WATER SUPPLY ASSESSMENT AND VERIFICATION REPORT FOR THE MEADOWOOD PROJECT

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CHAPTER 1

PURPOSE

The County of San Diego has caused this Water Supply Assessment and Verification Report (WSA&V Report) to be prepared in consultation with the San Diego County Water Authority (Water Authority), the San Diego Local Agency Formation Commission (LAFCO), the Valley Center Municipal Water District (VCMWD), the San Luis Rey Municipal Water District (SLRMWD), and the Rainbow Municipal Water District (RMWD) pursuant to Public Resources Code Section 21151.9, and California Water Code Sections 10631, 10656, 10910, 10911, 10912, and 10915 referred to as SB 610 and Business and Professions Code Section 11010, Government Code Sections 65867.5, 66455.3, and 66473.7 referred to as SB 221. SB 610 and SB 221 amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain proposed projects. SB 221 requires the County of San Diego to approve, conditionally approve, or disapprove tentative maps for certain residential subdivisions of property based upon the sufficiency of the water supply.

In the absence of a public water system, SB 610 requires the County to prepare the water supply assessment. SB 221 requires the County to make a written finding, or verification, of sufficient water supply based on the evidentiary requirements of subdivisions (c) and (d) of Section 66473.7 and to identify the mechanism for providing water to the subdivision. Subdivision (c) states that the verification shall be supported by substantial evidence which may include, but is not limited to, an urban water management plan or a water supply assessment.

This WSA&V Report is intended for use by the County of San Diego in its evaluation of the Meadowood project under the California Environmental Quality Act. This WSA&V Report evaluates water supplies that are or will be available during normal, single dry, and multiple dry water years during a 20-year projection to meet existing demands, expected demands of the project, and reasonably foreseeable planned future water demands served by the public water system.

CHAPTER 2

FINDINGS

This WSA&V Report concludes that the water demand for the Meadowood project is included in the water demand forecasts of the most recent April 2007 *Updated 2005 Urban Water Management Plan* of the San Diego County Water Authority (Water Authority). Water supplies necessary to serve the demands of the proposed project, along with existing and other projected future users, as well as the actions necessary to develop these supplies, have been identified in Sections 4 and 8 of the Water Authority's April 2007 *Updated 2005 Urban Water Management Plan*. This WSA&V Report demonstrates and verifies that with development of the resources identified there will be sufficient water supplies over a 20-year planning horizon to meet the projected demand of the proposed project and the existing and other planned development projects within the Water Authority service area. Since the Meadowood project is outside the Water Authority service area, it will be necessary for the project to be annexed into the Water Authority's service area to receive water. Concurrent with the Water Authority annexation, it will be necessary for the project to be annexed into the Metropolitan Water District of Southern California (Metropolitan) service area.

Based on a normal water supply year, the Water Authority projection, estimated in five-year increments over a 20-year period, indicates projected potable water supply will meet the projected potable water demand of 715,450 acre-feet per year (ac-ft/yr) in 2010 to 829,030 ac-ft/yr in 2030. Based on dry year forecasts, the projected water supply will also meet the projected water demand during single and multiple dry year scenarios. Supply and demand totals for a single dry year are approximated at 767,650 ac-ft/yr to 883,030 ac-ft/yr for years 2010 to 2030. Multiple three-year dry periods are also provided for.

The Water Authority's April 2007 *Updated 2005 Urban Water Management Plan* (2007 UWMP), in which the Meadowood project is specifically identified, states in its normal, single dry, and multiple dry year assessments that, "If the Water Authority and member agency supplies are developed as planned, along with the implementation of Metropolitan's IRP, no shortages are anticipated within the Water Authority's service area in a normal year through 2030" (pp. 8-1). The Water Authority states the same on later pages regarding the single dry and multiple dry year assessments. The analysis through 2030 demonstrates that the Water Authority will be able to meet the normal, single, and multiple dry year demands with a demand by the Meadowood project of 1,000 ac-ft/yr.

The 1,000 ac-ft/yr demand for the project did not consider conservation by the project and was based on all water demands, potable and non-potable, being met by Water Authority supplies. In actual development, the Meadowood project will implement conservation measures and utilize non-potable water for irrigation purposes to reduce its potable water demand. In addition to reducing potable water demand through the above actions, the project will further reduce its water demand by participating in offset programs or projects offered by the Water Authority or a MWD resulting in a net zero water demand on Water Authority supplies. The specific offset program(s) will be identified during the sphere of influence update process which will occur after approval of the Meadowood project.

Following approval of the CEQA documentation for the Meadowood project, the San Diego County Local Agency Formation Commission (LAFCO) will complete a Municipal Services Review and Sphere of Influence Update (MSR-SOI) to determine the appropriate provider of water and sewer service to the area, which includes the Meadowood project. Annexation into the water provider service area, the Water Authority, and Metropolitan is the mechanism by which the subdivision will receive water.

Together, these findings of the assessment report verify that there is sufficient water supply to serve the proposed project and the existing and other planned projects in the Water Authority service area in normal and dry year forecasts.

CHAPTER 3

PROJECT DESCRIPTION

The Meadowood development project encompasses a total of 389.5 acres. The project is located on the northern side of State Highway 76, just east of Interstate 15. The project will consist of single-family and multi-family housing along with a park, elementary school, common area landscaping and agricultural open space containing approximately 49 acres of retained groves. Tables 1 and 2 provide the Meadowood land use, respectively.

TABLE 1
MEADOWOOD LAND USE SUMMARY

Planning Area	Land Use	Proposed Zoning	Gross Acreage	Dwelling Units	Actual Density *
1	Multi-Family Detached	RV10	26.1	164	6.3
2	Elementary School Site	RV10	12.7	42 **	3.3
3	Neighborhood Park	S80	10.1	--	--
4	Multi-Family Attached	RU20	24	325	13.5
5	Single-Family Detached	RS3	132.5	355	2.7
6	Agricultural Open Space	S80	47.6	--	--
7	Open Space	S80	128.5	--	--
	Roads, etc.	--	8	--	--
TOTAL			**389.5**	**886**	**2.3**

* Dwelling Units per acre
** Note: The actual proposed dwelling unit number is 886 – 42 = 844, as the elementary school is the intended use for Planning Area 2.
Source: *Meadowood Water Study* (Dexter Wilson Engineering, Inc., May 2009)

TABLE 2
MEADOWOOD LAND USE DETAIL

Land Use	Gross Acreage	Area Acreage	HOA Area Acreage	Road Area Acreage
Single-Family	130.8	57.6	49.6	23.6
Multi-Family	50.1	29.5	7.9	12.7
Elementary School	12.7	11.1	1.4	0.2
Neighborhood Park	10.1	8.5	0	1.6
Retained Groves *	49.3	49.3	0	0
Open Space	128.5	128.5	0	0
Roads, etc.	8.0	0	0	8
TOTALS	**389.5**	**284.5**	**58.9**	**46.1**

* Includes Planning Area 6 (47.6 acres) and 1.7 acres of HOA Area within Planning Area 5
Source: *Meadowood Water Study* (Dexter Wilson Engineering, Inc., May 2009)

The project is within the Fallbrook Community Planning Area of San Diego County over which the County has jurisdiction for land use and development approvals. Presently, the County has not been able to identify a public water system which could immediately serve the project. As such, pursuant to Section 10910(b) of the California Water Code, the County of San Diego is preparing this WSA&V Report.

The project is partially within the San Luis Rey Municipal Water District (SLRMWD) boundaries and is not within the Water Authority or Metropolitan's service areas. San Luis Rey Municipal Water District is a groundwater monitoring district and cannot provide imported water or wastewater service. The San Diego County Local Agency Formation Commission (LAFCO) is conducting a Municipal Services Review and Sphere of Influence Update (MSR-SOI) to determine the appropriate provider of water and sewer service to the area which includes the Meadowood project. In addition to SLRMWD, LAFCO is examining the suitability of Rainbow Municipal Water District (RMWD) and Valley Center Municipal Water District (VCMWD) to provide water, wastewater, and recycled water service. Ultimately, annexation of the project to the Water Authority and Metropolitan service areas will be required once it is determined which MWD will serve the project. For all three MWDs included in the MSR-SOI, the source of water to the project will be imported water via the Water Authority.

PROJECT WATER DEMANDS

Water demands for the Meadowood project are based on the *Meadowood Water Study* (May 2009) by Dexter Wilson Engineering, Inc. and summarized in Table 3. This table represents the maximum potable water demand for the Meadowood project based on typical demand factors (water use rates) for the proposed land use type. The Meadowood project demand was included in the April 2007 *Updated 2005 Urban Water Management Plan* as a project to be served by the San Luis Rey Municipal Water District (SLRMWD), whose un-annexed area option was one of the areas proposing annexation at the time the April 2007 *Updated 2005 Urban Water Management Plan* was developed. Therefore, the Water Authority included the water demands forecasted for Meadowood because it was one of the areas/projects to be provided water within the SLRMWD annexation. At the time, the demand anticipated by the project was 892,500 gallons per day or 1,000 acre-feet per year. Table 3 sets forth a reduced projected water demand due to design refinements to the project.

TABLE 3 MEADOWOOD WATER DEMAND					
Land Use	**Dwellings Units or Acres**	**Water Use Factor**	**Demand**		
			gpd	**mgd**	**ac-ft/yr**
Single-family	355	500 gpd/DU	177,500	0.178	199
Multi-family	489	400 gpd/DU	195,600	0.196	219
Elementary School [1]	11.1	2,000 gpd/ac	22,200	0.022	25
Neighborhood Park [1]	8.5	2,000 gpd/ac	17,000	0.017	19
HOA Areas [2]	58.9	2,000 gpd/ac	117,800	0.118	132
R.O.W. Irrigation [3]	9.22	2,000 gpd/ac	18,440	0.018	21
Retained Groves [1]	49.3	3,570 gpd/ac	176,001	0.176	197
Natural Open Space [1]	128.5	--	--	--	--
TOTAL			**724,541**	**0.725**	**812**

[1] Water Demand acreage based on Area Acreage, Table 2
[2] Water Demand acreage based on total HOA Area Acreage within each planning area, Table 2
[3] Water Demand acreage based on 20% of total Road Area Acreage within each planning area, Table 2
Source: *Meadowood Water Study* (Dexter Wilson Engineering, Inc., May 2009)

The demands in Table 3 do not account for water conservation measures the project is planning to implement or the use of non-potable water sources such as groundwater and recycled water for the irrigation of the HOA landscaped slopes and the retained groves. Examples of water conservation features the project may utilize are provided below. Ultimately, the specific water conservation features incorporated into the project will be based on the most effective measures available and those recommended by the Water Authority and/or the identified MWD.

Interior water conservation features:

- High efficiency clothes washers
- High efficiency dishwashers
- Low flush toilets
- Low flow water faucets and showerheads
- Tankless water heaters

Exterior water conservation features:

- Weather-based irrigation controllers
- Low water use landscaping (xeriscape)
- Restrictions limiting turf use and encouraging artificial turf

Additional conservation features:

- Installation of “smart” meters with leak detection capability
- Individually metered multi-family units

Table 4 provides the project's proposed water demands with the implementation of conservation measures and utilization of non-potable water, where appropriate, as outlined in the project's water study. The water study provides the methodology for calculating the project's potable versus non-potable demands and interior versus exterior potable water use. Exterior potable water use will be reduced for the project by maximizing the use of non-potable water for irrigation. The project's water study is included as a technical appendix of the Meadowood EIR documentation.

TABLE 4
MEADOWOOD POTABLE AND NON-POTABLE DEMANDS AND DELIVERIES, WITH CONSERVATION

Project Information		Potable Water, gpd			Non-potable Water, gpd		
Land Use	**Project Water Demands, gpd**	**Total Demand**	**Interior Demand**	**Exterior Demand**	**Total Demand**	**Recycled Water Deliveries**	**Makeup Water (Ground-water) Deliveries**
Single-family	133,125	133,125	79,875	53,250	0	0	0
Multi-family	146,700	146,700	117,360	29,340	0	0	0
Elementary School	16,650	8,325	8,325	0	8,325	5,617	2,708
Neighborhood Park	12,750	1,275	1,275	0	11,475	7,742	3,733
HOA Areas	88,350	4,418	4,418	0	83,933	56,631	27,301
R.O.W. Irrigation	13,830	0	0	0	13,830	9,331	4,499
Retained Groves	132,001	0	0	0	132,001	89,064	42,937
Natural Open Space	-	-	-	-	-	-	-
TOTAL, gpd	**543,406**	**293,843**	**211,253**	**82,590**	**249,563**	**168,386**	**81,178**
TOTAL, ac-ft/yr	**608.7**	**329.2**	**236.6**	**92.5**	**279.6**	**188.6**	**90.9**

* Includes recreation areas, drainage areas, wastewater treatment plant, and water tank sites

CHAPTER 4

HISTORICAL AND PROJECTED WATER DEMANDS

The Water Authority utilizes the San Diego Association of Government's (SANDAG) most recent regional growth forecast to calculate future demands within their service area. This provides for consistency between San Diego County planning efforts and the Water Authority demand projections, thereby ensuring that adequate supplies are being planned for existing and future water users. SANDAG's growth forecasts are based on the land use planning policies of the cities and county within San Diego County, so planned growth is included in the water demand forecasts of the County. Sections 1 and 2, pages 1-6 through 2-5, of the Water Authority's April 2007 *Updated 2005 Urban Water Management Plan* provide detail on the current population projection (in 5-year increments) as well as economic data utilized in their water supply planning. The Water Authority's 2005 Urban Water Management Plan was revised in April 2007 due to two actions. The first was a change on seawater desalination development within San Diego county from a regional supply project to a local supply project, and the second action was the adoption of the Water Authority's Drought Management Plan. The April 2007 *Updated 2005 Urban Water Management Plan* has been included in its entirety in Appendix A of this WSA&V Report.

