programs.



This BMP requires that agencies identify barriers that make it difficult to retrofit commercial accounts with dedicated landscape meters as well as incentives to encourage such retrofits.

7.5.5 BMP #5 - Large Landscape Conservation Programs and Incentives

This BMP requires that agencies provide non-residential customers with support and incentives to improve their landscape water efficiency. Several of the local water retailers provide free large landscape surveys and MWD provides incentives for devices such as smart irrigation controllers and rotating sprinkler nozzles.

The large landscape sector was identified in West Basin's 2006 Conservation Master Plan as an area where a considerable amount of water could be saved. Recent data shows that irrigation system and landscape inefficiencies can be as high as 50 percent. Many landscapes are poorly maintained and overwatered, therefore additional training, education and resources are needed to reduce water use. As a result, West Basin and its water retailers partnered to develop several programs with grant funds.

Ocean Friendly Landscape Program

In 2005, West Basin formed a partnership with the Surfrider Foundation to develop the Ocean Friendly Landscape Program. This program contained several water conservation and education components including:

- Facilitation of 40 Ocean Friendly Garden workshops
- Distribution of 1,350 residential "smart" irrigation controller rebates
- Distribution of 1,117 large landscape irrigation controllers,
- Development of 10 Ocean Friendly demonstration gardens
- Implementation of a study that would test the success of the irrigation controllers at reducing dry-weather runoff.

As part of the Greater Los Angeles County Region Integrated Regional Water Management Program, Proposition 50 Implementation Grant Application, this program was awarded a \$1.2 million grant. Since the implementation of this program began in 2010, West Basin has been working with cities, parks, school districts, Homeowner Associations, and other qualified sites to install "smart" controllers. Table 7-3 shows the estimated conserved savings to date of this program. Once all 1,117 controllers are installed by the end of the year 2012, the total annual water savings is estimated to be 332 AF per year.



Due to the State bond freeze in 2008 and 2009, the residential rebate and demonstration garden components of the program were put on hold. They both resumed implementation in late 2010.



Table 7-3: Ocean-Friendly Landscape Program since Inception

Program Component	Units Completed	Annual Savings (AF)
Irrigation Controllers Installed	100	30
Classes Conducted	19	N/A
Residential Rebates Provided	5	.26
Demonstration Gardens Installed	0	N/A

Comprehensive Landscape Survey Program

In 2006, West Basin developed a Large Landscape Survey Program and was awarded funding through MWD’s Enhanced Conservation Program. This program provided the services of a qualified landscape surveyor to conduct comprehensive surveys on large landscapes and provide a detailed audit report along with recommendations. Fifteen sites were audited with a resulting 55.6 percent of average irrigation efficiency due to broken and mismatched sprinkler heads, over-watering, no hydro-zoning, puddling of water, dry spots, incorrect water scheduling and various other problems.

Figure 7-3: Example Audit Report

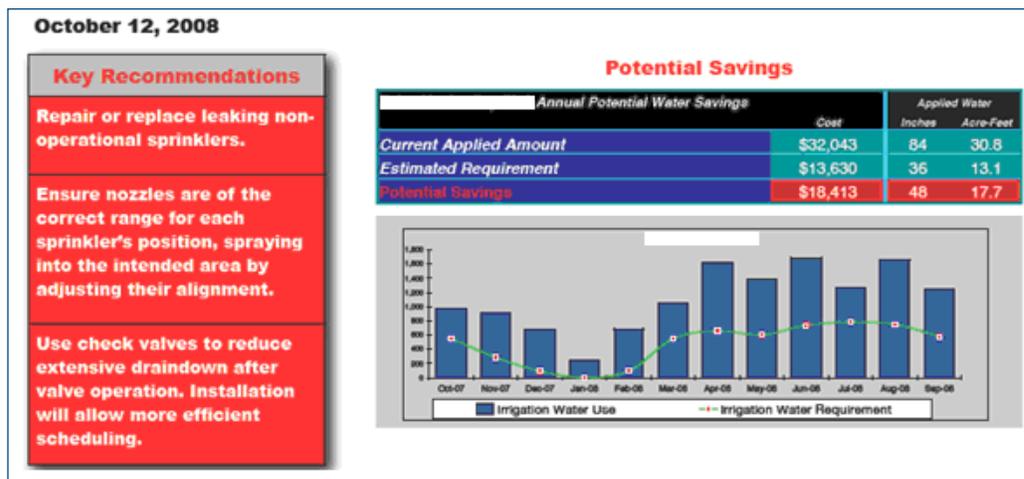


Table 7-4 is an example of the front cover of the audit report. Within the report, the water usage was analyzed and compared to the recommended water usage using the local weather or evapotranspiration potential. Key recommendations were also provided to the customer.

Table 7-4: Comprehensive Landscape Survey Program Savings

Number of Site Surveys	Annual Savings (AF)
15	51



Landscape Training to Professional Landscapers

In order to better educate the landscape community about water conservation practices, West Basin held a workshop in 2009 in the City of Malibu. West Basin partnered with the City of Malibu, Los Angeles County Waterworks District #29 (the local water retailer) and a professional landscape company to conduct a training session. The class was taught in Spanish and provided information about water-efficiency practices, the local ordinance requirements, and overall best management practices.

Model Landscape Ordinance Compliance

The landscape programs mentioned above will help West Basin and its retailers abide by the requirements of the new State's Model Landscape Ordinance. For example the ordinance contains the following requirements and provisions:

- Encouragement of the use of recycled water
- Landscape water budget component
- Provision to minimize landscape irrigation overspray and runoff
- Provisions for appropriate use and groupings of plants
- Provisions for use of automatic irrigation systems and irrigation schedules based on climate conditions

West Basin's programs are aligned with the new ordinance. For example, West Basin continues to identify and connect new customers to its water recycling system. West Basin also encourages the use of water budgets as mentioned above in the Comprehensive Landscape Program. During the last few years, several of West Basin's water retailers have developed new tiered rates and developed water budgets. Through its Ocean Friendly Garden Classes, West Basin teaches residents how to develop a water efficient and sustainable garden. Some of the topics covered include: reducing turf, installing native plants, installing drip irrigation and using weather-based irrigation controllers, all of which are mentioned in the state's new ordinance.

7.5.6 BMP #6 - High-Efficiency Washing Machine Rebate Programs

Since 2005, the MWD has provided rebates for high-efficiency clothes washers to its member agencies. MWD has branded the term BeWaterWise to develop market recognition. During the 2006–10 period, MWD conducted many radio and television commercials to promote the rebates as well as promoted the program on its www.bewaterwise.com website.

MWD testing found that many of the high-efficiency machines had a Water Factor of 6.0 or less. In order to motivate the public to purchase the most efficient washers possible, MWD develops a rebate that allowed only washers with a Water Factor of 4.0 or less to qualify for a \$100 washer rebate. The washer rebate incentive continues to be an effective tool to achieve water conservation. Table 7-5 shows the annual water savings within West Basin's service area as a result of the use of higher efficient machines.



Table 7-5: High-Efficiency Washing Machine Rebate Program Savings (2003-2010)

Number of Rebates	Annual Savings (AF)
2,821	44

7.5.7 BMP #7 - Public Information Programs

West Basin uses many strategies to help promote its programs to the public. It coordinates with local and regional agencies to promote water conservation messaging as well as developing its own public information programs. Community support for WR2020 is strong based on letters of support received from City Councils, Chambers of Commerce, community groups and more than 4,000 individual supporters.

In 2009, West Basin developed and launched its WR2020 Program. The goal of this program is to communicate to the public West Basin’s goal of increasing local water reliability by doubling recycled water production, doubling its water conservation efforts and introducing ocean-water desalination to its water portfolio. All of West Basin’s supply development programs fall under the umbrella of the WR2020 Program. As part of WR2020, West Basin offers the specific conservation related programs described below.

WR2020 Program – Speakers Bureau

West Basin staff provides presentations on its WR2020 Program. In 2009/10, West Basin conducted over 100 presentations to local community groups that included city councils, service clubs, chambers of commerce and others. The presentations provided information on current water supply challenges and the programs that West Basin launched to help meet those challenges. Through outreach efforts more than 3,500 local residents and 100 cities/community groups pledged their support for the WR2020 Program.

Imported Water Supply Tours

West Basin, in cooperation with MWD, also provides inspection tours of the Colorado River Aqueduct and the State Water Project to legislators, local elected officials, retail agency staff, and the general public at various times throughout the year. The purpose of the three-day trips is to give local decision-makers a better understanding and appreciation of the water supply issues impacting the region.

Water Harvest Festival

In October 1999, West Basin began its first annual Water Harvest Festival located at the ECLWRF in El Segundo. West Basin invites the public to participate in a variety of games, shows, tours and contests to learn from informational stations about water recycling and conservation. In 2010, West Basin conducted its 12th annual Water Harvest Event that had over 3,000 people



Water Harvest Festival



in attendance. The event features local agencies and water conservation product vendors that provide the public with information about water conserving devices, rebates and programs. West Basin also provides free tours of its facility and demonstrates to the public how waste water is turned into usable recycled water.

Smart Landscape Expo

There has been an increased desire by the public recently to learn more about native plants, drip irrigation and other landscape conservation devices and measures. In response, West Basin developed the Smart Landscape Expo, where the public can visit irrigation vendors and purchase native plants from local nurseries. At the initial expo, conducted in 2009, West Basin provided free 30-minute workshops taught by landscape designers. West Basin filmed several outdoor landscape demonstrations and placed the clips on its web site for the public to view. For the second annual Expo, West Basin will incorporate energy efficiency awareness into the event to give the public a more holistic view of green living both outdoors and indoors. It will be renamed the Water and Energy Smart Expo.

Water Recycling and Ocean-Water Desalination Tours

Once a month, West Basin offers free tours of its ECLWRF to the public to share the WR2020 Program, educate visitors about water supply issues, and show how water is purified in 20 minutes. The ocean-water desalination facility will open to the public in May 2011, and will soon offer tours three days a week. Both facilities will also be open for school tours for grades 3-12.

Ocean Friendly Garden Classes

In 2008, West Basin began offering free Ocean Friendly Garden (OFG) Classes as part of its larger Ocean Friendly Landscape Program. In 2010, West Basin, in partnership with the Surfrider Foundation, conducted 19 classes throughout its service area. Classes are one-day, three-hour sessions that teach residents how to build an Ocean Friendly Garden of their own, reduce runoff, landscape with drought-tolerant plants, and keep water on their property. These classes were well attended with as many as 60 residents participating per class.

Zero Runoff Street Median Water Conservation Program

For this West Basin sponsored program, water efficient street medians and parkways were designed to reduce water use by at least 50 percent and water runoff by 100 percent. This program included projects that replaced existing street medians and parkways with a combination of artificial turf, porous cover, native and/or drought tolerant plants, drip irrigation, or Smart Irrigation Controllers. Several cities took advantage of this program and retrofitted street medians to reduce water use, reduce runoff and educate the public about water conservation.