The available historic potable water demands for the Water Authority are shown in Table 5 and projected demands during a normal water year are shown in Table 6. Tables 7 and 8 then provide single dry year and multiple dry year demand forecasts for the Water Authority, respectively. The Water Authority demand projections consider industrial and agricultural demands as well. Industrial demands are projected with municipal demands (M&I) in the Water Authority's Municipal And Industrial Needs (CWA-MAIN) computer model while agricultural demands are determined separately and then incorporated into the total forecasted demand.

TABLE 5
HISTORIC WATER DEMAND WITHIN THE WATER AUTHORITY SERVICE AREA

Fiscal Year	Water Use, ac-ft
1995	526,053
1996	615,900
1997	621,739
1998	562,225
1999	619,409
2000	694,995
2001	646,387
2002	686,530
2003	649,622
2004	715,763
2005	642,152

Source: *Updated 2005 Urban Water Management Plan* (SDCWA, April 2007, p.2-2)

TABLE 6 NORMAL WATER YEAR DEMAND FORECAST WITHIN THE WATER AUTHORITY SERVICE AREA					
Water Demand Category	**Total Projected Demand, ac-ft/yr**				
	2010	**2015**	**2020**	**2025**	**2030**
M&I Baseline Forecast	699,250	739,020	780,350	830,550	877,740
Estimated Conservation Savings	79,960	87,310	94,170	101,950	108,400
M&I Forecast Reduced by Conservation	619,290	651,710	686,180	728,600	769,340
Agricultural Forecast	89,700	83,130	77,270	58,980	51,630
Total Projected Demand	708,990	734,840	763,450	787,580	820,970
Pending Annexations	6,460	8,060	8,060	8,060	8,060
Total Projected Demand with Pending Annexations	**715,450**	**742,900**	**771,510**	**795,640**	**829,030**

Source: *Updated 2005 Urban Water Management Plan* (SDCWA, April 2007, p. 2-4)

TABLE 7 SINGLE DRY YEAR WATER DEMAND FORECAST (5 YEAR INCREMENTS) WITHIN THE WATER AUTHORITY SERVICE AREA	
Year	**Total Projected Demand, ac-ft/yr**
2010	767,650
2015	795,970
2020	825,560
2025	848,610
2030	883,030

Source: *Updated 2005 Urban Water Management Plan* (SDCWA, April 2007, p.2-5)

The multiple dry year demand forecast, shown in the following Table 8, was developed for the April 2007 *Updated 2005 Urban Water Management Plan* to evaluate the compounding effect that a multiple dry year event can have on demands. Multiple dry year demands are presented in 5 year increments beginning with 2006, based on a three dry year event.

TABLE 8 MULTIPLE DRY YEAR (3 YEARS) WATER DEMAND FORECAST (5 YEAR INCREMENTS) WITHIN THE WATER AUTHORITY SERVICE AREA	
Year	**Total Projected Demand, ac-ft/yr**
2006	744,520
2007	749,780
2008	755,030
2011	771,410
2012	777,280
2013	783,150
2016	801,030
2017	807,150
2018	813,270
2021	830,680
2022	835,840
2023	841,010
2026	858,480
2027	865,630
2028	872,770

Source: *Updated 2005 Urban Water Management Plan* (SDCWA, April 2007, p.2-5)

Demand Management (Water Conservation)

The County of San Diego enforces several State and local ordinances requiring water conservation to assure available water resources are put to beneficial use for all citizens of the County. California Plumbing Code, Section 402 requires the installation of water conserving fixtures in new construction. Section 67.101 of the County's Code of Regulatory Ordinances simply prohibits water waste in that "No person shall waste or cause or permit to be wasted any water furnished or delivered by any agency distributing for public benefit any water dedicated to or provided for public use within the unincorporated territory of the County of San Diego."

The County is required to enforce California's Model Water Efficient Landscape Ordinance as it applies to new and rehabilitated public and private landscapes that require a permit and on developer installed residential landscapes (Section 6717c.1 of the County's Zoning Ordinance). The County's Water Conservation and Landscape Design Manual implements Zoning Ordinance Section 6712(d) which requires efficient irrigation uses (including rain sensors), transitional zones, use of native plantings, restriction on turf, use of mulch, the preservation of existing vegetation and natural features, and the use of reclaimed water when available.

The Water Authority's water conservation efforts include but are not limited to implementation of the Best Management Practices (BMPs) that are included in the California Urban Water Conservation Council's (CUWCC) 1991 *Memorandum of Understanding Regarding Urban Water Conservation in California* (MOU). Additional information regarding the BMPs, details of their Agricultural Efficient Water Management Practices (EWMPs), and conservation measures tailored to the landscape, commercial, industrial, and institutional sectors can be found in Section 3 of the April 2007 *Updated 2005 Urban Water Management Plan*.

CHAPTER 5

EXISTING AND PROJECTED SUPPLIES

Water supply for the Meadowood project will originate from the Water Authority, a member public agency of Metropolitan. The Water Authority was formed in 1944 to provide a supplemental supply of water to the San Diego region. The Water Authority's 24 member agencies purchase water from the Water Authority for retail distribution within their service areas. The Water Authority, through exchange and transfer agreements, currently purchases water from Metropolitan and conserved agricultural water transferred from the Imperial Irrigation District. Future supplies, through exchange and transfer agreements, will come from conserved water for the All-American Canal Lining and the Coachella Canal Lining projects. The contracts, agreements, and environmental permits for each of these Water Authority Supplies are addressed in Section 6 and Appendix E of the April 2007 *Updated 2005 Urban Water Management Plan.* Water Authority supplies also include local supplies developed and managed by its member agencies such as surface water, water recycling, groundwater, and in the future, desalinated seawater. Section 5 of the April 2007 *Updated 2005 Urban Water Management Plan* outlines the coordination steps between the Water Authority and its member agencies to develop the anticipated yields from each of the local supplies.

Sections 4, 5, and 6 of the April 2007 *Updated 2005 Urban Water Management Plan* provide the detailed supply forecasts, in 5 year increments (pages 4-8, 5-14, and 6-1), of each of these supplies. Tables 9, 10, and 11 below summarize these supply forecasts. These sections of the April 2007 *Updated 2005 Urban Water Management Plan* also discuss further the exchange and transfer agreements, contracts, entitlement, financing, and permitting of the Water Authority's supplies. With seawater desalination becoming a new source for the region, the April 2007 *Updated 2005 Urban Water Management Plan* identifies no entities outside the Water Authority which have existing entitlements, water rights, or water service contracts to the same source of water.

TABLE 9
NORMAL YEAR WATER SUPPLY FORECAST
WITHIN THE WATER AUTHORITY SERVICE AREA

Water Supply Source	Total Projected Supply, ac-ft/yr				
	2010	2015	2020	2025	2030
Water Authority	147,700	177,700	267,700	277,700	277,700
Member Agency	121,892	165,345	172,436	175,070	178,408
Metropolitan Water District	445,858	399,855	311,374	342,870	372,922
Total Projected Supplies	715,450	742,900	771,510	795,640	829,030

Source: *Updated 2005 Urban Water Management Plan* (SDCWA, April 2007, p.8-1)

TABLE 10 SINGLE DRY YEAR WATER SUPPLY FORECAST WITHIN THE WATER AUTHORITY SERVICE AREA					
Water Supply Source	**Total Projected Supply, ac-ft/yr**				
	2010	**2015**	**2020**	**2025**	**2030**
Water Authority	147,700	177,700	267,700	277,700	277,700
Member Agency	78,190	119,882	126,134	128,768	132,106
Metropolitan Water District	541,760	498,388	431,726	442,142	473,224
Total Projected Supplies	767,650	795,970	825,560	848,610	883,030

Source: *Updated 2005 Urban Water Management Plan* (SDCWA, April 2007, p.8-2)

The multiple dry year supply forecast, shown in the following Table 11, was developed for the April 2007 *Updated 2005 Urban Water Management Plan* to evaluate the compounding effect that a multiple dry year event can have on supplies. Multiple dry year supplies are presented in 5 year increments beginning with 2006, based on a three dry year event.

TABLE 11 MULTIPLE DRY YEAR (3 YEARS) WATER SUPPLY FORECAST (5 YEAR INCREMENTS) WITHIN THE WATER AUTHORITY SERVICE AREA				
Year	**Supply, ac-ft/yr**			
	Water Authority	**Member Agency**	**Metropolitan**	**Total Projected**
2006	40,000	56,670	647,850	744,520
2007	71,500	60,230	618,050	749,780
2008	71,500	80,900	602,630	755,030
2011	157,700	101,012	512,698	771,410
2012	167,700	100,431	500,149	777,280
2013	177,700	116,970	488,480	783,150
2016	177,700	109,214	514,116	801,030
2017	177,700	108,149	521,301	807,150
2018	207,700	124,194	481,376	813,270
2021	277,700	114,752	438,228	830,680
2022	277,700	112,960	445,180	835,840
2023	277,700	128,288	435,022	841,010
2026	277,700	117,524	463,256	858,480
2027	277,700	115,873	472,057	865,630
2028	277,700	131,343	463,727	872,770

Source: *Updated 2005 Urban Water Management Plan* (SDCWA, April 2007, pp. 8-2 – 8-3)

Water Supply Reliability

As the Water Authority's supplies are diverse, the primary vulnerabilities of the supplies differ. Water coming from Metropolitan's Colorado River and Northern California supplies are vulnerable to implementation risks such as seismic events due to the terrain the supplies cross to reach the San Diego region. The Water Authority's surface water supplies are more vulnerable to water quality issues due to increasing urbanization. Section 7.3 of the April 2007 *Updated 2005 Urban Water Management Plan* specifically discusses how the Water Authority addresses their surface water vulnerability.

Section 9 of the April 2007 *Updated 2005 Urban Water Management Plan* includes a water shortage contingency analysis which addresses how the Water Authority would manage catastrophic shortage and drought situations. The water shortage contingency analysis discusses the Water Authority's Emergency Response Plan and Emergency Storage Project, demonstrating they are taking actions to prepare for and appropriately handle a catastrophic interruption of water supplies. The analysis also describes the coordinated development of a Drought Management Plan for the San Diego region which identifies the actions to be taken by the Water Authority to minimize the impacts of a supply shortage due to a drought and includes an allocation methodology to be used if cutbacks are necessary.

Section 8 of the April 2007 *Updated 2005 Urban Water Management Plan* provides a water supply reliability assessment of the imported and local supplies necessary to meet demands over the next 25 years in normal year (page 8-1), single dry year (page 8-2), and multiple dry year (pages 8-2 and 8-3) scenarios. The Water Authority's April 2007 *Updated 2005 Urban Water Management Plan* assessment of their water supplies states that under single dry year and multiple dry year conditions, "The supplies available from projected recycling and groundwater recovery projects are assumed to experience little, if any, reduction in a dry-year. The Water Authority's existing and planned supplies from the IID transfer, canal lining projects, and seawater desalination are also considered "drought-proof" supplies as discussed in Section 4. Therefore, estimated normal yields from these supplies are also included in the [dry year] analysis." (p. 8-2) The plan states that if projected Water Authority and member agency supplies are developed as planned, no shortages are anticipated with the Water Authority service area. Additionally, the Water Authority has identified contingency sources of water. For example, should future seawater desalination not be pursued, the Water Authority has considered alternative options, including accelerating the construction of the Pipeline 6 project. This pipeline would allow for additional supply deliveries from Metropolitan.