ECLWRF School Tours



*Native Plant
Demonstration Garden*

New Native Plant Demonstration Gardens

In 2009, West Basin built a new Native Plant Demonstration Garden at ECLWRF in El Segundo. As a part of this project, West Basin held two hands-on workshops where the public assisted with the installation of the plants, drip irrigation and the permeable walkway. In 2010, West Basin also renovated the landscape at its headquarters in Carson with two hands-on workshops to install and maintain the native plants and a drip irrigation system.

California Water Awareness Campaign

West Basin is also active with the California Water Awareness Campaign (CWAC), which is an association formed several years ago to coordinate efforts throughout the State during its *May is Water Awareness Month* campaign. With this effort, water agencies throughout the State, large and small, can tap into a large pool of knowledge and materials to promote a water awareness message not only in May, but throughout the year.

Media Outreach

West Basin maintains a strong link with the local news media through press releases, one-on-one tours and talks, and small group briefings to share West basin's ongoing achievements in making water supply more reliable. Recently, West Basin conservation staff was included on the cover of a Palos Verdes gardening supplement highlighting native water efficiency plants.

7.5.8 BMP #8 - School Education Programs

Water and environmental education continue to be critical components of West Basin's outreach strategy. Therefore, West Basin offers a variety of elementary through high school programs free of charge to all schools within its service area. Descriptions of each program can be found in Section 7.7.

7.5.9 BMP #9 - Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts

West Basin has increased its participation and involvement with the CII sector over the past few years. Since 2007, West Basin has implemented, designed and participated in a number of successful CII programs partnering with local water agencies and their purveyors as well as with governmental organizations for increased outreach opportunities, described further below.

Complete Restroom Retrofit Program

This program provides businesses using older restroom devices with high-efficiency toilets, urinals and sink faucets. This program was initially funded through a grant and has been ongoing since 2007. This program has been successful for both small businesses and larger businesses alike. Phase 2 of the program was implemented in 2010 and will focus more on larger commercial customers such as high-rise buildings and hotels.



Recirc and Save Program

This program incentivizes large commercial and industrial customers to implement water-use efficiency projects as identified by West Basin. Increased incentives are offered for cooling tower efficiency upgrades and process water efficiency improvements such as water supply recirculation and on-site treatment. This program also offers technical assistance and audits to assist these customers in making changes to their processes that will result in water use reductions.

Cash for Kitchens Program

During its pilot phase in 2009, this program initially targeted large (greater than 1,000 square feet) commercial kitchens but has now been expanded to also include smaller restaurants. Food service facilities can benefit greatly from the use of efficient devices as well as through behavioral changes. In order to address both, the program includes a quick audit, a session with the facility's management as well as device replacements for qualifying equipment.

Public Sector Program

This program was designed and implemented by MWD to assist public and institutional facilities in making water-efficiency upgrades. It was offered as a limited-time only program providing up-front funding for these public sites to make changes to their indoor and outdoor water-using systems.

Save Water, Save a Buck

In 2005, West Basin entered into a 10-year agreement with MWD to help support the on-going regional marketing efforts of this CII rebate program. As a way to increase the success of this program, West Basin offers its cities and water purveyors an opportunity to contribute additional funding to Save Water, Save a Buck to increase the rebate amounts available to their commercial customers. Over the years, agencies have partnered to provide higher rebate amounts in an effort to increase conservation participation from their customers. Rebates are offered for commercial clothes washers, water brooms, cooling tower conductivity controllers, pre-rinse spray nozzles, x-ray machine recirculating devices and commercial toilets and urinals.

7.5.10 BMP #10 - Wholesale Agency Programs

The programs provided by West Basin as a regional wholesaler are done in partnership with its retail agencies to benefit the 17 cities that are located within West Basin's service area as shown in Table 7-7.

Since 2005, West Basin has acquired more than \$4 million from State, Federal and local grant funding sources for program development and implementation. Furthermore, West Basin markets, designs and implements a majority of the BMPs within its service area. West Basin has also invested over \$2 million over the last five years to provide conservation and education programs that help increase water supply reliability for the region.



Table 7-6: Summary of CII Programs

Program	Devices Distributed	Number of Units	AF Savings*	Agency Partnerships
Complete Restroom Retrofit	High-Efficiency Toilets, Zero-Water and Ultra-Low Flush Urinals, Self-Closing Sensor Faucets	1,164	804	California Water Service Company and Golden State Water Company, Metropolitan Water District, Department of Water Resources, Water Replenishment District
Recirc and Save	pH Conductivity Controllers, Various process improvements	3	29	California Water Service Company and Golden State Water Company, Metropolitan Water District, Department of Water Resources, United States Bureau of Reclamation
Cash for Kitchens	Faucet Aerators, Flow Restrictors, Pre-Rinse Spray Valves, Waterbrooms	162	14.7	California Water Service Company, Golden State Water Company, Water Replenishment District, Metropolitan Water District
Public Sector Program	High-Efficiency Toilets, Zero-Water and Ultra-Low Flush Urinals, Waterbrooms, Centralized Irrigation Controllers, Synthetic Turf	265	978	Metropolitan Water District
Save Water, Save a Buck	Various	11,320	12,857	Metropolitan Water District, California Water Service Company, and Golden State Water Company
TOTAL		12,914	14,683	

*Over the Lifetime of the Devices



Table 7-7 West Basin Wholesale Agency Program Support

Retail Agencies that West Basin Supports	BMPs that West Basin Supports
California American Water Company	BMP #3 - System Audits
California Water Service Company	BMP #5 - Landscape Programs
City of El Segundo	BMP #6 - Washing Machines
City of Inglewood	BMP #7 - Public Information
City of Lomita	BMP #8 - School Education
Los Angeles County Waterworks District #29	BMP #9 - CII Rebates and Programs
City of Manhattan Beach	BMP #10 - Wholesaler Incentives
Golden State Water Company	BMP #12 - Water Conservation Coordinator
	BMP #14 - ULFT Replacement

As part of West Basin’s WR2020 Program, conservation programs will be further enhanced to provide even greater support to city and water retailer conservation program efforts.

7.5.11 BMP #11 - Conservation Pricing

In 2003, West Basin passed-through MWD’s two-tiered rate structure to its customer agencies to promote water conservation and regional water supply reliability. This rate structure called for customer agencies, in coordination with West Basin, to develop a reasonable budget for their Tier 1 annual maximum limit for imported water. Through voluntary purchase agreements, these customers will pay a higher price (Tier 2) for purchases that exceed their Tier 1 allotment. To assist them in not exceeding their Tier 1 allocation limits, West Basin works with agencies to enhance conservation, education and expand recycled water use.

7.5.12 BMP #12 - Water Conservation Coordinator

In 2007, West Basin added an additional full time employee, which was identified in the 2006 Conservation Master Plan, to assist with the development of West Basin CII Programs. West Basin’s Conservation Department now employs both a Senior Water Use Efficiency Specialist and a CII Specialist.

7.5.13 BMP #13 - Water Waste Prohibition

West Basin helped to promote MWD’s *Its Time to Get Serious* media campaign by developing a campaign to increase our cities’ awareness of the current water situation by requesting that they adopt a resolution. The resolution stated that the city would be willing to review their current ordinances and policies as they related to water conservation. With West Basin’s effort, many cities adopted the resolution and seven cities actually passed stricter water efficiency ordinances.

In 2008/09, MWD launched the Public Sector Program. This program provided upfront incentives to motivate the public including cities, counties, agencies, schools, and others, to purchase and install water-use efficiency devices. In order to participate in this program, MWD required each city to pass a Water Waste Prohibition Ordinance.



These ordinances feature provisions regarding water waste ranging from outdoor watering restrictions and requirements for water features and pools to requiring eating establishments to provide drinking water upon request only and requiring new car washes be equipped with recirculation systems. To date, the cities within West Basin’s service territory that have passed these ordinances include: Rolling Hills Estates, West Hollywood, Lomita, Manhattan Beach, Culver City, El Segundo, and Malibu. Each city’s ordinance may differ slightly.

7.5.14 BMP #14 - Residential Ultra-Low-Flush Toilet (ULFT) Replacement Programs

Since early 2000, MWD, West Basin and its local water retailers have been providing the public with ULFT rebates and programs. These successful programs have evolved through the steps listed below to provide the increasing water savings shown in Table 7-8.

- 2000 – 2010: MWD, West Basin, and local retailers provided rebates
- 2000 – 2010: West Basin provided free ULFTs and High-Efficiency Toilet (HET) to the public through its one-day toilet distributions
- 2008: West Basin received a grant from MWD to directly install HETs in the multi-family sector
- 2010: MWD, due to high ULFT saturation levels (in specific areas of its region), stopped providing residential toilet rebates

Table 7-8: ULFT / HET Rebate Program

	2000-2004	2005-2010	Total
\$ per Rebate	\$100	\$50	N/A
# of Rebates	2,822	1,271	4,093
Water Savings (AF)	113	51	164

Over the last five years, there have been several new technological advancements with the ULFTs. In 2006-07, the 1.28 gallon per flush HET was introduced and began gaining greater acceptance in the market.

In 2009, MWD conducted a region-wide saturation study, as part of its *SoCalWaterSmart* Program and found a water efficient saturation level of over 70 percent. Therefore, in 2010, MWD phased-out the rebate for the HET. In 2004, West Basin had estimated a 40% saturation level and in 2009, estimated 60% saturation. West Basin’s portion of MWD’s service area has older communities and opportunities still remain for replacement of older 3 - 5 gallon toilets. Since opportunities still exist in West Basin’s service area, West Basin along with several of its retail water agencies has continued conducting its free one-day HET distribution events. The results of this program are shown in Table 7-9.



Table 7-9: One Day Free HET Replacement Program Savings

	2000-2004	2005	2006*	2007*	2008	2009	Total
# of Devices	13,172	2,742	0	0	2,593	1,500	20,007
Water Savings (AF)	381	110	0	0	104	60	655

*Temporary stop in program

In 2006, West Basin and its sister agency Central Basin Municipal Water District separated and became two distinct agencies so there was a halt of this program from 2006-2007. Also during this time period, West Basin’s toilet vendor went out of business but was able to restart toilet distributions in 2008.

Multi-Family Program

In 2008, West Basin developed a unique water/energy direct installation program called Green Living for Apartments & Condos. In collaboration with Southern California Edison (Edison) and the Southern California Gas Company (Gas Company), West Basin received a MWD grant to provide apartment and condominium owners with free installations of HETs, showerheads, bathroom aerators and compact fluorescent light bulbs. A total of 2,000 HETs were installed, conserving an estimated 80 AF per year. During this period, West Basin also provided an additional 1,000 toilets to the Multi-family sector, for a total of 3,000 toilets.

Table 7-10: Multi-Family Residential Device Replacements

	2008	2009	Total	Annual Savings (AF)
HETs	2,500	1,500	4,000	161
Showerheads	214	214	428	3
Aerators	230	230	460	1.2
CFLs	500	500	1,000	N/A
Water Savings (AF)	104	60	655	165

7.5.15 Additional Conservation Programs

West Basin is very active in working with MWD to develop new conservation programs that are included in the CUWCC BMPs. In 2005, MWD implemented two new programs that are described below.