Since the publishing of the April 2007 *Updated 2005 Urban Water Management Plan*, there have been several water supply reliability challenges. Most notable are the federal and state actions in the Delta area to protect certain fish species. These actions have reduced the State Water Project pumping, and may do so further. Additionally, state storage reservoirs are below normal storage levels due to two consecutive years of dry conditions. In response to these concerns, in April 2008 Metropolitan developed with its member agencies a Five-Year Supply Plan to identify specific resource and conservation actions over the following five years to manage water deliveries under continued drought conditions and court-ordered restrictions. This Five-Year Supply Plan is in addition to Metropolitan's Integrated Water Resources Plan, to be revised in 2009, which addresses broader challenges associated with water supply such as

population growth, increased competition for low-cost water supplies, variable weather conditions, and increased environmental regulations for clean and safe drinking water. Metropolitan's *Appendix A* attached to their January 15, 2009 Official Statement for $200,000,000 Water Revenue Bonds (attached to this WSA&V as Appendix C) provides additional background on their water supply planning and details the litigation regarding the Bay-Delta area to protect fish species such as the Delta smelt.

The Five-Year Supply Plan has identified new supplies for Metropolitan to consider in addition to the State Water Project and Colorado River on which it substantially relies. Metropolitan has demonstrated on a monthly basis in reports to their Board, that firm demands on Metropolitan are able to be met by these sources along with utilization of its Water Surplus Drought Management Storage Portfolio.

In April 2009, the Water Authority declared a Drought Response Level 2 in anticipation of Metropolitan declaring a Regional Shortage Level 2. The Water Authority's Model Drought Ordinance does not identify water use restrictions for new projects at the Drought Response Level 1 or 2, as outlined in the Water Authority's May 2006 *Drought Management Plan*. However, several of the Water Authority's member agencies, including the VCMWD, specify that new projects or annexations will not be allowed to continue unless the proposed demand is offset. The Meadowood project will offset its potable water demand, resulting in a net zero demand on Water Authority supplies.

The County recently addressed water supply reliability in the November 2008 *San Diego County Draft General Plan Update*. Within the Land Use Element of the Update (p. 3-34) and addressing water supply reliability for the county, the Update states, "The Water Authority prepared an updated Urban Water Management Plan in 2007 that assessed the ability of future water supplies to meet future demand through 2030. The plan concluded that if existing supplies remained reliable and projected supplies are developed as planned, no shortages are anticipated within the Water Authority's service area under single dry-year or multiple dry water years through 2030. Since development of this plan, deliveries from the State Water Project have been cut due to regulatory and judicial restrictions. The Water Authority and its member agencies will continue to develop local resources in order to reduce dependence on the State Water Project and support actions at the state level to improve the reliability of the State Water Project. Future updates of the Water Authority's Urban Water Management Plan will address these actions."

CHAPTER 6

AVAILABILITY OF SUFFICIENT SUPPLIES

In comparing the Water Authority's projected supplies to projected demands, the Water Authority can reliably meet demands during normal, single dry, and multiple dry year scenarios. Tables 12, 13, and 14 at the end of this chapter present the comparison of the Water Authority's projected demands which were presented in Chapter 4 and the projected supplies which were presented in Chapter 5 of this WSA&V Report.

Of importance to the Meadowood project is that these projected demands include areas which were pending annexation to the Water Authority, of which the Meadowood project was part, at the time the April 2007 *Updated 2005 Urban Water Management Plan* was adopted by the Water Authority. The areas pending annexation to the Water Authority service area, and subsequently Metropolitan's service area, were included to provide a more comprehensive analysis of future Water Authority demands, as these areas were not included in the SANDAG population projections on which Water Authority demands are based. The Meadowood project was explicitly identified as a project to be served by the San Luis Rey Municipal Water District (SLRMWD). The SLRMWD's un-annexed area option was one of the areas proposing annexation at the time the Water Authority April 2007 *Updated 2005 Urban Water Management Plan* was developed. Therefore, the Water Authority included the water demands forecasted for Meadowood because it was one of the areas/projects to be provided water within the SLRMWD annexation.

The demand of the SLRMWD pending annexation was determined in the SLRMWD's December 2006 *Master Plan for Water, Wastewater, and Recycled Water Services, Final Draft Report (Un-annexed Area Option)* where water demands were calculated for the SLRMWD, including the Meadowood project and others, to be 4,217 ac-ft/yr. In the report, the projected demand for Meadowood was calculated to be 892,500 gallons per day or 1,000 acre-feet per year. Excerpts from the Water Authority and SLRMWD documents discussed in this section can be found in Appendices A and B, respectively.

The acreage distribution between land use types for the Meadowood project has been refined resulting in a lower demand of 724,541 gpd or 812 acre-feet per year. Additionally, in accounting for conservation and the use of non-potable water, the Meadowood project's potable demand is 293,843 gpd or 329 acre-feet per year. In addition to reducing potable water demand through the above actions, the project will further reduce its water demand by participating in offset programs or projects offered by the Water Authority or a MWD resulting in a net zero water demand on Water Authority supplies. The specific offset program(s) will be identified during the sphere of influence update process which will occur after approval of the Meadowood project.

Because the Meadowood project was part of SLRMWD's proposed annexation to the Water Authority service area, and because SLRMWD's proposed annexation to the Water Authority is accounted for as a near term future annexation in the Water Authority's April 2007 *Updated 2005 Urban Water Management Plan*, the Meadowood project's water demands have been

accounted for and included in the Water Authority's long term water planning. Independent of the LAFCO determination of the ultimate water service provider (i.e. MWD determination), an adequate supply of water is available from the Water Authority to serve the Meadowood project's demands. Moreover, the project's conservation efforts, use of non-potable water, and offset of potable demand will result in a net zero impact on the Water Authority's supply requirements.

The assessment conducted in this WSA&V Report demonstrates and verifies that with development of the resources identified there will be sufficient water supplies to meet the projected demand of the proposed project and the existing and other planned development projects within the Water Authority and Metropolitan service areas over the next 20 years during average year, dry year, and multiple dry year conditions. Moreover, the project's conservation efforts, use of non-potable water, and offset of potable demand will result in a net zero impact on the Water Authority's supply requirements.

TABLE 12
NORMAL YEAR DEMAND AND SUPPLY COMPARISON
WITHIN THE WATER AUTHORITY SERVICE AREA

Projection	ac-ft/yr				
	2010	2015	2020	2025	2030
Total Demand with Pending Annexations	715,450	742,900	771,510	795,640	829,030
Total Supply	715,450	742,900	771,510	795,640	829,030

TABLE 13
SINGLE DRY YEAR DEMAND AND SUPPLY COMPARISON
WITHIN THE WATER AUTHORITY SERVICE AREA

Projection	ac-ft/yr				
	2010	2015	2020	2025	2030
Total Demand with Pending Annexations	767,650	795,970	825,560	848,610	883,030
Total Supply	767,650	795,970	825,560	848,610	883,030

TABLE 14 MULTIPLE DRY YEAR (3 YEARS) DEMAND AND SUPPLY COMPARISON (5 YEAR INCREMENTS) WITHIN THE WATER AUTHORITY SERVICE AREA		
Year	**Total Projected Demand, acre-feet/year**	**Total Projected Supply, acre-feet/year**
2006	744,520	744,520
2007	749,780	749,780
2008	755,030	755,030
2011	771,410	771,410
2012	777,280	777,280
2013	783,150	783,150
2016	801,030	801,030
2017	807,150	807,150
2018	813,270	813,270
2021	830,680	830,680
2022	835,840	835,840
2023	841,010	841,010
2026	858,480	858,480
2027	865,630	865,630
2028	872,770	872,770

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APPENDIX A

San Diego County Water Authority April 2007
Updated 2005 Urban Water Management Plan

2005 UPDATED URBAN WATER MANAGEMENT PLAN

San Diego County Water Authority

UPDATED 2005 URBAN WATER MANAGEMENT PLAN

Prepared by:

San Diego County Water Authority
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With assistance provided by the following departments:

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2005 UWMP ABBREVIATIONS

2000 Plan	2000 Urban Water Management Plan
2005 Plan	2005 Urban Water Management Plan
AAC	All-American Canal
Act	Urban Water Management Planning Act
AF	acre-feet
AF/YR	acre-feet per year
Bay-Delta	San Francisco Bay/Sacramento-San Joaquin River Delta
BMPs	Best Management Practices (Water Conservation)
CC	Coachella Canal
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
CRA	Colorado River Aqueduct
CSP	Carryover Storage Project
CUWA	California Urban Water Agencies
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project (Federal)
CVWD	Coachella Valley Water District
CWA-MAIN	County Water Authority - Municipal and Industrial Needs
Delta	Sacramento - San Joaquin River Delta
DHS	Department of Health Services (State of California)
DIP	Delta Improvement Package
DMP	Drought Management Plan
DWR	Department of Water Resources (State of California)
EIR/EIS	Environmental Impact Report/Environmental Impact Statement
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Endangered Species Act (Federal)
ESP	Emergency Storage Project
EWA	Environmental Water Account
EWDP	Emergency Water Delivery Plans
EWMPs	Efficient Water Management Practices
FAP	Financial Assistance Program
FFY	Federal Fiscal Year

Forum	Colorado River Basin Salinity Control Forum
FY	Fiscal Year
GRP	Groundwater Recovery Program
HEWs	high-efficiency clothes washers
IAWP	Interim Agricultural Water Program
IID	Imperial Irrigation District
IRP	Integrated Resources Plan
IRWMP	Integrated Regional Water Management Plan
lb/day	pounds per day
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
LRP	Local Resource Program
M&I	municipal & industrial
MAF	million acre-feet
MAF/YR	million acre-feet per year
MAIN	Institute for Water Resources - Municipal and Industrial Needs
MCB Camp Pendleton	Marine Corps Base Camp Pendleton
mg/l	milligrams per liter
mgd	million gallons per day
Metropolitan	Metropolitan Water District of Southern California
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding Regarding Urban Water Conservation in California
MTBE	Methyl Tertiary Butyl Ether
MWDOC	Municipal Water District of Orange County
NEPA	National Environmental Policy Act
OAEP	Operational Area Emergency Plan
Omnibus Act	Omnibus Appropriations Act
OM&R	Operation, Maintenance, and Repair
O&M	Operations and Maintenance
PEIR	Programmatic Environmental Impact Report
ppb	parts per billion
ppm	parts per million
QSA	Quantification Settlement Agreement
Regional Board	California Regional Water Quality Control Board
RO	reverse osmosis
ROD	Record of Decision
RUWMP	Regional Urban Water Management Plan
RWDF	Reclaimed Water Development Fund
RWFMP	Regional Water Facilities Master Plan
SANDAG	San Diego Association of Governments
SDP	Metropolitan Water District of Southern California's Seawater Desalination Program
SDCWA	San Diego County Water Authority
SDWA	Safe Drinking Water Act
SEMS	Standardized Emergency Management System
Skinner TP	Lake Skinner Water Treatment Plant
SONGS	San Onofre Nuclear Generating Station
SRF	State Revolving Fund
SSOA	Surface Storage Operating Agreement
SWA	Source Water Assessment
SWP	State Water Project
SWRCB	State Water Resources Control Board
TAC	Technical Advisory Committee
Transfer Agreement	Water Authority-Imperial Irrigation District Transfer Agreement
TOC	total organic carbon
TDS	total dissolved solids
ULFTs	ultra-low flush toilets
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
VIP	Voucher Incentive Program
Water Authority	San Diego County Water Authority
Water Use Plan	California's Colorado Water Use Plan
WRLP	Water Reclamation Loan Program
WSDM Plan	Water Surplus and Drought Management Plan

UPDATED UWMP

In accordance with the Urban Water Management Planning Act, the San Diego County Water Authority (Water Authority) Board of Directors adopted the 2005 Urban Water Management Plan (2005 Plan) in November 2005. Since November 2005, the Board of Directors has taken two significant actions that result in the need to update the 2005 Plan. These include a change on seawater desalination development within San Diego county from a regional supply project at the Encina Power Station to a local supply project (**Sections 4.3** and **5.4**), and adoption of the Water Authority's Drought Management Plan (**Section 9.2**). Updating the plan to address these changed conditions also provides an opportunity to make clarifying edits requested by Department of Water Resources staff after its review of the 2005 Plan.

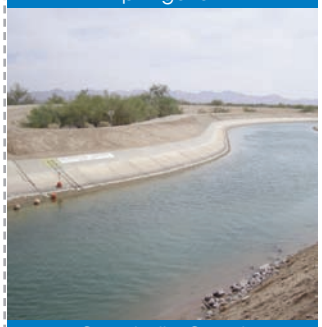
The Urban Water Management Planning Act requires an update of the plan every five years. This update is being done, prior to 2010, to maintain the Water Authority's eligibility for state grant funding and also provides updated information on the Water Authority's supplies. In accordance with its Administrative Code, the Water Authority will also prepare annual water supply reports commencing in 2008 to provide updated information on development of local and imported water supplies. The following is the Water Authority's Updated 2005 Plan:

SECTION 1 INTRODUCTION

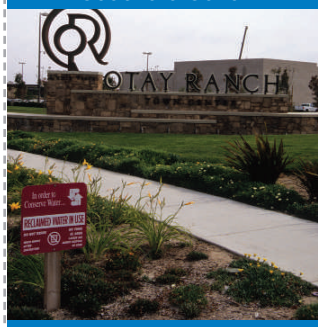
The mission of the San Diego County Water Authority (Water Authority) is to provide a safe and reliable supply of water to its member agencies serving the San Diego region. This Updated 2005 Urban Water Management Plan (Updated 2005 Plan) identifies a diverse mix of water resources projected to be developed over the next 25 years to ensure long-term water supply reliability for the region.

Since adopting the 2000 Urban Water Management Plan (2000 Plan), the Water Authority and its member agencies have made great strides in conserving and diversifying its supplies. With an aggressive conservation program, the region has conserved an average of 40,500 acre-feet per year (AF/YR) over the last five years. In 2003, conserved agricultural transfer water from the Imperial Valley began flowing to the region, which will provide 200,000 AF/YR by 2021. In 2003, the Water Authority was assigned rights to 77,700 AF/YR of conserved water from projects that will line the All-American and Coachella Canals. Deliveries of this conserved water from the Coachella Canal reached the region in 2007, and deliveries from the All-American Canal are projected to reach the region in 2010.

Drip Irrigation



Coachella Canal



Recyled Water at Otay Ranch

Developing these supplies is key to diversifying the region's supply sources, but other factors are also important, such as member agencies implementing and managing local resources. Indeed, local surface water, groundwater, recycled water, and desalinated seawater are all important elements of a diverse water supply portfolio. Likewise, it is critical that the Metropolitan Water District of Southern California (Metropolitan) continue to provide a reliable supply of imported water to the region. The Water Authority, its member agencies, and Metropolitan must work together to ensure a diverse and reliable supply for the region.

This section of the Updated 2005 Plan describes the state laws that influence preparation of the plan, including the Urban Water Management Planning Act (Act) and Water Code Sections that were enacted with the passage of Senate Bills 610 and 221 in 2001. It also includes a discussion of the coordination that occurred in preparation of the Updated 2005 Plan as well as a general description of the Water Authority, with its physical water delivery system, service area characteristics, climate, and population projections.

SECTION 1.1 CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT

The California Water Code requires all urban water suppliers in the state to prepare urban water management plans and update them every five years. These plans satisfy the requirements of the Act of 1983, including amendments that have been made to the Act. Sections 10610 through 10657 of the California Water Code details the information that must be included in these plans, as well as who must file them.

Major amendments made to the Act since the Water Authority's 2000 Plan was prepared include:

- Description of specific water supply projects and implementation schedules to meet projected demands over the planning horizon;
- Description of the opportunities for the development of desalinated water;
- Additional information on groundwater, where groundwater is identified as an existing or planned water source;
- Description of water quality over the planning horizon; and
- Description of water management tools that maximize local resources and minimize imported water supplies.

In addition, the California Department of Water Resources (DWR) will consider whether the urban water supplier has submitted an updated plan when determining eligibility for funds made available pursuant to any program administered by the department.

According to the Act, "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." The Act requires that each urban water supplier that provides water for municipal purposes either directly or indirectly to more than 3,000 customers or supplies more than 3,000 AF of water annually, shall prepare, update, and adopt its urban water management plan at least once every five years or before December 31, in years ending in five and zero. In accordance with the Act, the Water Authority is required to update and adopt its plan for submittal to the DWR by December 31, 2005. **Appendix A** contains the text of the Act.

SECTION 1.2 SENATE BILLS 610 AND 221

Water Code Sections 10910 through 10914 and Government Code Sections 65867.5, 66455.3, and 66473.7 (commonly referred to as SB 610 and SB 221) amended state law to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires that the water purveyor of the public water system prepare a water supply assessment to be included in the environmental documentation of certain large proposed projects. SB 221 requires affirmative written verification from the water purveyor of the public water system that sufficient water supplies are available for certain large residential subdivisions of property prior to approval of a tentative map.

Section 4 of the Updated 2005 Plan contains documentation on the existing and planned water supplies being developed by the Water Authority. This documentation may be used by the Water Authority's member agencies in preparing the water supply assessments and written verifications required under state law. Specific documentation on member agency supplies and Metropolitan supplies may be found in their respective plans.

SECTION 1.3 WATER AUTHORITY'S UPDATED 2005 URBAN WATER MANAGEMENT PLAN

This report constitutes an update to the Water Authority's 2005 Plan. To adequately demonstrate how the region will be reliable over the next 25 years, the Updated 2005 Plan quantifies the regional mix of existing and projected local and imported supplies necessary to meet future retail demands within the Water Authority's service area. While the Updated 2005 Plan includes specific documentation on development of the Water Authority's supplies, the plans submitted by the member agencies and Metropolitan will provide details on their supplies that contribute to the diversification and reliability of supplies for the San Diego region.

Striving for consistency among the plans of Metropolitan, the Water Authority, and its member agencies is important to accurately reflect the projected supplies available to meet regional demands. In order to facilitate coordination within the Water Authority's service area, the Water Authority formed an Urban Water Management Plan Working Group made up of staff from the Water Authority and its member agencies. This group provided a forum for exchanging demand and supply information. In addition, DWR and the California Urban Water Conservation Council (CUWCC) hosted a special workshop to review the requirements of the Act. At a separate workshop, the Working Group received a briefing from Metropolitan on its regional plan, and participants discussed strategies for coordination between the supply agencies.

Some members of the UWMP working group

The Water Authority further coordinated its efforts by working with the appropriate wastewater agencies. These agencies helped prepare the water recycling element of the Updated 2005 Plan, which describes

the wastewater treatment requirements and water recycling potential. The Water Authority also coordinated with Metropolitan regarding projected needs for imported water deliveries. A member agency draft 2005 Plan was distributed for technical review by the Water Authority's member agencies and their comments incorporated.

In accordance with the Act, the Water Authority notified the land use jurisdictions within its service area that it was preparing an Updated 2005 Plan. Prior to adoption, the Water Authority mailed the Updated 2005 Plan to interested parties that included the Water Authority's member agencies, the San Diego Regional Chamber of Commerce, the Sierra Club, the County of San Diego, and cities within the Water Authority's service area. The Updated 2005 Plan was also available for public review at the Water Authority and on the Water Authority's internet homepage.

The Water Authority reviewed all of the comments received and revised the plan accordingly. The Water Authority Board of Directors held a public hearing on October 27, 2005, and adopted the Water Authority's Updated 2005 Plan on November 17, 2005. The Board of Directors adopted the Updated 2005 Plan on April 26, 2007. **Appendix B** contains a copy of the resolution adopting the Updated 2005 Plan and the Updated Updated 2005 Plan.

DWR prepared a checklist based on the Act of items that must be addressed in an agency's plan. This checklist allows an agency to identify where in its plan it has addressed each item. The Water Authority has completed the checklist, referencing the sections and page numbers included in the Updated 2005 Plan. The completed checklist is included in **Appendix C**.

SECTION 1.4 HISTORY AND DESCRIPTION OF THE WATER AUTHORITY

1.4.1 HISTORY

The Water Authority was established pursuant to legislation adopted by the California State Legislature in 1943 to provide a supplemental supply of water as the San Diego region's civilian and military population expanded to meet wartime activities. Due to the strong military presence, the federal government arranged for supplemental supplies from the Colorado River in the 1940s. In 1947, water began to be imported from the Colorado River via a single pipeline that connected to Metropolitan's Colorado River Aqueduct (CRA) located in Riverside County. To meet the water demand for a growing population and economy, the Water Authority constructed four additional pipelines between the 1950s and early 1980s that are all connected to Metropolitan's distribution system and deliver water to San Diego County. The Water Authority is now the county's predominant source of water, supplying from 75 to 95 percent of the region's needs depending upon weather conditions and yield from surface, recycled, and groundwater projects.

1.4.2 SERVICE AREA

The Water Authority's boundaries extend from the border with Mexico in the south, to Orange and Riverside counties in the north, and from the Pacific Ocean to the foothills that terminate the coastal plain in the east. With a total of 920,463 acres (1,438 square miles), the Water Authority's service area encompasses the western third of San Diego County. **Figure 1-1** shows the Water Authority's service area, its member agencies, and aqueducts.

In 1947 water began to be imported from the Colorado River.

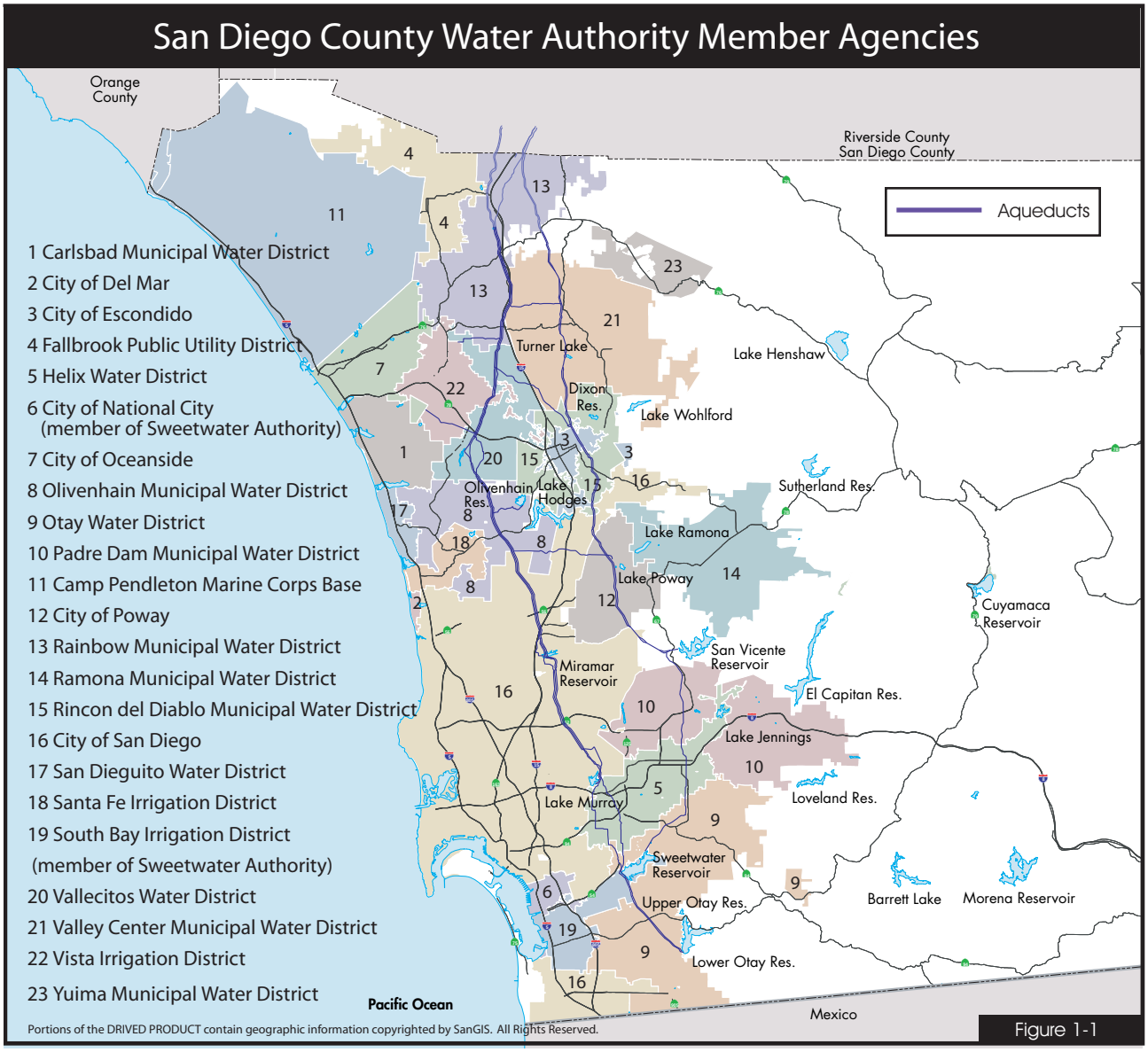


Figure 1-1

1.4.3 MEMBER AGENCIES

The Water Authority's 23 member agencies purchase water from the Water Authority for retail distribution within their service territories. A 34-member Board of Directors comprised of member agency representatives governs the Water Authority. The member agencies' six cities, four water districts, eight municipal water districts, three irrigation districts, a public utility district, and a federal military reservation have diverse and varying water needs.