Water and Energy Implementation Program (WEIP)

West Basin is designing the WEIP to lay out both near-term and long-term goals working toward program integration between ourselves, Edison, the Gas Company and the water purveyors. Potential integration includes coordinated visits with the Gas Company for the *Cash for Kitchens* program, to acknowledge the strong connection between kitchens and natural gas use, and coordinated efforts to market and



implement water-efficiency programs along with Edison’s well established Small Business Direct Install programs.

Community Partnering Program

MWD, in cooperation with its member agencies, accepts applications from non-profit organizations and public agencies that promote discussions and educational activities for regional water quality, conservation and reliability issues. This program provides support for the following types of activities:

- After-school water education
- Community water festivals
- Watershed education outreach
- Environmental museum exhibits
- Library water resources education book drives
- Public policy water conferences
- Other projects that directly support water conservation or water quality education

7.6 Current and Future Education Programs

West Basin is particularly dedicated to working with MWD and its customer agencies to provide water conservation educational opportunities for the communities they serve. West Basin manages and supports several programs and has also developed new program ideas for future implementation.



Solar Cup

7.6.1 Current Programs

Solar Cup

Solar Cup is an annual solar-power boat building and racing competition held for high school students in Southern California. The goal of the 7-month program is to encourage students to learn about science, mathematics, water quality issues, conservation, and alternative energy and fuel sources. This year, MWD, the lead sponsor of the program, allowed member agencies, including West Basin, to sponsor up to four teams. In 2010, the West Basin sponsored teams were divided into veteran and rookie teams.

- Veteran Teams
 - Palos Verdes Peninsula High School, Rolling Hills Estates
 - City Honors High School, Inglewood
- Rookie Teams
 - Environmental Charter High School, Lawndale
 - West High School, Torrance



Water is Life Student Art Contest

This program encourages 3rd -12th grade students to learn about their water supply and design a water conservation slogan illustrated with original artwork. Grand prize winners in the elementary, middle and high school categories receive a MacBook laptop through the generous support of United Water Services and the Law Offices of Lemieux and O’Neill.

Board of Directors Scholarship Program

The West Basin Board offers an annual Scholarship Award of up to \$1,000 per qualified student with an interest in pursuing studies or a career in the water industry. Commencing in 2009, this program awarded eight scholarships to graduating high school seniors in West Basin’s service area who have been accepted to a college, university or trade school. In 2010, this program awarded seven scholarships.

Water Educators Newsletter

West Basin keeps in touch with educators and administrators regarding our programs through our quarterly newsletter *Waterworks*.

Water Explorations School Tours

West Basin offers a free field trip experience for 3rd – 12th grade students (including a complimentary school bus) to visit the ECLWRF in El Segundo. During the field trip, students interact with a conservation exhibit that teaches the students about how changing their behavior can save water. The students are then taken to visit the SEA Lab aquarium to learn about local marine life. Also located at the SEA Lab facility is West Basin’s new Water Education Center where students again get to experience another interactive conservation exhibit and learn about ocean-water desalination.



Water Educators Newsletter

Table 7-11: School Tours at ELCWRP

Grade Level	FY 2005-06	FY 2006-07	FY 2007-08	FY 2008-09	FY 2009-10	Total
Grades K-3rd	475	958	1,012	1,939	1,033	5,417
Grades 4th-6th	590	1,061	1,534	2,893	2,467	8,545
Grades 7th-8th	35	332	150	542	196	1,255
High School	0	25	145	344	167	681
Total	1,100	2,376	2,841	5,718	3,863	15,898

Water Star Program

West Basin’s new WR 2020 Water Star Program encourages elementary aged school children to sign up to save 20 gallons a day, reducing our dependence on imported water and reducing runoff to the ocean. Children receive a water star conservation kit



Water Star Program

complete with fix-it tickets, a water star badge, shower timer, faucet aerator, and other water-saving reminders. More than 700 students pledged to save 20 gallons per day during the 2010 pilot program.

Surfrider Foundation Teach and Test Program

The Surfrider Foundation South Bay Chapter's Teach and Test Program is an exciting project pairing high school students with graduate students from Loyola Marymount University to study the water quality of our South Bay beaches. West Basin sponsors this on-going effort to improve the water quality of Santa Monica Bay and introduce youth to water quality research and careers.

Teams volunteer to collect water samples from 12 local beaches to then analyze and publish their results in an on-going database. Students have participated from several schools within West Basin's service area including Chadwick School, Westchester, El Segundo, Redondo Union, and South high schools.

Splash Science

In 2011, Splash Science will be morphed into a program to bring students to the Ocean-Desalination Demonstration Facility.

Career Training Programs

Every February, West Basin partners with United Water Services, Inc. to participate in the Inglewood/Airport Chamber of Commerce's Annual Youth Business and Industry Job Shadow Day. West Basin serves as a business host and conducts a 5-hour water careers program and facility tour that accommodates 10 students. Students are introduced to West Basin's mission, water sustainability projects, agency organization and variety of job positions. Students then go on a tour of the ECLWRF to see the result of the public/private partnership with United Water. Students are exposed to a wide range of careers in chemistry, biology, engineering, human resources, finance, water resource planning, public affairs, operations and maintenance. West Basin also hosts high school summer internships in partnership with the South Bay Workforce Investment Board.

7.6.2 Future Programs

In addition to the programs listed above, in 2010 West Basin will be completing an Education Master Plan that outlines the programs best suited for the students within our service area. These programs will be considered for implementation over the next five years.



7.7 Conservation Program Partnerships

By partnering with various entities, West Basin is able to leverage its funding and resources in order to develop targeted programs that have been identified in its CMP.

Over the last five years, West Basin has partnered with local, state and federal agencies and has received several grants. These grants have allowed West Basin to develop and offer the public free water conservation programs. For every \$1 that West Basin invests, it provides \$6 worth of programs to the public. West Basin's funding partners have included the following:

- United States Bureau of Reclamation (USBR)
- California Department of Water Resources
- Metropolitan Water District
- Retail Water Agencies
- Southern California Edison
- Southern California Gas Company

Over the last several years, West Basin has also developed new and important partnerships that help expand West Basin's conservation programs and messages including:

- **South Bay Environmental Services Center (South Bay Center):** In 2006, West Basin formed a partnership with the South Bay Center. The South Bay Center is a program of the South Bay Cities Council of Governments (South Bay COG) that promotes programs provided by Edison, the Gas Company, Los Angeles County Sanitation District and LA Metro as well as West Basin's water conservation programs throughout 16 cities in the South Bay.
- **Surfrider Foundation:** In 2006, West Basin formed a partnership with Surfrider for the purpose of creating the Ocean Friendly Landscape Program. Since that time, West Basin has also helped to sponsor Surfrider's Teach & Test Program. Surfrider works with high school students to teach them about water runoff issues and pollution to the ocean.
- **Southern California Edison and Southern California Gas Company:** Efforts to work more closely with the energy utilities have been made through West Basin's partnership with the South Bay Environmental Services Center. Residents and businesses interested in saving energy are more likely to be interested in saving water as well. Leveraging the efforts of the energy utilities allows for more cost-effective programs as well as enhanced offering for residential and business customers alike. Successful integration of water-use efficiency and energy efficiency programs is happening on a small scale with the real possibility of further and larger scale integration in the near future.



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SECTION EIGHT

Rates and Charges



2010



SECTION 8 Water Rates & Charges



West Basin Water Purchases

As a water wholesale agency, West Basin does not directly charge residential and other end-use customers for supplies. Instead, West Basin's customer agencies purchase water from West Basin and then combine it with other supplies to deliver to their retail customers at a variety of rates.

West Basin's current potable water rates are primarily based upon the costs of imported supplies purchased from MWD. Imported water purchased by West Basin from MWD carries not only the cost of acquiring, importing, treating and distributing the water throughout the region, but also these costs associated with maintaining MWD reliability and "readiness to serve". The total West Basin rate structure must include the value-added costs associated with representing customer agencies at MWD, and distributing locally-produced recycled and desalinated groundwater supplies.

8.1 MWD Rate Structure

In 2002, the MWD Board adopted a new rate structure to support its strategic planning vision to encourage the development of local supplies like recycled water and conservation, and ensure a reliable supply of imported water. To achieve these objectives, MWD called for voluntary purchase orders from its member agencies, unbundled its water rates, established a tiered supply rate system, and added a capacity charge. The new rate structure components provide a better opportunity for MWD and its member agencies to manage their water supplies and proactively plan for future demands.

8.1.1 Purchase Orders

The Purchase Order is an agreement between MWD and a member agency, whereby the member agency agrees to purchase a minimum amount of non-interruptible water over a ten-year Purchase period. The Annual Maximum is the amount of lower cost (Tier 1) non-interruptible water that a member agency is entitled to purchase annually as a result of that Purchase Order.

Table 8-1 shows how both the current annual maximum and purchase commitment were calculated for West Basin. West Basin's highest delivery of non-Order interruptible water was 174,304 AF in 1990. Therefore, West Basin's Tier 1 annual maximum is calculated as 90 percent of 174,304 AF – or 156,874 AF. The total purchase commitment is 60 percent of 174,304 AF multiplied by the 10 year Purchase Order period - or 1,045,824 AF to be purchased by the end of 2013. Since signing a Purchase Order with MWD in 2002 West Basin has remained below its Tier 1 annual maximum and has been on track to meet its Purchase Commitment by the year 2012.



Table 8-1: West Basin Purchase Order Terms

Initial Base Allocation (AF)	Tier 1 Annual Maximum (90% of Base) (AF)	Purchase Order (60% of Base x 10) (AF)
174,304	156,874	1,045,825

8.1.2 Unbundled Rates and Tier 1 & 2

To justify the different components of the costs of water on a per acre foot basis, MWD rates are comprised of the following components:

- **Supply Rate Tier 1:** Reflects the average supply cost of water from the Colorado River and State Water Project.
- **Supply Rate Tier 2:** Reflects the MWD costs associated with developing new supplies, which is assessed when an agency exceeds its Tier 1 limit of firm deliveries.
- **System Access Rate:** Recovers a portion of the costs associated with the conveyance and distribution system, including capital and operating and maintenance costs.
- **Water Stewardship Rate:** Recovers MWD’s cost of providing incentives to member agencies for conservation, water recycling, groundwater recovery, and other water management programs approved by the MWD Board.
- **Delta Supply Surcharge:** Reflects the additional supply costs that Metropolitan faces along with other costs due to the pumping restrictions on the State Water Project. The Delta Supply Surcharge replaced the Water Supply Surcharge effective with the FY 2009/10 rates.
- **System Power Rate:** Recovers MWD’s electricity-related costs, such as the pumping of water through the conveyance and distribution system.
- **Treatment Surcharge:** Recovers the treatment cost and is assessed only for treated water deliveries, whether firm or non-firm.

The MWD water rates for calendar year 2011 are displayed in Table 8-2.