In terms of land area, the City of San Diego is the largest member agency with 210,726 acres. The smallest is the City of Del Mar, with 1,159 acres. Some member agencies, such as the cities of National City and Del Mar, use water almost entirely for municipal and industrial purposes. Others, including Valley Center, Rainbow, and Yuima Municipal Water Districts, deliver water that is used mostly for agricultural production.

SECTION 1.5 WATER AUTHORITY PHYSICAL WATER DELIVERY SYSTEM

The Water Authority currently purchases water from Metropolitan and transferred water from the Imperial Irrigation District (IID). These supplies are delivered to its member agencies through two aqueducts containing five large-diameter pipelines. The aqueducts follow general north-to-south alignments, and the water is delivered largely by gravity, which allows the distribution system to operate during a power outage. The Water Authority has an exchange agreement with

Metropolitan, which allows delivery of the IID transfer water through Metropolitan's system. Delivery points from Metropolitan are located about six miles south of the Riverside/San Diego county line. The largest single-year of sales of imported water ever recorded by the Water Authority was 644,000 acre-feet (AF) in fiscal year (FY) 2004.

The First Aqueduct includes Pipelines 1 and 2, located in a common right-of-way. They share five common tunnels and are operated as a unit. They have a combined capacity of 180 cubic feet per second (cfs). Pipelines 3, 4, and 5 form the Second Aqueduct. These pipelines are operated independent of the First Aqueduct and are located in separate rights-of-way. Pipeline 3 has a capacity of 280 cfs; Pipeline 4 carries 470 cfs, and Pipeline 5 carries 500 cfs. **Figure 1-1** shows the locations of the Water Authority's aqueducts within San Diego County.

1.5.1 CAPITAL IMPROVEMENT PROGRAM (CIP)

The Water Authority completed a Regional Water Facilities Master Plan (RWFMP) process in 2004. The RWFMP defines the regional facilities needed to meet water demands within the Water Authority's service area through the year 2030. The Water Authority examined the changing water supply and demand forecast patterns using a probabilistic approach to facilities planning. A computer model analyzed various facility options under a range of supply and demand scenarios. This modeling resulted in an assessment of the reliability of the system measured in terms of the probability, frequency, and magnitude of water shortages for each facility option.

Table 1-1: CIP Cost Summary by Category (in $ millions)

PROJECT CATEGORY	PROJECT COST[2]
Pipeline Projects	$1,768.3
System-wide Improvements	$63.4
Emergency Storage Projects	$1,176.0
Water Supply Projects	$496.6
Flow Control & Pumping Facilities	$67.5
Reimbursable Projects–Total Cost	$13.9
Total Costs of Active & Future Projects	$3,585.7
Less All Reimbursable Costs[1]	$121.8
Net Water Authority Costs[3]	$3,463.9

1 There are project costs within the CIP that are considered reimbursable.
2 Project costs are from the recommended FY 08/09 Multi-Year Water Authority CIP Budget.
3 In June 2004, the Water Authority Board of Directors voted unanimously to select seawater desalination as the preferred RWFMP alternative and added it and 21 other major water facilities projects to the CIP. This action, the largest investment in water supply reliability and system infrastructure in the Water Authority's 60-year history, more than doubled the agency's CIP, from $1.3 billion to more than $3.19 billion. In July 2006, the Water Authority Board of Directors decided not to certify the final environmental impact report for the regional seawater desalination project and not to pursue the project further. The table reflects this change. See Sections 4.3 and 5.4 for more information.

The water supply and capital improvements currently under way and planned for the future are designed to serve the region's needs through 2030. They include new pipelines and pump stations to convey the water, a water treatment facility, improvements to the existing water delivery system, the All-American and Coachella Canal Lining Projects, and projects to increase storage capacity throughout the county (see **Table 1-1** for the CIP cost summary by category).

The timing for implementation of the CIP projects will be evaluated based on the reliability analysis prepared for the Updated 2005 Plan. If necessary, project schedules will be adjusted to accurately reflect when the project is needed for reliability purposes.

Table 1-2: Member Agency Treatment Plant Capacity

MEMBER AGENCY	WATER TREATMENT PLANT	CAPACITY*
Escondido, City of/ Vista Irrigation District	Escondido/Vista	65
Helix Water District	Levy	106
Olivenhain Municipal Water District	Olivenhain	34
Oceanside, City of	Weese	25
Poway, City of	Berglund	24
Ramona Municipal Water District	Bargar	4
San Diego, City of	Alvarado	150
San Diego, City of	Miramar	140
San Diego, City of	Lower Otay	40
San Dieguito Water District/ Santa Fe Irrigation District	Badger	40
Sweetwater Authority	Perdue	30

*million gallons/day

WATER AUTHORITY REGIONAL TREATMENT FACILITY

The treated water that serves the San Diego region is presently produced at local water treatment plants owned by several Water Authority member agencies, and is also imported from Metropolitan's Skinner Water Treatment Plant (Skinner TP) in Riverside County. The member agency treatment plants and capacity are shown in **Table 1-2**. A rapid increase in treated water demand over the last five years has produced significant strains on these treated water supply sources. During peak periods, local plants in the San Diego region typically operate at maximum capacity, and imported water from the Skinner TP meets the remaining demand.

To maintain an adequate level of capacity to meet increased retail customer demands throughout the San Diego region, in September 2005, the Water Authority's Board of Directors certified an environmental impact report for the Twin Oaks Valley Water Treatment Plant and awarded a design-build-operate contract to begin final design and construction of the plant. The plant will be the Water Authority's first water treatment plant and will produce 100-million gallons of drinking water per day beginning in 2008. The plant will help address the growing demand for additional treated water supplies in the region, especially during hot summer days.

EMERGENCY STORAGE PROJECT

Also part of the CIP, the Emergency Storage Project (ESP) is a $1,176 million system of reservoirs, pipelines, pump stations, and other facilities that will work together to store and move water around the county in case of a prolonged interruption of the region's imported water supply. The facilities that make up the ESP are located throughout San Diego County and are being constructed in phases. The initial phase includes the recently completed 318-foot-high Olivenhain Dam and accompanying 24,789 AF Olivenhain Reservoir. **Section 9.1.2** contains additional information on the ESP.

The Olivenhain Dam is an integral part of the Emergency Storage Project.

CARRYOVER STORAGE PROJECT

The CIP also includes budget for the Carryover Storage Project (CSP). The Water Authority's RWFMP identifies the need for additional water storage capacity to improve water supply reliability for the region. The Water Authority is currently conducting environmental reviews of project alternatives, including a possible expansion of the San Vicente Reservoir.

The Water Authority has identified three main needs for carryover storage:

1.) Enhance water supply reliability – Carryover storage provides a reliable and readily available source of water during periods of potential shortage, such as during dry years.

2.) Increase system efficiency – Carryover storage provides operational flexibility to serve above-normal demands, such as those occurring in dry years, from storage rather than by the over-sizing of the Water Authority's imported water transmission facilities.

3.) Better management of water supplies – Carryover storage allows the Water Authority to accept additional imported deliveries during periods of availability, such as during wet years, to ensure water availability during dry years. As described in **Section 6**, the Water Authority receives delivery of State Water Project (SWP) supplies from Metropolitan, which can be significantly influenced by the need to protect environmental resources in the Sacramento-San Joaquin Bay-Delta region. This protection requires that the SWP reduce deliveries in dry years, but similarly allows for increased deliveries during wet years. Efficient management of this system therefore requires carryover storage to absorb the annual fluctuations in supply.

SECTION 1.6 SERVICE AREA CHARACTERISTICS

The Water Authority's service area characteristics have undergone dramatic changes over the last several decades. The region's population grew on average by 50,000 people per year, resulting in a shifting of large amounts of rural land to urban uses. This shift in land use has resulted in the region's prominent urban and suburban character. San Diego County also has a rich history of agriculture, beginning with the large cattle ranches established in the 18th century and continuing through the diverse range of crops and products grown today. Although the total number of agricultural acres under production has declined, the region maintains a significant number of high value crops, such as flowers, vegetables, nursery plants, turf grass, avocados, and citrus.

Based on the last survey conducted by DWR, irrigated agricultural land in the Water Authority's service area totaled 73,769 acres. San Diego County agriculture is a $1.3 billion per year industry, eighth in farm production value in the state. Shifting market forces, including the increasing cost of water, may

cause a change in agricultural practices and ultimately result in the retirement of some economically marginal lands.

1.6.1 REGIONAL ECONOMY AND DEMOGRAPHICS

Historically, defense-related contracting and manufacturing – particularly the aerospace industry – drove the local economy. This pattern peaked in the 1980s as federal spending fueled economic growth, and local defense-related expenditures surged to $9.6 billion in 1987. When this level of federal spending experienced sharp cuts in the early 1990s, widespread layoffs resulted and triggered a recession that lasted until 1995.

San Diego County has since rebounded, due in part to the emergence of a diversified employment base that includes telecommunications, electronics, computers, software, and biotechnology. High technology and bioscience related employment now exceeds 160,000 jobs. San Diego's gross regional product is forecast to reach $151.1 billion in 2005, a 6.6 percent increase over 2004's $141.7 billion estimate. The number of people actively working averaged 1.42 million in 2004, and that number is forecast to rise by 2.1 percent in 2005, to 1.45 million. Compared to the pace of expansion recorded in the 1980s, the current growth is more moderate, and perhaps more healthy and sustainable.

1.6.2 CLIMATE

Climatic conditions within the county area are characteristically Mediterranean along the coast, with mild temperatures year-round. Inland area weather patterns are more extreme, with summer temperatures often exceeding 90 degrees Fahrenheit and winter temperatures occasionally dipping below freezing. Average annual rainfall is approximately 10 inches per year on the coast and in excess of 33 inches per year in the inland mountains. More than 80 percent of the region's rainfall occurs between December and March.

Variations in weather patterns affect regional short-term water requirements, causing reductions in water use during wet cycles and demand spikes during hot, dry periods. Over the last seven years, San Diego has experienced the latter event. Since 1999, local

Rainfall – Evapotranspiration – Temperature Comparison

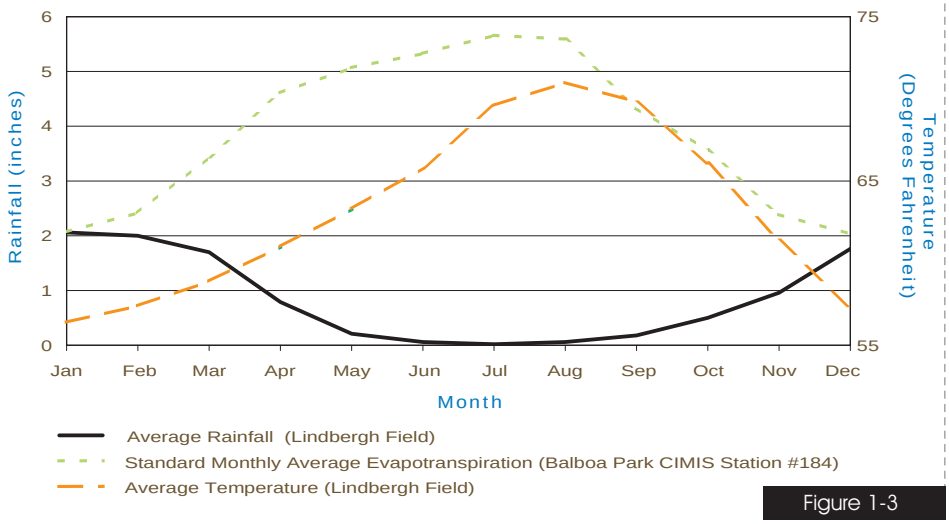


Figure 1-3

Annual Rainfall (Lindbergh Field Station)

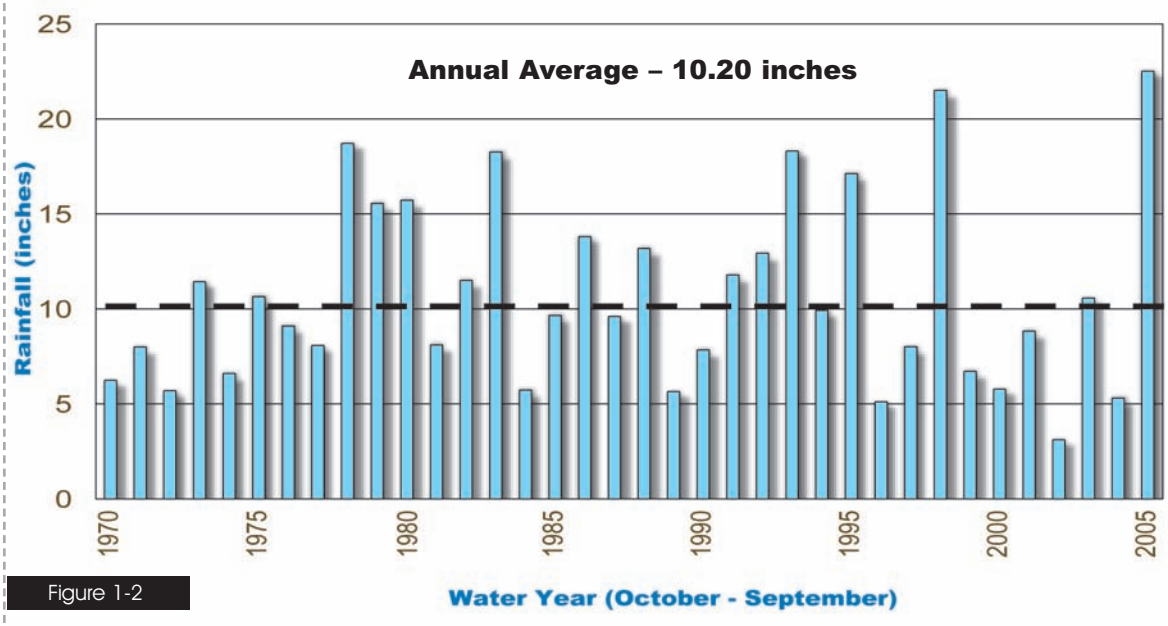


Figure 1-2

rainfall exceeded the historic annual average only twice (**Figure 1-2**). These conditions resulted in record level demands during FY 2004, with total local and imported water use surpassing 715,700 AF. With record rainfall in FY 2005, total demands decreased to 642,152 AF. On a monthly basis, water requirements tend to increase during the summer months when a decrease in rainfall combines with an increase in temperatures and an increase in evapotranspiration levels (**Figure 1-3**).

1.6.3 POPULATION

When the Water Authority was formed in 1944, the population of San Diego County totaled roughly 260,000 people. In 2004, total population within the service area reached 2.8 million. The City of San Diego represents the largest population of any member agency, with approximately 1.3 million people. The Yuima Municipal Water District has the smallest population, at just under 2,000 people. The average population density in 2004 was 3.43 people per acre, with National City having the highest density (9.32/acre) and Yuima Municipal Water District the lowest (0.15/acre).

The population of San Diego County is projected to increase by 842,300 people between 2005 and 2030, for a total county population in excess of 3.8 million. This change represents an average annual increase of about 33,700 people, for an annual growth rate of roughly 1.1 percent. These regional growth projections are based on the San Diego Association of Governments (SANDAG) 2030 Cities/County Forecast.

The Water Authority's service area population projections are also based on SANDAG's 2030 Cities/ County Forecast and appear in **Table 1-3**. Water Authority member agencies are projected to have varying future growth. Some, such as the Santa Fe Irrigation District and the City of Del Mar, are expected to experience relatively little growth. Others, including the Otay and Vallecitos water districts, anticipate large increases in both population and water demand.

Table 1-3: Population Forecast – Water Authority Service Area (2005-2030)

YEAR	POPULATION
2005	2,947,262
2010	3,113,498
2015	3,261,691
2020	3,414,068
2025	3,554,815
2030	3,703,243
Average Annual Growth	30,239

Source: SANDAG 2030 Cities/County Forecast

SECTION 2 WATER DEMANDS

Demand for water in the Water Authority's service area falls into two basic categories: municipal and industrial (M&I), and agricultural. M&I uses currently constitute about 80 to 85 percent of regional water consumption. Agricultural water, used mostly for irrigating groves and crops, accounts for the remaining 15 to 20 percent of demand. This section describes these use categories along with the total historic, current, and projected water demands. By 2030, total normal water demands are projected to reach 829,030 AF (includes projected near-term annexation demands), which represents about a 29 percent increase from the 642,152 AF of demand that occurred in FY 2005.

SECTION 2.1 MUNICIPAL AND INDUSTRIAL WATER DEMAND

M&I demand can be subdivided into residential demand (water used for human consumption in the home, domestic purposes, and residential landscaping) and water used for commercial and industrial purposes.

2.1.1 RESIDENTIAL DEMAND

Residential water consumption covers both indoor and outdoor uses. Indoor water uses include sanitation, bathing, laundry, cooking, and drinking. Most outdoor water use entails landscaping irrigation requirements. Other minor outdoor uses include car washing, surface cleaning, and similar activities. For single-family homes and rural areas, outdoor demands may be as high as 60 percent of total residential use.

Outdoor residential water consumption includes car washing.

Based on SANDAG data, the 2004 composition of San Diego regional housing stock was approximately 61 percent single-family homes, 35 percent multi-family homes, and 4 percent mobile homes. Single-family residences generally contain larger landscaped areas, predominantly planted in turf, and require more water for outdoor application in comparison to other types of housing. The general characteristics of multi-family and mobile homes limit outdoor landscaping and water use, although some condominium and apartment developments do contain green belt areas.

Single-family homes often have more turf.

2.1.2 COMMERCIAL AND INDUSTRIAL DEMAND

Commercial water demands generally consist of incidental uses, but are necessary for the operation of a business or institution, such as drinking, sanitation, and landscape irrigation. Major commercial water users include service industries, such as restaurants, car washes, laundries, hotels, and golf courses. Economic statistics developed by the San Diego Regional Chamber of Commerce indicate that almost half of San Diego's residents are employed in commercial (trade and service) industries.

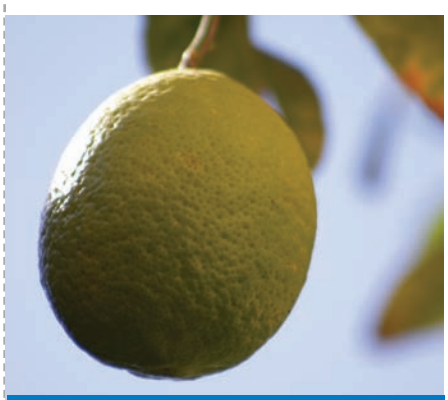
Industrial water consumption consists of a wide range of uses, including product processing and small-scale equipment cooling, sanitation, and air conditioning. Water-intensive industrial uses in the City of San Diego, such as electronics manufacturing and aerospace manufacturing, typically require smaller amounts of water when compared to other water-intensive industries found elsewhere in Southern California, such as petroleum refineries, smelters, chemical processors, and canneries.

The tourism industry in San Diego County affects water usage within the Water Authority's service area not only by the number of visitors, but also through expansion of service industries and attractions,

which tend to be larger outdoor water users. Tourism is primarily concentrated in the summer months and affects seasonal demands and peaking. SANDAG regional population forecasts do not specifically account for tourism, but tourism is reflected in the economic forecasts, and it causes per capita use to increase.

SECTION 2.2 AGRICULTURAL WATER DEMAND

The coastal and inland valley areas of the county possess a moderate and virtually frost-free climate able to support a variety of sub-tropical crops, making the San Diego area a unique agricultural region. The primary crops grown for the national and international markets are avocados, citrus, cut flowers, and nursery products. To a lesser extent, local fresh market crops and livestock are produced in the Water Authority's service area. In recent years, agriculture has accounted for 10 to 20 percent of the Water Authority's total water demand depending on weather conditions.



Citrus is a common crop for the area.

The Water Authority is the largest consumer of agricultural water within Metropolitan's service area, accounting for over 65 percent of Metropolitan's total agricultural water demands in FY 2004. Agricultural water use within the Water Authority's service area is concentrated mainly in the north county, and includes member agencies such as the Rainbow, Valley Center, Ramona, and Yuima Municipal Water Districts, the Fallbrook Public Utility District, and the City of Escondido.

SECTION 2.3 TOTAL CURRENT AND HISTORIC WATER USE

Water use in the San Diego area is closely linked to the local economy, population, and weather. Over the last half-century a prosperous local economy has stimulated population growth, which in turn produced a relatively steady increase in water demand. By 1999, a new combination of natural population increases and job creation surfaced as the primary drivers of long-term water consumption increases.

In FY 2004, water demand in the Water Authority's service area reached a record level of 715,763 AF, only to drop to 642,152 AF in FY 2005 due to above average rainfall. **Table 2-1** shows the historic water demand within the Water Authority's service area.

Table 2-1: Historic Water Demand within Water Authority Service Area

FISCAL YEAR (1995 - 2005)	WATER USE (AF)
1995	526,053
1996	615,900
1997	621,739
1998	562,225
1999	619,409
2000	694,995
2001	646,387
2002	686,530
2003	649,622
2004	715,763
2005	642,152

Figures 2-1 and **2-2** show the estimated and projected relative percentages of various categories of water demand within the Water Authority's service area for FY 2005 and FY 2030. In these figures, residential demand includes single-family residential and multi-family residential.

Estimated Type of Water Use
FY 2005

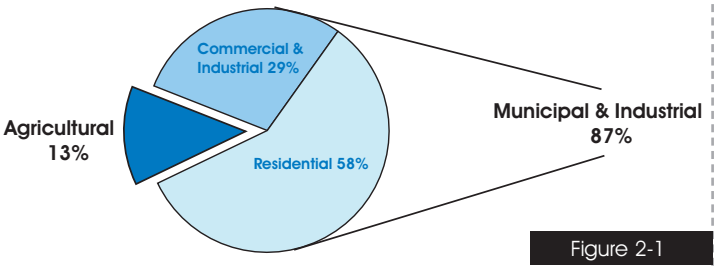


Figure 2-1

Projected Type of Water Use
FY 2030

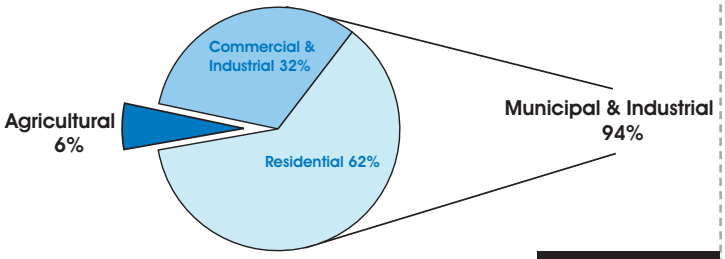


Figure 2-2

SECTION 2.4 PROJECTED WATER DEMANDS

In 1994, the Water Authority selected the Institute for Water Resources – Municipal And Industrial Needs (MAIN) computer model to forecast M&I water use for the San Diego region. The MAIN model uses demographic and economic data to project sector-level water demands (i.e. residential and non-residential demands). This econometric model has over a quarter of a century of practical application and is used by many cities and water agencies throughout the United States. The Water Authority's version of the MAIN model was modified to reflect the San Diego region's unique parameters and is known as CWA-MAIN.

As stated, the foundation of the water demand forecast is the underlying demographic and economic projections. This was a primary reason why, in 1992, the Water Authority and SANDAG entered into a Memorandum of Agreement (MOA), in which the Water Authority agreed to use SANDAG's current regional growth forecast for water supply planning purposes. In addition, the MOA recognizes that water supply reliability must be a component of San Diego County's regional growth management strategy as required in Proposition C (passed by San Diego County voters in 1988). The MOA ensures a strong linkage between local general plan land use forecasts and water demand projections for the San Diego region.

Consistent with previous CWA-MAIN modeling efforts, the 2005 water demand forecast update utilized the latest official SANDAG demographic projections. The new SANDAG 2030 Forecast, released in December 2003, extended the projection horizon an additional ten years to 2030. Member agency-level demographic and economic projections were compiled from this SANDAG forecast and incorporated into the MAIN model. Demand projections for the Marine Corps Base Camp Pendleton (MCB Camp Pendleton) were forecast outside of the MAIN model due to uncertainty regarding future land use development. Water-use projections for the various developments within the MCB Camp Pendleton area were based on historic demand trends, which were then added to the baseline forecast.

The M&I forecast also included an updated accounting of projected conservation savings based on projected regional implementation of the CUWCC Best Management Practices and SANDAG demographic information for the period 2005 through 2030. These savings estimates were then factored into the baseline M&I forecast. **Section 3.3** discusses the derivation of the estimated savings.

A separate agricultural model, also used in prior modeling efforts, was used to forecast water demands within the Water Authority service area. This model estimates agricultural demand met by the Water Authority's member agencies based on agricultural acreage projections provided by SANDAG, crop distribution data derived from the DWR and the California Avocado Commission, and average crop-type watering requirements based on California Irrigation Management Information System (CIMIS) data.

Demographic and economic data is used to project water demand.