Table 8-2: MWD Rates Adopted for 2011

Category of Water	\$/AF
Supply Rate Tier 1	\$104
Supply Rate Tier 2	\$280
System Access Rate	\$204
Water Stewardship Rate	\$41
Water Supply Surcharge	\$0
Delta Supply Surcharge	\$51
Power Rate	\$127
Treatment Rate	\$217
Total Tier 1 Treated Rate	\$744
Total Tier 2 Treated Rate	\$869



8.1.3 Replenishment Service

Although the great majority of the MWD water supplies are sold as uninterruptible Tier 1 or Tier 2 supply, there are times when excess supply is available for storage replenishment purposes. Since these excess supplies are only as available (or interruptible), they are typically bought at a discounted rate by agencies to recharge groundwater supplies or fill surface storage. This Replenishment Service Water is offered by MWD as either untreated or treated (that can be used as “in-lieu,” where a retail agency will curtail pumping and instead take direct deliveries from MWD). Replenishment Service Water rates are not tied to the uninterruptible rate structure illustrated in Table 8-2. These rates are established by MWD to provide the best incentive to replenish the groundwater basins. Replenishment Service rates effective January 1, 2011 are shown in Table 8-3.

Table 8-3: MWD Replenishment Service Rate Adopted for 2011

Category of Water	\$/AF
Replenishment Water Rate Untreated	\$409
Treated Replenishment Water Rate	\$601

8.1.4 MWD Capacity Charge

The MWD capacity charge was developed to recover the costs of providing distribution capacity use during peak summer demands. The aim of this charge is to encourage member agencies to reduce peak day demands during the summer months (May 1 thru September 30) and shift usages to the winter months (October 1 thru April 30), which will result in more efficient utilization of MWD’s existing infrastructure and defers capacity expansion costs. Currently, MWD’s capacity charge for FY 2010 and 2011 are set at \$7,200/cubic feet per second (cfs).

The capacity charge is applied to an agency’s maximum usage rate, which is the highest daily average usage (per cfs) for the past three summer periods. Table 8-4 shows the maximum usage rate for West Basin.

Table 8-4: Metropolitan Water District Capacity Charge for 2010

Peak Flow 2007 (cfs)	Peak Flow 2008 (cfs)	Peak Flow 2009 (cfs)	3-Year Max (cfs)	Capacity Charge
262	243	221	262	\$1,663,700

Note: These peak flows are based upon West Basin’s coincident peak of all its MWD connections.

8.1.5 Readiness-to-Serve Charge

MWD’s readiness-to-serve charge recovers a portion of MWD’s debt service costs associated with regional infrastructure improvements and is determined by the member agencies’ firm imported deliveries for the past ten years. West Basin meets this obligation through its commodity rates.



8.2 West Basin's Imported Water Rates

To deliver water from MWD to its customer agencies, West Basin must pass along the MWD costs as well as an additional administrative surcharge. Described below are elements of the rate structure that West Basin applies to the delivery of imported water for its customer agencies.

8.2.1 Purchase Agreements

In order to meet the Purchase Order commitment with MWD, West Basin established its own purchase contract policy with its customer agencies. West Basin's Imported Water Purchase Agreement also calculates an annual maximum and total purchase commitment, but offers more flexibility to the customer. West Basin requires only a five-year commitment, as opposed to the ten-year MWD term. Furthermore, customer agencies have the option to adjust their annual maximum and purchase commitment amounts annually by offsetting imported water demand with recycled water purchased from West Basin. For purchases above the Tier 1 limit, or in the absence of a Purchase Agreement, the customer agency pays the Tier 2 rate.

8.2.2 Reliability Service Charge

One of the main revenue sources for West Basin is the reliability service charge applied to all imported water sold. Revenue from this charge recovers West Basin's administrative costs including planning, outreach and education, and conservation efforts, as well as a portion of the recycled water system operating costs. As of July 1, 2010, West Basin's reliability service charge is at \$66/AF.

8.2.3 Readiness-to-Serve Surcharge

West Basin passes along MWD's readiness-to-serve charge within its commodity rates for non-interruptible and Barrier water supplies to cover this charge. As of January 1, 2011, West Basin's surcharge will be \$125/AF.

8.2.4 Water Service Charge

Water utility revenue structures benefit from a mix of fixed and variable sources. West Basin's water service charge recovers a portion of the agency's fixed administrative costs, but is a relatively small portion of its overall revenue from water rates. As of July 1, 2010, the water service charge is \$34/cfs of a customer agency's meter capacity for imported water meters.

8.2.5 West Basin's Capacity Charge

MWD's capacity charge is intended to encourage customers to reduce peak day demands during the summer months, which will result in more efficient utilization of MWD's existing infrastructure. West Basin has passed through MWD's capacity charge to its customer agencies based upon their highest daily average usage (per cfs) for the past three summer periods. The capacity charge that West Basin is assessed by MWD is \$6,350/cfs for FY 2011.



8.2.6 Desalter Water Charges

West Basin also sells water produced by the Brewer Desalter at the effective MWD rate. This includes the MWD non-interruptible base rate and an acre-foot equivalent for the Capacity Charge. Currently, the rate for Desalter water is \$767/AF as of January 2011.

8.3 Recycled Water Rates

West Basin’s ECLWRF provides five different qualities of water to meet the needs of landscape irrigation, cooling towers, refineries, and industries within and outside its service area. Since 1995, West Basin has encouraged the maximum use of recycled water by providing an economic incentive through specialized rates and charges.



Recycled water use for irrigation

8.3.1 Recycled Water Rates

West Basin uses seven different rates for recycled water to account for differing treatment quality, power requirements, and customer location. All rates are assessed to include the operation and maintenance costs, and labor and power costs associated with the delivery of recycled water. A majority of these rates are set up in a declining tiered structure to further encourage the use of recycled water, while the others are set up to service one or more customers at a uniform rate. Most of the recycled water rates are set lower than potable water rates except for highly treated recycled water for use by refineries. Fiscal year 2010 – 2011 rates are shown in Table 8-5.

Table 8-5: 2010-2011 Recycled Water Rates

		Within West Basin Service Area				Torrance/ LADWP Service Area	Palos Verdes Zone
AF	Basic	West Coast Barrier	Indus- trial R/O	AF	Basic	West Coast Barrier	Indus- trial R/O
0-25	\$686/AF	\$540/AF	\$914/AF	0-25	\$686/AF	\$540/AF	\$914/AF
25-50	\$676/AF	\$540AF	\$914/AF	25-50	\$676/AF	\$540AF	\$914/AF
50-100	\$666/AF	\$540/AF	\$914/AF	50-100	\$666/AF	\$540/AF	\$914/AF
100-200	\$656/AF	\$540/AF	\$914/AF	100-200	\$656/AF	\$540/AF	\$914/AF
200+	\$646/AF	\$540/AF	\$914/AF	200+	\$646/AF	\$540/AF	\$914/AF

Customers outside of West Basin’s service area boundaries pay an additional \$42/AF per tier. This additional charge is applied to make up for the recycled water standby charge that is not levied on their parcels.



8.3.2 Recycled Water Standby Charge

The recycled water standby charge is levied by West Basin to each parcel within the service area. A rate of \$24 per parcel (up to one acre for residential) is administered by West Basin to provide a source of non-potable water completely independent of drought-sensitive supplies. The revenue collected from this charge is used to pay the debt service obligations on the West Basin water recycling facilities. Each year West Basin holds a public hearing where they adopt West Basin's Engineer's Report and Resolution to assess this charge.

8.4 Future Water Rate Projections

As the demand for water increases in southern California so does the cost to administer, treat, and distribute imported and recycled water. However, West Basin has worked diligently to ensure that stable and predictable rates are managed for the future. This section discusses projections of imported and recycled water rate trends for the next ten years.

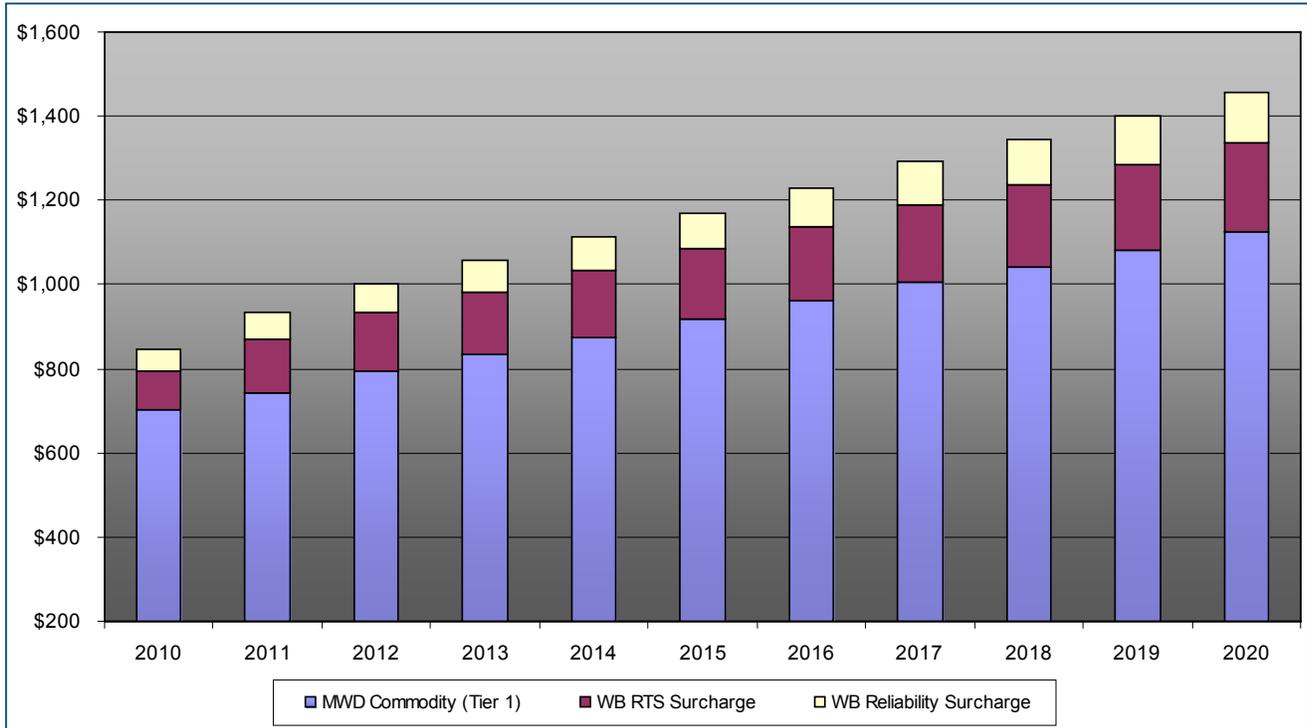
8.4.1 Imported Water Rate Projections

In 2004, the MWD Board adopted its Long Range Financial Plan. This plan was developed to forecast future costs and revenues necessary to support its operations and capital investments. Furthermore, it lays out the financial policy MWD will pursue over the next ten years. According to projected MWD sales, with investments into local resources, MWD estimates imported water rates will increase 4-6 percent annually. As a result, West Basin's water reliability service charge is projected to increase at an annual average rate of 7 percent. This increase is determined by West Basin's own Long Range Financial analysis and revenue requirements.



Figure 8-1: Projected Imported Water Rates displays West Basin’s imported water rate projections for the next ten years.