Utilizing SANDAG's most recent growth forecast to project future water demands is an important link to the land use plans of the cities and the county. This process ensures supplies are being planned to meet future growth. Any revisions to the land use plans are captured in SANDAG's updated forecasts. The Water Authority will update its demand forecast based on SANDAG's most recent forecast approximately every five years to coincide with preparation of the urban water management plan. Prior to the next forecast update, local jurisdictions may require water supply availability reports under Senate Bills 610 and 221 for proposed land use developments that have a higher density than reflected in the existing growth forecast. The increased density could result in a higher demand for the parcel than originally anticipated. In evaluating the availability of supply, the Water

Authority's member agency can determine if "offset" supplies are available as a result of other land use decisions which lower water use within their service area. In addition, Metropolitan's draft 2005 Regional Urban Water Management Plan identified potential reserve supplies in the supply capability analysis (Tables II-7, II-8, II-9), which could be available to meet the unanticipated demands. The Water Authority's next forecast and other supply planning documents would then capture this increase in demands.

To fully quantify probable demands served by the Water Authority, lands with impending applications for annexation to the Water Authority's service area were identified. Working with its member agencies, the Water Authority identified potential near-term annexations as being parcels that may be annexed to the Water Authority within the next five years. Estimated water demands for those parcels were provided to the Water Authority by the member agency or project proponent and then added to the forecast. Including the demands provides no assurance of annexation; approval by the Water Authority Board would be required before water service is provided to these lands. It is difficult to know exactly which parcels will be annexed and when, but including this additional demand will provide for more comprehen-

Table 2-2: Normal Year Water Demand Forecast Adjusted for Water Conservation (2010-2030)

Year	2010	2015	2020	2025	2030
M&I Baseline Forecast (AF)	699,250	739,020	780,350	830,550	877,740
Esimated Conservation Savings (AF)	79,960	87,310	94,170	101,950	108,400
M&I Forecast Reduced by Conservation (AF)[1]	619,290	651,710	686,180	728,600	769,340
Agricultural Forecast (AF)[2]	89,700	83,130	77,270	58,980	51,630
Total Projected Demand (AF)	708,990	734,840	763,450	787,580	820,970
Total Projected Demand with pending Annexations[3]	715,450	742,900	771,510	795,640	829,030

Source: CWA-MAIN Forecast (August 2005)
1 Includes M&I demands for Camp Pendleton area customers.
2 Includes certified IAWP agricultural water and non-credited agricultural water.
3 Estimated near-term annexation demands are 6,455 AF/YR in 2010, and 8,060 AF/YR in years 2015, 2020, 2025, and 2030. The potential near-term annexations used to calculate the estimate include Otay Ranch Village 13 (1,961 AF), Peaceful Valley Ranch (51 AF), Sycuan Reservation (392 AF), San Luis Rey MWD (includes the Meadowood development) (4,217 AF), and four potential annexations to Yuima MWD (1,435 AF). Including the demands for these parcels does not limit the Board's discretion to deny or approve these or other annexations not contemplated at this time.

2.4.1 PROJECTED NORMAL WATER DEMANDS

Table 2-2 shows projected normal water demand for the Water Authority through 2030. The baseline M&I demand forecast reflects an adjustment for estimated water conservation, MCB Camp Pendleton area demands, and forecasted agricultural water use, to produce total projected demand. Water conservation measures are expected to reduce total M&I demands by approximately 12 percent in 2030, with an estimated savings of 108,400 AF. Agricultural water use is projected to decrease by approximately 42 percent between 2010 and 2030, to an estimated 51,630 AF, primarily due to the conversion of agricultural land to residential use.

Regional Historic and Projected Normal Water Demands

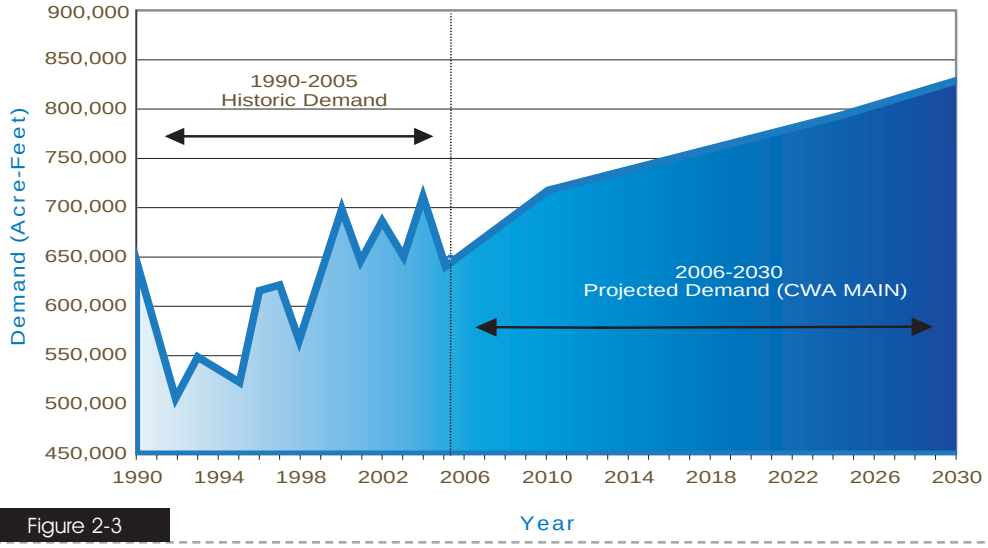


Figure 2-3

sive supply planning and assist member agencies in complying with Senate Bills 610 and 221.

Figure 2-3 illustrates the projected trend in water demands over the 2005 to 2030 time frame. This figure combines historic water use and forecasted CWA-MAIN model demands based on SANDAG 2030 demographic and economic projections.

2.4.2 PROJECTED DRY-YEAR WATER DEMANDS

To assess water service reliability during dry-year events, the Act requires single dry-year and multiple dry-year demand projections in five-year increments. Based on observed historic demand impacts associated with each of these events, separate approaches were taken to project single and multiple dry-year conditions.

Since the CWA-MAIN model was constructed to project water demands over discrete twelve-month periods and it utilizes weather as a predictive variable, it was utilized to forecast single dry-year demands for the region. By inserting annual dry-year weather data into the model and holding all non-weather related predictive variables constant for a given year, the model produces an annual forecast of weather-driven demand. An analysis of historic dry-year events was performed to select a representative year. This analysis evaluated the relative impact of weather (e.g. high temperature and low rainfall) to resulting total water demand, and also the availability of local supplies. Using this criterion, 1989 was selected as the representative single dry-year event. Weather data for 1989 was then run through the model for each five year increment. Projected single dry-year demands are shown in **Table 2-3**.

The Act requires agencies to prepare multiple dry-year demand scenarios every five years for at least 20 years. An analysis of historic water demands reveals that multiple dry-year events may have a compounding effect on demands that is not captured through the modeling of discrete yearly weather patterns. For this reason, the CWA-MAIN model was not directly used to project multiple dry-year demands. Instead, an alternative method which utilized a 7% annual increase in demands was used to develop the multiple dry-year scenarios. This value is supported by the projected yearly increase in demands generated from the CWA-MAIN model single dry-year forecast. The annual 7% factor was applied to the normal year demand estimates to generate the multiple dry-year demand projections shown in **Tables 2-4, 2-5, 2-6, 2-7,** and **2-8.**

Table 2-3: Single Dry-Year Total Water Demand Forecast (5-Year Increments)

NORMAL YEAR	AF/YR
2010	767,650
2015	795,970
2020	825,560
2025	848,610
2030	883,030

Multiple Dry-Year Total Water Demand Forecast
(5-Year Increments)

Table 2-4

YEAR	TOTAL ESTIMATED DEMANDS AF/YR
2006	744,520
2007	749,780
2008	755,030

Table 2-5

YEAR	TOTAL ESTIMATED DEMANDS AF/YR
2011	771,410
2012	777,280
2013	783,150

Table 2-6

YEAR	TOTAL ESTIMATED DEMANDS AF/YR
2116	801,030
2017	807,150
2018	813,270

Table 2-7

YEAR	TOTAL ESTIMATED DEMANDS AF/YR
2121	830,680
2022	835,840
2023	841,010

Table 2-8

YEAR	TOTAL ESTIMATED DEMANDS AF/YR
2026	858,480
2027	865,630
2028	872,770

2.4.3 MEMBER AGENCY IMPORTED DEMAND ON THE WATER AUTHORITY

Table 2-9 shows the Water Authority's historical, current, and projected imported water demands (sales) by member agency. The projected demands were calculated from the baseline demands for each member agency, as forecasted in **Section 2.4**, minus the projected local supplies and conservation savings. Therefore, the projected imported demands (sales) are directly tied to the success of local supply development (**Section 5**) and water conservation savings (**Section 2**). The forecasted sales figures in **Table 2-9**, should not be considered a member agency's allocation of supplies from the Water Authority.

Table 2-9: Member Agency Imported Demand (Sales) on Water Authority (AF) [1,2] (2000 – 2030) Normal Year Forecast

	2000	2005	2010	2015	2020	2025	2030
Carlsbad M.W.D.[3]	19,952	20,155	19,093	0	0	0	0
Del Mar, City of	1,556	1,324	1,370	1,317	1,312	1,321	1,342
Escondido, City of	26,977	25,103	26,122	25,063	25,456	25,942	26,669
Fallbrook P.U.D.	16,824	15,809	16,239	16,276	16,586	17,056	17,402
Helix W.D.	38,483	32,060	35,050	35,533	36,274	37,284	38,348
Oceanside, City of	32,073	31,181	30,088	31,310	31,501	33,039	35,473
Olivenhain M.W.D.	19,433	21,052	19,401	21,059	22,740	25,268	26,606
Otay W.D.	29,901	37,787	43,761	50,337	57,787	64,547	73,097
Padre Dam M.W.D.	21,824	19,246	21,266	22,542	23,690	25,656	27,491
Pendleton MCB	105	834	850	850	850	850	850
Poway, City of	15,625	13,975	16,372	16,890	17,448	17,986	18,317
Rainbow M.W.D.	29,929	25,252	27,146	26,427	26,352	22,878	22,822
Ramona M.W.D.	8,267	10,359	11,858	12,198	12,438	12,638	13,650
Rincon del Diablo M.W.D.	9,119	7,732	8,968	5,471	5,939	6,401	6,905
San Diego, City of	206,433	204,039	197,320	201,109	207,584	217,449	226,821
San Dieguito W.D.	5,112	5,605	4,703	4,730	4,910	5,063	5,118
Santa Fe I.D.	8,056	9,737	11,473	11,437	11,703	12,000	12,103
Sweetwater Authority	5,520	11,331	12,398	10,136	10,546	10,999	12,180
Vallecitos W.D.	16,409	18,150	19,409	19,741	20,365	21,317	22,903
Valley Center M.W.D.	48,550	38,105	43,850	35,751	35,019	30,417	28,212
Vista I.D.	17,123	21,229	17,417	18,389	19,617	21,412	23,197
Yuima M.W.D.	2,849	2,984	2,949	2,929	2,895	2,984	3,053
SUB-TOTAL	580,120	573,049	587,103	569,493	591,012	612,508	642,559
Near-term annexation area demands[4]	0	0	6,455	8,062	8,062	8,062	8,062
TOTAL	580,120	573,049	574,465	577,555	599,074	620,570	650,621

1 Based on SANDAG 2030 Cities/County Forecast.
2 Includes water conservation.
3 For years 2015 – 2030, the Water Authority demand forecast assumes that Carlsbad MWD total demands will be met by local supplies (desalinated seawater and recycled water).
4 Near-term annexation area demands are listed for planning purposes and are not assigned to any specific member agency.

SECTION 3 DEMAND MANAGEMENT

SECTION 3.1 DESCRIPTION

Demand management, or water conservation, is frequently the lowest-cost resource available to the Water Authority and its member agencies. Water conservation is a critical part of the Water Authority's Updated 2005 Plan and long-term strategy for meeting water supply needs of the San Diego region.

The goals of the Water Authority's water conservation program are to:

- Reduce demand for more expensive, imported water;
- Demonstrate continued commitment to the Best Management Practices (BMPs) and Agricultural Efficient Water Management Practices (EWMPs);
- Ensure a reliable future water supply; and
- Reduce consumption during periods of high treated-water demand.

SECTION 3.2 BEST MANAGEMENT PRACTICES

The California Urban Water Conservation Council (CUWCC) was formed in 1991 through a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). The urban Best Management Practices, or BMPs, for water conservation included in the MOU are intended to reduce California's long-term urban water demands.