Figure 8-1: Projected Imported Water Rates



Source: MWD Long Range Financial Plan & West Basin’s Financial Plan.

8.4.2 Recycled Water Rate Projections

Similar to imported water rates, recycled water rates are expected to increase due to higher treatment, maintenance, and power costs. However, West Basin believes in setting recycled water rates at a competitive level to help offset the use of imported water. To achieve this economic incentive, recycled water rates have been projected to increase at a slightly lower level than imported water. Rates are projected to increase for all types of recycled water, by an average of 5 percent annually. However, these rates may vary depending upon energy and chemical costs.



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SECTION NINE

Recycled Water



2010



SECTION 9 Recycled Water

Recycled water is the cornerstone of West Basin's efforts to increase water reliability by augmenting local supplies and reducing dependence on imported water. Since planning and constructing its recycled water system in the early 1990s, West Basin has become an industry leader in water reuse. West Basin's recycled water supply is sold to customers for non-potable applications such as landscape irrigation, commercial and industrial processes, and indirect potable uses through groundwater replenishment. While serving to offset imported water supplies, recycled water use also results in less ocean discharge of lesser-treated wastewater into the Santa Monica Bay.

In FY 2009-10, West Basin delivered about 30,400 AF of recycled water to sites inside and outside its service area, saving enough potable water to serve roughly 61,000 households. Within West Basin's service area, municipal and industrial recycled water use totaled about 15,500 AF and seawater barrier about 7,796 AF, which is about 13 percent of West Basin's current total water supplies. It is projected that recycled water sales could represent 27 percent of total water supplies by 2035.



9.1 Recycled Water Supply and Treatment

West Basin's recycled water source of supply is treated wastewater effluent from the City of Los Angeles's Hyperion Wastewater Treatment Plant (Hyperion). The City of Los Angeles has operated Hyperion, located adjacent to West Basin's service area, since 1894. Initially built as a raw sewage discharge plant into the Santa Monica Bay, Hyperion has been upgraded over the years to secondary and full secondary treatment. Hyperion's full treatment capacity is 450-850 mgd and secondary treatment capacity is 450 mgd.

Although the City of Los Angeles strives to provide West Basin with a consistent quality of secondary treated wastewater, the ECLWRF has to accommodate inevitable fluctuations in influent quality. Table 9-1 illustrates the amount of historical, current and projected wastewater collected and treated at Hyperion and the amount of recycled water that West Basin treats to at least tertiary recycled water standards.



Table 9-1: Hyperion Wastewater Collected and Treated (AFY)

	2005	2010	2015	2020	2025	2030	2035
Wastewater collected & treated in Los Angeles' service area ¹	390,000	425,000	465,000	500,000	535,000	570,000	605,000
Quantity treated to meet recycled water standard ²	24,160	30,000	58,100	62,000	66,000	70,000	70,000

[1] Data supplied by the Hyperion Wastewater Treatment Plant.

[2] Data supplied by West Basin.

West Basin purchases approximately 37,600 AF, or roughly 9 percent of Hyperion's secondary effluent for treatment at the ECLWRF. West Basin opened ECLWRF in 1995, which is still one of the largest recycled water plants of its kind in the nation. This facility has a current capacity of 62,700 AF with its fourth expansion expected to be complete in 2012.

Most of West Basin's recycled water is treated to meet California Code of Regulations Title 22 (Title 22) tertiary standards. Title 22 addresses specific treatment requirements for recycled water and lists approved uses. Approximately 2,000 tests are performed monthly at the West Basin ECLWRF to ensure water quality meets or exceeds all State and Federal requirements.

In 2002, West Basin's ECLWRF was recognized by the National Water Research Institute as one of the six National Centers for Water Treatment Technologies in the country. West Basin's recycled water program is unique in that it provides a variety of recycled water qualities beyond basic tertiary Title 22 levels. These five different water products, including Tertiary, are developed to meet specific customer specifications and are as follows:

- **Tertiary Water:** Secondary treated wastewater meeting Title 22 regulations is produced for non-potable irrigation through a conventional treatment process of coagulation, flocculation, clarification, filtration and disinfection.
- **Nitrified Water:** Tertiary water that is nitrified to remove ammonia is produced for use in refinery cooling towers.
- **Reverse Osmosis Water:** Secondary treated wastewater pretreated by microfiltration followed by reverse osmosis (RO), disinfection with ultra-violet and peroxide treatment for groundwater recharge.
- **Pure Reverse Osmosis Water:** Secondary treated wastewater that has undergone micro-filtration and RO for low-pressure boiler feed water.
- **Ultra-Pure Reverse Osmosis Water:** Secondary treated water that has undergone micro-filtration and two passes through RO for high-pressure boiler feed water.

In addition to providing recycled water for commercial and industrial uses, the reverse osmosis water produced by West Basin is purchased by the WRD and blended with potable water for injection into the West Coast Basin Seawater Barrier. This injected



water has the dual benefit of not only preventing seawater intrusion into the aquifers of the West Coast Groundwater Basin, but also providing replenishment to replace the water that is extracted by drinking water wells.

Seawater barriers are a series of injection wells that form a barrier to ensure that the groundwater level near the ocean stays high enough to keep seawater from seeping into a basin. Currently, the West Coast Basin Barrier receives approximately 75 percent RO recycled water mixed with 25 percent potable water. In April 2009, West Basin and WRD signed an agreement to increase the amount of RO recycled water supplied to the barrier to 100 percent by 2012 — saving 5.5 billion gallons of potable imported water a year.

In order to supply the variety of recycled water products to large customers that are often a long distance from the ECLWRF, West Basin also operates three satellite facilities that provide further treatment to tertiary water after passing through the ECLWRF.

Figure 9-1 shows the location of the ECLWRF, in the City of El Segundo, as well as these satellite treatment facilities including the Exxon-Mobil Nitrification Plant in Torrance, the Chevron Nitrification Plant in El Segundo and the Carson Regional Water Recycling Plant in Carson.



9.2 Recycled Water Use

9.2.1 Existing System

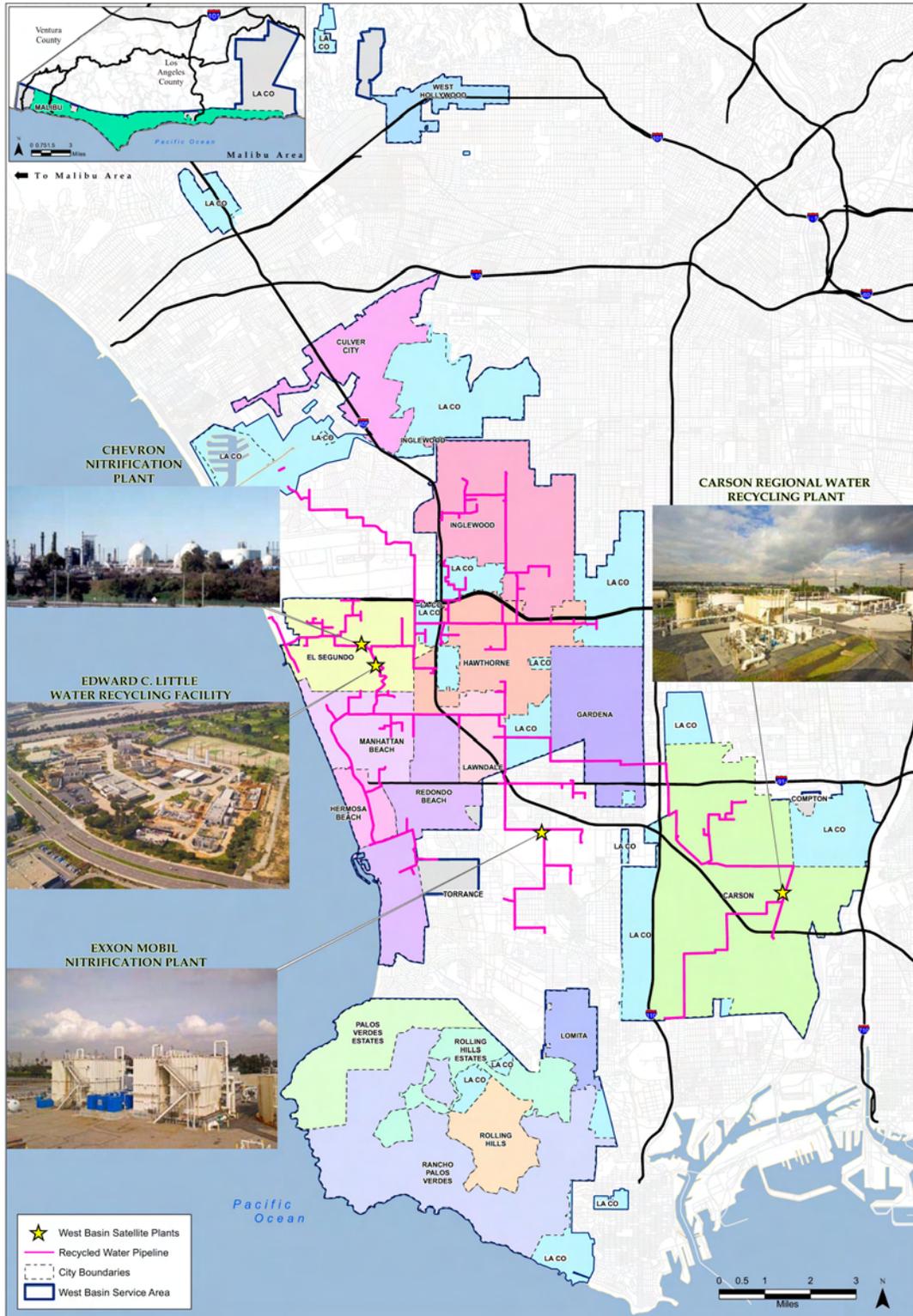
To date, West Basin has saved over 100 billion gallons of potable water imported from Northern California and the Colorado River which would have otherwise been used for non-potable applications. All recycled water is produced initially at the ECLWRF where it is distributed to either end-use sites or one of several satellite facilities. In all, more than 350 sites currently use more than 9.7 billion gallons annually.

As Figure 9-1 shows, West Basin’s recycled water system serves the cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Manhattan Beach, Lawndale, Redondo Beach, and unincorporated areas of Los Angeles County within its service area, as well as the cities of Torrance and Los Angeles, which are outside of its service area.

The recycled water distribution infrastructure is separate from the potable drinking water system. All pipes, pumps and other equipment used to transport recycled water are clearly identified as recycled water to distinguish them from the potable drinking water system.



Figure 9-1: West Basin's Water Recycling Facilities



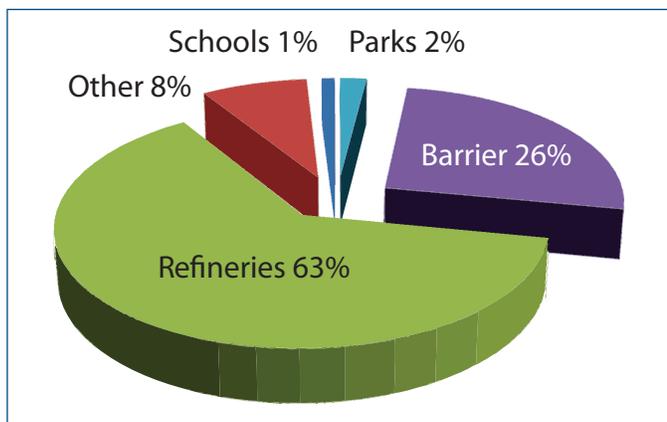


9.2.2 Recycled Water Use by Type

West Basin supplies recycled water for a wide-variety of customer uses such as:

- Seawater barriers
- Construction
- Industrial: Multi-Use
- Industrial: Nitrified
- Street Sweeping
- Irrigation: Cal-Trans
- Irrigation: Cemetery
- Irrigation: College
- Golf Course
- Irrigation: Landscape
- Irrigation: Medians
- Irrigation: Multi-Use
- Irrigation: Park
- Irrigation: School

Figure 9-2: Recycled Water Use by Type



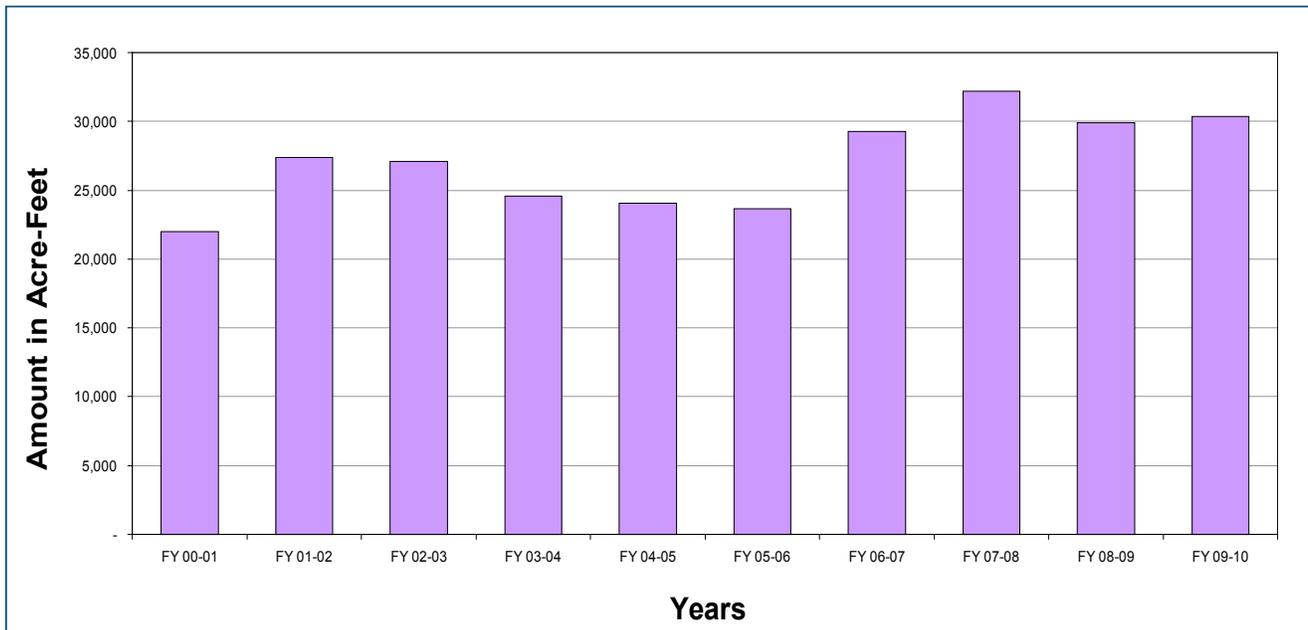
9.2.3 Historical and Current Sales

West Basin’s recycled water sales over the past ten years are illustrated in Figure 9-3. Sales increased until 2002-03, then declined due to a change in the source water from Hyperion. Sales have increased slightly in subsequent years and have remained steady at around 30,000 AF for the past two years. Table 9-3 provides a more detailed breakdown of historical sales by showing each retail customer agency’s annual purchases for the past ten years.

West Basin has been able to deliver over 270, 500 AF over the last ten years to customers both inside and outside of its service area. This recycled water use has replaced enough potable water to supply the needs of approximately 135,250 families of four for an entire year. West Basin anticipates recycled water production and use to increase in the future due to system expansions, new applications, increasing public acceptance and economic incentives.



Figure 9-3: Historical Recycled Water Sales (FY 2000-2010)



West Basin’s recycled water system also services the Cities of Torrance and Los Angeles, which are located outside of the District’s boundaries. Therefore, although the total usage within West Basin’s service area was 23,331 AF in 2009-2010, the total amount of recycled water delivered by West Basin was 30,384 AF

According to West Basin’s 2005 UWMP, deliveries of recycled water within the service area were projected to reach over 39,000 by 2010. As shown in Table 9-2, actual sales in 2009/2010 fell significantly below this target. This was mainly due to setbacks in expanding the recycled water program in the southern portion of West Basin’s service area which resulted in many large industrial customers not connecting to the system. In addition, water quality problems at Hyperion impacted deliveries to the West Coast Seawater Barrier significantly.

Table 9-2: Comparison of Recycled Water Use Project

Type of Use	2005 Projection for 2010	2009/2010 Actual Use
Irrigation/Industrial	21,848	22,588
West Coast Barrier	17,500	7,797
Total	39,348	30,384



9.2.4 Projected System Expansions

In 2009, West Basin completed a Capital Implementation Master Program (CIMP). The CIMP includes all of the planned projects for recycled water and desalination through the year 2030. The major recycled water capital projects are explained in further detail below.

ECLWRF Phase V Expansion: With the completion of the ECLWRF Phase V Expansion in 2012, West Basin is looking toward increasing its ability to provide enough recycled water to meet 100 percent of the West Coast Seawater Barrier’s needs. The Phase V Expansion Project will increase barrier water production at the ECLWRF by up to an additional 5 mgd and serve the El Segundo Energy Center with 0.5 mgd of single-pass RO water. The Phase V Expansion will also expand ECLWRF’s tertiary treatment system by an additional 10 mgd.

Hyperion Secondary Effluent Pump Station Expansion: As West Basin’s recycled water production continues to increase, the demand for Hyperion’s effluent will eventually exceed the capacity of the Hyperion Secondary Effluent Pump Station. A pump station expansion would be able provide a capacity of up to 70 mgd for ECLWRF. West Basin is working closely with Los Angeles Department of Water & Power, the provider of electrical power to the pump station, to also construct a second electrical feeder to the pump station that will also increase the reliability of the pumping facilities.



Edward C Little Water Recycling Facility



Table 9-3: West Basin Recycled Water Sales FY 2000-2010 (AFY)

West Basin	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Total
California Water Service Co. Dominguez	3,297	3,165	3,101	3,639	3,616	3,665	3,610	4,690	5,293	4,959	39,035
California Water Service Co. Hawthorne	90	116	101	112	111	111	118	85	99	90	1,032
California Water Service Co. Hermosa/Redondo	133	130	130	144	107	119	141	145	163	150	1,361
City of El Segundo	3,542	7,632	8,103	8,310	7,868	7,405	8,201	7,865	8,978	9,035	76,937
City of Inglewood	622	707	577	638	595	568	797	650	680	621	6,455
City of Manhattan Beach	272	307	254	301	274	249	316	288	251	264	2,777
Inglewood Unified School District	24	31	30	67	60	57	68	56	62	56	510
Golden State Water Company	237	282	315	432	435	429	523	552	410	360	3,975
M&I	8,216	12,371	12,610	13,643	13,064	12,604	13,774	14,330	15,936	15,535	132,082
WRD (Barrier)	6,753	7,290	6,754	3,935	3,799	4,383	9,104	11,129	7,652	7,797	68,596
Within Service Area	14,969	19,660	19,364	17,578	16,863	16,987	22,878	25,459	23,588	23,331	200,677
City of Torrance	91	117	144	196	186	253	285	311	277	272	2,134
City of Torrance - Mobil	6,558	7,212	7,328	6,385	6,735	6,156	5,774	6,078	5,599	6,173	63,998
LA DWP	357	398	277	394	283	257	313	360	444	608	3,692
Outside of Service Area	7,006	7,727	7,750	6,975	7,205	6,666	6,372	6,750	6,320	7,053	69,823
TOTAL	21,974	27,387	27,113	24,552	24,067	23,652	29,250	32,208	29,908	30,384	270,500



Harbor-South Bay Recycled Water Expansion Project: The Harbor-South Bay Recycled Water Expansion Project is a partnership between West Basin and the United States Army Corps of Engineers (USACE) to both expand West Basin’s current recycled water distribution system as well as to provide an improvement in overall system reliability. This expansion will be able to bring additional recycled water supplies to the cities of Carson, Torrance, Palos Verdes, Gardena, and unincorporated areas of Los Angeles County.

Treatment/Conveyance Facility Repair, Replacement, and Improvements: Multiple improvements are under consideration for West Basin’s treatment and conveyance system facilities. These improvements will enhance the safety, operability and efficiency of both the distribution system and treatment facilities. Some improvements will be made to comply with safety, water quality or other regulatory requirements or will be done to lower operating costs or improve equipment life.

Conveyance Facility Corrosion Protection Improvements: As a result of a study completed by West Basin, various cathodic protection improvements were identified that would ensure the integrity of West Basin’s recycled water facilities. These improvements will be implemented periodically to ensure system integrity over the duration of the system’s useful service life.

9.2.5 Projected Recycled Water Use

The 2009 CIMP identified and prioritized areas where recycled water has the potential to expand based upon potential future customers. Converting fabric and carpet dyeing industrial users to recycled water use are examples of significant opportunities for increased use.

The CIMP projects described in Section 9.2.4 are expected to result in at least an additional 40,900 AF of use within West Basin’s service area by 2035. West Basin is also projecting to expand its export of recycled water within the City of Los Angeles’ service area. Oil refineries within the harbor area of Los Angeles are proximal to West Basin’s existing system and represent a large untapped potential for high-quality recycled water sales. West Basin will continue to pursue new cost-effective projects both within and outside its service area.





Table 9-4 illustrates the projected increase of recycled water over the next 25 years.

Table 9-4: Projected Recycled Water Use (AFY)

	2015	2020	2025	2030	2035
Industrial & Irrigation	16,368	33,882	33,882	37,382	37,382
Indirect Potable Reuse	16,980	16,980	16,980	20,480	20,480
Within Service Area	33,348	50,862	50,862	57,862	57,862
City Torrance	6,650	6,650	6,650	6,650	6,650
City of Los Angeles	10,700	10,700	10,700	10,700	10,700
Outside of Service Area	17,350	17,350	17,350	17,350	17,350
Total	50,698	68,212	68,212	75,212	75,212

9.2.6 Encouraging Recycled Water Use

West Basin generates interest in recycled water by contacting potential customers and cities with sites that are located near an existing main pipeline, have a high water use potential in which a line can be constructed, are mandated to use recycled water, and/or express interest. For commercial and industrial customers, West Basin emphasizes the benefit of recycled water as a tool for profitability for businesses that goes beyond the benefits of water conservation. West Basin markets recycled water as a resource that:

- Is less expensive than potable water;
- Is more reliable than imported water in a drought; and
- Is consistent with statewide goals for water supply and ecosystem improvement on both the State Water Project and Colorado River systems.