Table 3-1 provides an overview of the Water Authority and its member agencies' progress in the implementation of the BMPs. Most member agencies are signatories to the MOU and submit biennial BMP reports to show compliance with the appropriate BMPs. **Appendix D** shows the Water Authority's FY 01, 02, 03, and 04 BMP Reports, as well as the Coverage Reports for FY 04. Major Water Authority activities include actively participating to develop and implement statewide BMPs; participating with member agencies, Metropolitan, the CUWCC, and the American Water Works Association Research Foundation in research and development activities; and implementing public information and education programs.

IMPLEMENTATION OF BMPS

The Water Authority began implementing its aggressive conservation program in 1990. Some of the early programs to address the BMPs provided financial incentives for retrofitting high-water-use toilets with ultra-low-flush models and distributing low-flow showerheads to consumers. Since the program's inception, the Water Authority and its member agencies have provided incentives for the installation of over 528,000 ultra-low-flush toilets (ULFTs). In addition, financial incentives have been provided for the installation of more than 45,100 residential high-efficiency clothes washers (HEWs), 7,600 coin-operated HEWs, 355 cooling tower conductivity controllers, and 3,200 pre-rinse spray valves. The Water Authority, its member agencies, and San Diego Gas & Electric also distributed over half-a-million showerheads to customers.

Since 1990, the Water Authority has invested more than $12 million to help implement these and other conservation programs. In addition, the Water Authority's member agencies have invested a similar amount to co-fund these conservation programs.

The Water Authority's FY 05 budget included $972,000 for conservation programs that are anticipated to save 68,000 AF/YR over the useful life of the measures. The Water Authority's member agencies, Metropolitan, and the DWR augment this funding. In FY 05, this additional funding totaled $4.74 million, bringing the total FY 05 amount budgeted for all conservation programs to $5.7 million.

Financial incentives are offered for commercial high-efficiency washers

The Water Authority provides approximately 20 percent of all conservation funding and manages most of the programs for its member agencies. The Water Authority also administers the Agriculture Water Management Program and CIMIS for agricultural use. **Appendix D**, the CUWCC BMP Reports for FY 01, 02, 03, and 04, contains additional information on implementation of the BMPs by the Water Authority.

Table 3-1: Best Management Practices for Urban Water Conservation in California

BMP	DESCRIPTION	CONSERVATION PROGRAMS	COMPLIANCE [1]	SDCWA Assistance [2]
1	Residential Water Surveys	Residential Survey Program	Yes	Yes
2	Residential Plumbing Retrofit	Showerhead distribution	Yes	Yes
3	Distribution System Water Audits	Water Authority and member agencies independently operate separate system audits	Yes	
4	Metering with Commodity Rates	Member agencies operate	Yes	
5	Large Landscape Programs and Incentives	• Commercial Landscape Incentive Program • Landscape Assistance Program for Business and Home • Protector Del Agua	Yes	Yes
6	High Efficiency Washing Machine (HEW) Rebate Programs	• Residential HEW Voucher Program	Yes	Yes
7	Public Information Program	• Media Coverage • Xeriscape Awards • WebSite • Water Conservation Literature	Yes	
8	School Education Programs	• Classroom Presentations • Splash Science Mobile Lab • Youth Merit Badge Program • Assembly Program • Teaching Garden • Mini-grants of up to $250	Yes	
9	Commercial, Industrial & Institutional (CII) Water Conservation Programs	• CII Voucher Program • Industrial Process Improvement Program	Yes	Yes
10	Wholesale Agency Assistance Programs	Ongoing	Yes	
11	Conservation Pricing	Member agencies operate	Yes	
12	Water Conservation Coordinator	Water Resources staff	Yes	
13	Water Waste Prohibition	Member agencies operate	Yes	
14	Residential Ultra-Low-Flush Toilet (ULFT) Replacement Programs	Residential ULFT Voucher Program	Yes	Yes

1 The Water Authority and one or more of its member agencies comply with the statewide BMPs listed.
2 The Water Authority provides financial assistance to its member agencies to implement conservation programs.

REVENUE IMPACTS

Water conservation is a well-established practice in ensuring that there will be a reliable water supply in the future for the increasing population and commerce of our local region. However, conservation occasionally suffers from the perception that it reduces revenues. Over the long-term, conservation measures actually serve to defer or limit rate increases by reducing the region's need for other, more expensive supplies and increased infrastructure. The Water Authority's FY 05 budget included $972,000 for conservation programs, which represents an average cost of $1.74 per acre-foot of projected water sales during FY 05. Conservation programs also reduce imported water demand that in turn allows the Water Authority to purchase less of Metropolitan's more expensive Tier 2 water. Tier 2 water is more expensive since it represents Metropolitan's cost to develop additional supplies.

SECTION 3.3 FUTURE WATER CONSERVATION SAVINGS

Projected water savings and effectiveness provided in the Updated 2005 Plan are based on industry standard methodologies for calculating savings, as defined by the CUWCC. The Water Authority assists the CUWCC in conducting pilot programs and analyzing ways to increase the accuracy of savings calculation methodologies. Projections show that implementing existing and proposed urban BMPs would produce water savings of approximately 108,396 AF/YR by the year 2030 within the Water Authority's service area (**Table 3-2**).

This conservation target is appropriate to implement the BMPs and fulfill the Water Authority's commitment to the MOU. Additionally, this target coincides with the availability of anticipated funds from member agencies, the Water Authority, and/or Metropolitan. The estimates presented in **Table 3-2** are based on savings projections from implementing various conservation measures and the result of state and national efficiency standards. The table represents a projection of the amount of water that will be conserved based on the best information available at this time.

Future water conservation savings are based on historical activity for Residential Surveys, Residential Retrofits, High-Efficiency Clothes Washer Incentives, and Toilet Incentives. Efficiency Standards include water-saving devices installed in new residential construction as part of state-required codes, as well as toilets replaced through natural replacement

Table 3-2: Potential Water Conservation Savings Through 2030 within the Water Authority Service Area (AF)

Best Management Practices	2005	2010	2015	2020	2025	2030
Existing BMPs						
Residential Surveys	1,620	1,620	1,620	1,620	1,620	1,620
Residential Retrofits	8,100	8,100	8,100	8,100	8,100	8,100
Landscape [1]	3,524	18,484	21,793	24,783	27,744	30,718
Clothes Washer Incentives	495	1,281	1,672	1,672	1,672	1,672
Commercial/Industrial/Institutional	2,260	3,328	5,056	6,801	8,533	10,272
Toilet Incentives	17,553	23,616	23,616	23,616	23,616	23,616
Subtotal	33,551	56,792	61,857	66,593	71,286	75,998
Potential BMPs and Efficiency Standards						
Efficiency Standards [2]	19,837	23,137	25,409	27,526	30,598	32,323
Graywater	0	25	30	40	50	50
On Demand Water Heaters	0	5	10	15	20	25
Subtotal	19,837	23,167	25,449	27,581	30,668	32,398
TOTAL [3]	**53,389**	**79,960**	**87,306**	**94,174**	**101,954**	**108,396**

1 Includes savings from Audits, Artificial Turf, WBIC (residential & commercial), Water Budget, and CLIP programs.
2 Code Compliance: new construction, ULFT natural replacement @ 4%, commercial HEWs natural replacement.
3 Values may not add to exact total due to rounding.

outside of the toilet incentive. Updated SANDAG demographic information is utilized to determine savings for new construction through BMP implementation.

On average, more than 50 percent of the water used in San Diego County goes to outdoor watering, and the savings potential from this irrigation is significant. Landscape savings are based on full implementation of BMP 5, through water budgets, large landscape audits, and irrigation hardware replacements.

Weather-based irrigation controllers provide landscape water savings.

Some of these measures are labor intensive and may be a challenge to achieve due to the limited resources of member agencies.

Water savings in the Commercial, Industrial, and Institutional (CII) sector are based on both historical activity and anticipated new water-efficient products that will experience expanded use. These products include multi-load commercial HEWs, food steamers, commercial dishwashers, and waterless urinals.

Some of the BMPs that are not quantified in **Table 3-2,** such as public information and school education, do not directly result in water savings. Instead, these BMPs result in a decision by a water user to take an action that will result in savings. For example, a water user may learn about the availability of HEWs through a public information program, but water will not be saved until the user installs a new HEW. To avoid double counting, the projected savings from the machine is reflected only in the high-efficiency washing machine BMP.

The Water Authority is a statewide leader of innovative programs in water conservation. Efforts have been so successful, however, that many of the conservation programs implemented in the early 1990s are maturing. Additional measures are now being taken to achieve further water savings, particularly in the CII and landscape sectors.

3.3.1 LANDSCAPE

Additional landscape water savings can potentially be achieved through incentives, regulations, and rates. In 2004, new programs included financial incentives for purchasing and installing self-adjusting, weather-based irrigation controllers, financial incentives to purchase improved efficiency irrigation devices, additional conservation literature, expanded water user efficient irrigation training programs, an artificial turf incentive program, and support for the Water Conservation Garden.

As a result of the passage of the Water Authority-sponsored Assembly Bill 2717, the Landscape Water Conservation Task Force has convened a stakeholders workgroup to evaluate and recommend proposals for improving the efficiency of water use in new and existing urban irrigated landscapes. Potential regulations include the requirement that residential sites have a dedicated water meter for outdoor use and a dedicated water meter for indoor use. Another potential regulation would require homeowners associations to allow water-efficient landscape if desired by the homeowner.

3.3.2 COMMERCIAL, INDUSTRIAL, & INSTITUTIONAL

For the past decade, the Water Authority has used its extensive relationships with manufacturers, suppliers, and contractors to increase participation in the CII Voucher Incentive Program (VIP) with a point-of-purchase service to customers. A number of new water-saving devices have recently been incorporated into the CII Program, including a hospital x-ray processor recirculating system that can save up to 3.2 acre-feet per year per system; water pressurized brooms, which save as much as 50,000 gallons per year per location; and pre-rinse spray valves, which can save up to 50,000 gallons of water annually.

The Industrial Process Improvement Program offers financial assistance to local industries to encourage investment in water saving process improvements. In the future, the Water Authority may consider providing additional funds to qualified projects to maximize water saving possibilities in the commercial, industrial, and institutional sectors. Ever-advancing technologies coupled with an aggressive marketing

plan provides solid foundations for these growing programs.

3.3.3 RESIDENTIAL

Programs, such as the HEW and ULFT VIP that target residential customers, have been highly effective in achieving conservation savings. The Residential ULFT VIP has been effective in encouraging toilet retrofits and is being expanded to serve other markets such as new residential construction. The current program focuses on multi-family sites and incentives for dual-flush toilets to maximize the water savings. Dual-flush toilets have two flushing mechanisms, one for liquid waste (0.8-1.1 gallons per flush) and one for solid matter (1.6 gallons per flush). Each of these toilets saves 2,250 gallons per year more than standard ULFTs.

Dual-flush toilets save 2,250 gallons per year more than standard ULFTs.

The Residential HEW VIP has evolved to encourage consumers to purchase the most water efficient models. Clothes washers eligible for incentives use 65 percent less water than standard washers. This savings will be expanded by further limiting the amount of water used in the washers that are eligible for vouchers. Effective in July 2005, only HEWs with a water efficiency factor of 6.0 or less are eligible for incentives. The water efficiency factor is determined by the amount of water it takes to wash a cubic foot of laundry. The lower the water efficiency factor, the greater the water efficiency of the clothes washer.

Studies for hot-water-on-demand systems are proceeding, and the outcome of those studies will help determine appropriate programs for encouraging the use of these systems in new homes.

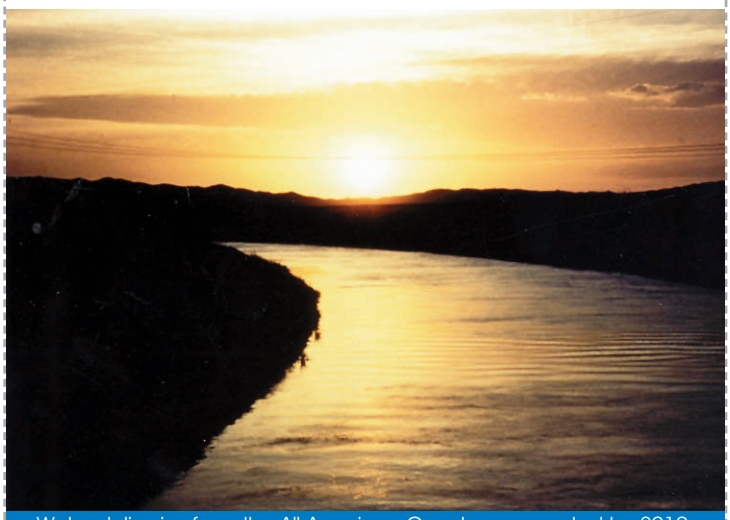
Finally, the Water