The target customer is expanding from traditional irrigation users such as golf courses and parks to unconventional commercial and industrial users. Through innovative marketing, recycled water is now being used by oil refineries and for cooling towers. In addition, West Basin is investigating recycled water use in fabric dye houses, co-generating plants, and commercial laundries.

In addition to West Basin wholesaling recycled water at a rate lower than potable water, other financial incentives are used to encourage recycled water use. Some potential recycled water customers do not have the financial capability to pay for the onsite plumbing retrofits necessary to accept recycled water. Therefore, West Basin advances funds for retrofit expenses, which can later be reimbursed through the water bills. Table 9-5 illustrates West Basin’s coordinated effort with key stakeholders during the development of the CIMP.



Table 9-5: CIMP Coordination

Participating Agencies	Role in Plan Development
Water Purveyors	Customer Development, Facilities, Impacts, Rates
Wastewater Agencies	Recycled Water Supply, Water Quality, Reliability
Groundwater Agencies	Rates and Customer Involvement
Planning Agencies	Economic Analysis, Rates, Data Assessment, Customer Assessment, Rates, Community Impacts, Customer Involvement, Conceptual Pipeline Routes, Cost Estimates

Funding

Capital costs for projects planned over the next five years have been budgeted to average approximately \$30 million a year. These costs will be covered by the sources identified here and other sources as they become available.

MWD Local Resources Program Incentive: To qualify, proposed recycled water projects by member agencies must cost more than projected MWD treated non-interruptible water rates and reduce potable water needs. As a member agency of MWD, West Basin is eligible to receive an incentive for up to \$250/AF of produced recycled water. It is competitive and requires an application and review process by MWD in coordination with West Basin staff.

Grant Funding: West Basin often applies for Federal and State grant funding for recycled water projects including through the USACE, which affords qualified programs 75 percent project funding. West Basin has utilized this funding arrangement for several of our previous water recycling projects.



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SECTION TEN
Desalination



2010





SECTION 10 Desalination

West Basin's experience in recycled water treatment includes substantial knowledge on methods used for the removal of salt from water supplies. This experience has proved useful to West Basin in pursuing both groundwater and ocean-water desalination programs to further develop local water supplies. Since 1993, West Basin has operated the C. Marvin Brewer Desalter Facility to treat brackish groundwater that remains on the inland side of the West Coast Seawater Barrier. In 2001 West Basin also began a multi-phase program to explore the systematic development of a full scale ocean-water desalination facility. This multi-phase approach has been based on deliberate scientific research and testing, beginning with a small pilot facility to test the basic treatment technology, and followed by West Basin's recently dedicated Ocean Water Desalination Demonstration Facility and Water Education Center in order to evaluate and demonstrate ocean protection, energy recovery and cost reduction technologies. These facilities have been developed to ensure a full scale ocean water desalination facility will be done in a cost and energy efficient manner and with a goal to protect the ocean. Research results from the Demonstration Facility will be shared throughout the water industry worldwide via the web site.

10.1 Ocean Desalting Process

Desalination or desalting is the process of converting highly salty, or brackish, water into a drinkable supply. Today's ocean-water desalting process removes salt, minerals and impurities from ocean water with cutting edge membrane technologies such as ultrafiltration or microfiltration and reverse osmosis. Using these methods, raw ocean water first passes through an ultrafiltration or microfiltration membrane which has thousands of hollow strands with pores on the walls that are 5,000 times smaller than a pinhole. The water then continues on to reverse osmosis membranes for the final purification process. Reverse osmosis is a pressure driven process whereby water passes through the molecular structure of a thin membrane that filters out salts, minerals, and impurities. Figure 10-1 shows a diagram of the typical desalting process.

Traditionally, ocean-water desalination has been considered too expensive for a large-scale project, and for many years it was cost prohibitive compared to other sources of potable water in the West Basin service area. However, due to recent advancements in membrane technologies and energy recovery systems, and the increasing cost of existing sources of water, ocean-water desalination is now a financially viable new water source that is cost competitive with other sources of drinking water.



10.2 West Basin’s Ocean Water Desalination Pilot Project

In May 2002, West Basin initiated piloting efforts to desalinate ocean water and evaluate the potential for developing a viable, new future drinking water supply for the region. This pilot project was located at the El Segundo Power Plant in the City of El Segundo and marked the first use of microfiltration pretreatment and reverse osmosis as a treatment process for ocean-water desalination. The pilot project was in operation for over seven years, and desalted approximately 20 gallons per minute (gpm) of raw ocean-water. The goal of the project was two-fold: 1) identify optimal performance conditions and 2) evaluate the water quality characteristics. The research findings are being shared among industry partners.

Figure 10-1: Desalting Process



The process combination of microfiltration pretreatment and reverse osmosis treatment was to evaluate whether this process was effectively treating ocean-water and so West Basin performed extensive water quality research. Tens of thousands of water quality test results indicated that the treatment approach of utilizing microfiltration pretreatment and reverse osmosis treatment provides a reliable and consistent water quality that meets all State and Federal drinking water standards. The water produced at the pilot project consisted of approximately 300 parts per million (ppm) of total dissolved solids, lower than typical tap water in southern California. Figure 10-2 shows the microfiltration and reverse osmosis membranes used in the pilot demonstration project.

Figure 10-2: Treatment Technologies Used at West Basin’s Pilot Plant





West Basin's ocean-water desalination pilot project was designed to be a regional and national asset, and it was an open, collaborative effort that has benefited the entire water industry. To fund the \$7 million combined cost of the pilot project, West Basin partnered with major agencies within and related to the water industry, including the American Water Works Association Research Foundation, California Avocado Commission, City of Tampa Bay, DWR, East Bay Municipal Utility District, Long Beach Water Department, Los Angeles Department of Water and Power, MWD, National Water Research Institute, San Diego County Water Authority, South Florida Water Management District, and United States Bureau of Reclamation.

10.3 Ocean Water Desalination Demonstration Facility Projects

Following in the pilot project, West Basin's next objective was to evaluate several critical components of the ocean-water desalination process through a small full-scale desalination demonstration project. In early 2009, West Basin received all necessary permits to proceed with the construction of the West Basin Ocean Water Desalination Demonstration Facility and Water Education Center. West Basin used the data acquired from the pilot project in the planning and development of the demonstration facility that is co-located at the SEA Lab Marine Educational Facility in Redondo Beach, California.

The Demonstration Facility draws in 500,000 gallons of seawater a day to perform various research and testing activities. Of the total intake volume, 100,000 gal/day is treated to produce 50,000 gal/day of drinking water (although the product water meets all drinking water standards, that is by permit required to re-combine the water and return it to the ocean). This process will develop a basis of design for a future full-scale desalination plant by accomplishing the following goals:

- Evaluating environmentally safe intake and concentrate discharge technologies and impacts
- Optimizing operation and maintenance procedures using full-scale elements
- Optimizing performance of energy recovery devices
- Analyzing water quality (as a continuation of the pilot plant testing)
- Providing opportunities for public and stakeholder education

Figure 10-3 shows the construction of the Demonstration Facility and Water Education Center within the facility.

10.4 Future Ocean Water Desalination Projects

10.4.1 Ocean Water Desalination Full-Scale Facility

This Ocean Water Desalination Demonstration Facility will test the viability of a future, full-scale Ocean Water Desalination Facility capable of providing up to 20,000 AFY, or enough to supply 40,000 families for a year, in the initial phase. Pending the findings



from the demonstration facility and the environmental review process, West Basin anticipates permitting, financing, and constructing a full-scale facility by 2017. West Basin will perform a Desalination Program Master Plan in 2011 that will evaluate potential siting opportunities within West Basin’s service area that could accommodate a full-scale facility. Potable water produced by the future ocean water desalination facility will be supplied to local and/or regional drinking water distribution systems.

Figure 10-3: West Basin’s New Desalination Demonstration Facility



Construction of Demonstration Facility

Water Education Center

Water Education Center

Water Education Center

Table 10-1: Opportunities for Desalinated Water

Sources of Water	Yield AFY	Start Date	Type of Use
Ocean Water	20,000	June 2015	Potable



10.5 Brewer Desalter Treatment Facility

West Basin owns the C. Marvin Brewer Desalter Facility which began operating in July 1993. The Desalter was built on a site owned by California Water Service Company (CWSC) in the City of Torrance where it removes chloride from groundwater impacted by seawater intrusion in the WCGB. The Desalter was initially conceived as a five-year pilot program to see if brackish water could be economically treated to drinking water standards.

The Desalter originally used two wells to pump brackish water from a saline plume remaining within the WCGB. It treats the water using cartridge filters and reverse osmosis, and the treated water is then blended with other potable water. CWSC stores the treated water blend on-site in a 5-million gallon storage reservoir, and ultimately delivers it to consumers through their distribution system. Under the terms of an agreement with CWSC, West Basin reimburses CWSC to operate and maintain the Desalter.

In 2005, enhancements were made to the Desalter program that replaced the two wells with a new, more productive well. This well has the capability to pump 1,600 to 2,400 AFY of brackish groundwater to be treated at the Desalter.

Figure 10-4: Brewer Desalter Facility Equipment



Appendices



2010





APPENDIX A

Urban Water Management Planning Act

CALIFORNIA WATER CODE DIVISION 6

PART 2.6. URBAN WATER MANAGEMENT PLANNING

All California Codes have been updated to include the 2010 Statutes.

CHAPTER 1.	GENERAL DECLARATION AND POLICY	10610-10610.4
CHAPTER 2.	DEFINITIONS	10611-10617
CHAPTER 3.	URBAN WATER MANAGEMENT PLANS	
Article 1.	General Provisions	10620-10621
Article 2.	Contents of Plans	10630-10634
Article 2.5.	Water Service Reliability	10635
Article 3.	Adoption and Implementation of Plans	10640-10645
CHAPTER 4.	MISCELLANEOUS PROVISIONS	10650-10656

WATER CODE

SECTION 10610-10610.4

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

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

- (1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.
- (2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
- (3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.
- (4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
- (5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
- (6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.
- (7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
- (8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
- (9) The quality of source supplies can have a significant impact

on water management strategies and supply reliability.

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

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

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

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

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

WATER CODE

SECTION 10611-10617

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

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

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

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

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

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city

and county, city, regional agency, district, or other public entity.

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

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

WATER CODE

SECTION 10620-10621

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

(b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.

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

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

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

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

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

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

(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water

supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

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

WATER CODE

SECTION 10630-10634

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

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

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

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

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

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

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

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

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

- (A) An average water year.
- (B) A single dry water year.
- (C) Multiple dry water years.

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

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

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

- (A) Single-family residential.
- (B) Multifamily.
- (C) Commercial.
- (D) Industrial.
- (E) Institutional and governmental.
- (F) Landscape.
- (G) Sales to other agencies.
- (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

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

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

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

- (A) Water survey programs for single-family residential and multifamily residential customers.
- (B) Residential plumbing retrofit.
- (C) System water audits, leak detection, and repair.
- (D) Metering with commodity rates for all new connections and retrofit of existing connections.
- (E) Large landscape conservation programs and incentives.
- (F) High-efficiency washing machine rebate programs.
- (G) Public information programs.
- (H) School education programs.
- (I) Conservation programs for commercial, industrial, and institutional accounts.

- (J) Wholesale agency programs.
- (K) Conservation pricing.
- (L) Water conservation coordinator.
- (M) Water waste prohibition.
- (N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

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

(j) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirements of subdivisions (f) and (g) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California,"

dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.

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

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

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

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

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

(3) Notwithstanding paragraph (1), the department shall determine that an urban water supplier is eligible for a water management grant or loan even though the supplier is not implementing all of the water demand management measures described in Section 10631, if the urban water supplier has submitted to the department for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the water demand management measures. The supplier may request grant or loan funds to implement the water demand management measures to the extent the request is consistent with the eligibility requirements applicable to the water management funds.

(4) (A) Notwithstanding paragraph (1), the department shall

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

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

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

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

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

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

(i) Compliance on an individual basis.

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

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

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

the agencies participating in the project or plan is not implementing all of the water demand management measures described in Section 10631.

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

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

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

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

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

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

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

(2) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic

sequence for the agency's water supply.

(3) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

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

(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

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

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

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

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

(b) Commencing with the urban water management plan update due December 31, 2015, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

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

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

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

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

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

(e) The projected use of recycled water within the supplier's

service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

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

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

WATER CODE

SECTION 10635

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

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

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

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

WATER CODE

SECTION 10640-10645

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

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

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

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

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

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the exemplary elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has submitted its plan to the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

(c) (1) For the purpose of identifying the exemplary elements of the individual plans, the department shall identify in the report those water demand management measures adopted and implemented by specific urban water suppliers, and identified pursuant to Section

10631, that achieve water savings significantly above the levels established by the department to meet the requirements of Section 10631.5.

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

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

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

WATER CODE

SECTION 10650-10656

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

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

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

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

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

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

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the

"Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

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

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.



APPENDIX B

2010 Urban Water Management Plan Checklist

Table I-2 Urban Water Management Plan checklist, organized by subject

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 1.1.4
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1.1.1
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		N/A
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Appendix E
55	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642		Section 1.1.3
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Appendix C
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix D
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Throughout All Sections of Document

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Appendix D
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Appendix D
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 2
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2.2
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2.3
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2.3
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2.3
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 3.3
2	<i>Wholesalers:</i> Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. <i>Retailers:</i> Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 3.4

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		N/A
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	N/A
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Section 1.4
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		N/A
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 4.1
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		N/A
16	Describe the groundwater basin.	10631(b)(2)		N/A
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		N/A

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		Section 4.3
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.	10631(b)(2)		N/A
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 4.3
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4.3
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4.4
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Section 4.5
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 10
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 9
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 9.2

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 9.2
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 9.3
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 9.3.2
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		Section 9.3.4
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 9.3.7
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 9.3.6
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING ^b				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Throughout All Sections of Document
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5.2
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 5.1
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 5.3

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)		Section 5.2
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)		Section 5.3.6
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)		Section 5.3.1
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)		Section 5.3.2
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 5.3.4
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 5.3.3-5.3.5
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Appendix C
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5.3.1
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 6

No.	UWMP requirement ^a	Calif. Water Code reference	Additional clarification	UWMP location
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5.2
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 7.6
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 7.6
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 7.2
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Section 7.6
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	Appendix G

a The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.

b The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.



APPENDIX C

Notice of Public Hearing



APPENDIX D

Resolution of Urban Water Management Plan Adoption



APPENDIX E

Notice of Urban Water Management Plan Preparation



March 16, 2011

Garry Hofer
Operations Manager
California American Water Company
8657 Grand Ave.
Rosemead, CA 91770

Dear Mr. Hofer:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

A workshop for West Basin's retail water agencies will be held in early April at the West Basin headquarters to provide a summary of the draft UWMP including water supply and demand projections. The Public Hearing on the final 2010 UWMP will take place at the West Basin Board of Directors Meeting on May 23, 2011 at 1:00 p.m. Subsequent to the Public Hearing, the Board will consider adoption of the UWMP. West Basin will send a CD of the adopted UWMP in June 2011 to your agency.

If you have any concerns, please contact Fernando Paludi, Water Policy and Resources Development Manager at (310) 660-6214.

Sincerely,

A handwritten signature in black ink, appearing to read "Rich Nagel".

Rich Nagel
General Manager

LK:jks



March 16, 2011

Henry Wind
District Manager
California Water Service Company
2632 West 237th Street
Torrance, CA 90505

Dear Mr. Wind:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

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Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

James Turner
Water Supervisor
City of El Segundo
350 Main St.
El Segundo, CA 90245

Dear Mr. Turner:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

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Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

Glen Kau
Public Works Director
City of Inglewood
One Manchester Blvd.
Inglewood, CA 90301

Dear Mr. Kau:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

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Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

Vince DeMarco
Interim Director of Public Works
City of Lomita
P.O. Box 340
Lomita, CA 90717

Dear Mr. DeMarco:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

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If you have any concerns, please contact Fernando Paludi, Water Policy and Resources Development Manager at (310) 660-6214.

Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

Jim Arndt
Director of Public Works
City of Manhattan Beach
3621 Bell Avenue
Manhattan Beach, CA 90266

Dear Mr. Arndt:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

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Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

Shad Rezai
Central District Manager
Golden State Water Company
1600 W. Redondo Beach Blvd, #101
Gardena, CA 90247-3226

Dear Mr. Rezai:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

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Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

David Rydman
Water Resources Manager
LA County Waterworks District #29
900 S. Fremont Ave.
Alhambra, CA 91803

Dear Mr. Rydman:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

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If you have any concerns, please contact Fernando Paludi, Water Policy and Resources Development Manager at (310) 660-6214.

Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

Robb Whitaker
General Manager
Water Replenishment District
4040 Paramount Blvd.
Lakewood, CA 90712

Dear Mr. Whitaker:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

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If you have any concerns, please contact Fernando Paludi, Water Policy and Resources Development Manager at (310) 660-6214.

Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

Tom Erb
Water Resources Manager
Los Angeles Department of Water and Power
P.O. Box 51111, Rm. 1315
Los Angeles, CA 90051

Dear Mr. Erb:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

A workshop for West Basin's retail water agencies will be held in early April at the West Basin headquarters to provide a summary of the draft UWMP including water supply and demand projections. The Public Hearing on the final 2010 UWMP will take place at the West Basin Board of Directors Meeting on May 23, 2011 at 1:00 p.m. Subsequent to the Public Hearing, the Board will consider adoption of the UWMP. West Basin will send a CD of the adopted UWMP in June 2011 to your agency.

If you have any concerns, please contact Fernando Paludi, Water Policy and Resources Development Manager at (310) 660-6214.

Sincerely,

A handwritten signature in black ink, appearing to read "Rich Nagel".

Rich Nagel
General Manager

LK:jks



March 16, 2011

Rob Beste
Public Works Director
City of Torrance
20500 Madronna Ave.
Torrance, CA 90503

Dear Mr. Beste:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

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If you have any concerns, please contact Fernando Paludi, Water Policy and Resources Development Manager at (310) 660-6214.

Sincerely,

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Rich Nagel
General Manager

LK:jk



March 16, 2011

Grace Chan
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054

Dear Ms. Chan:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

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If you have any concerns, please contact Fernando Paludi, Water Policy and Resources Development Manager at (310) 660-6214.

Sincerely,

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Rich Nagel
General Manager

LK:jks



March 16, 2011

Water Resources Department
Los Angeles County Department of Public Works
900 S. Fremont Ave
Alhambra, CA 91803

Dear Water Resources Department:

**Notice of Preparation
West Basin 2010 Urban Water Management Plan**

West Basin Municipal Water District (West Basin) is currently preparing the 2010 Urban Water Management Plan (UWMP) for its service area as required by the Urban Water Management Planning Act (Act) in California Water Code section 10610. The final draft of the 2010 UWMP will be available for review on West Basin's website at www.westbasin.org and will be sent to your agency in hard copy form at the end of March 2011. This final draft UWMP will include information that is required under the Act and will meet all of the requirements in the 2011 Guidebook issued by the California Department of Water Resources.

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If you have any concerns, please contact Fernando Paludi, Water Policy and Resources Development Manager at (310) 660-6214.

Sincerely,

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Rich Nagel
General Manager

LK:jks



APPENDIX F

Water Shortage Contingency Resolution

RESOLUTION NO. 4-09-902

**A RESOLUTION OF THE BOARD OF DIRECTORS OF
WEST BASIN MUNICIPAL WATER DISTRICT
ESTABLISHING A WATER SHORTAGE ALLOCATION
PLAN FOR CONSERVATION PURPOSES**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF WEST BASIN MUNICIPAL WATER DISTRICT as follows:

WHEREAS, the State of California is now in its third consecutive year of drought, with the annual rainfall and the water content in the Sierra Nevada Snowpack being significantly below the amounts needed to fill California's storage reservoir system; and

WHEREAS, local rainfall levels for the 2008-2009 water year are 66% of average as of the April 1, 2009, measurement; and

WHEREAS, storage in the State's reservoir system is at below normal levels; and

WHEREAS, recent legal decisions issued to protect delta smelt and other species have further reduced water supplies available for delivery from the State Water Project; and

WHEREAS, Governor Schwarzenegger issued water emergency proclamations on June 12, 2008, and February 27, 2009, both ordering his administration begin taking action to address the water shortage; and

WHEREAS, the State Department of Water Resources' allocation of State Water Project water available to Southern California State Water Contractors is only 20% of the contracted supply amount; and

WHEREAS, on April 14, 2009, the Metropolitan Water District of Southern California declared that a regional shortage exists and implemented its Water Supply Allocation Plan at a Regional Shortage Level 2, including allocation penalty rates for water use in excess of a member agency's annual allocation; and

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE WEST BASIN MUNICIPAL WATER DISTRICT DOES HEREBY RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

1. The West Basin Municipal Water District Board of Directors declare that there currently is a regional water shortage in the West Basin service area; and
2. The West Basin Water Shortage Allocation Plan, adopted by the West Basin Board on October 27, 2008 shall be implemented by the District's General Manager, effective July 1, 2009 through June 30, 2010, at Level 2 – the level equivalent to the Regional Shortage Level declared by the Metropolitan Water District; and
3. The West Basin Municipal Water District General Manager is hereby authorized and directed to take all necessary action to implement the West Basin Water Shortage Allocation Plan, consistent with its terms.

PASSED, APPROVED AND ADOPTED on _____, 2009.

President

I hereby certify that the foregoing is a full, true and correct copy of the Resolution adopted by the Board of Directors of the West Basin Municipal Water District at its meeting held on April ____, 2009.

ATTEST:

Secretary

[SEAL]

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APPENDIX G

Demand Management Measures Annual Reports



Prepared by:
West Basin Municipal Water District
17140 South Avalon Boulevard, Suite 210
Carson, CA 90746
www.westbasin.org

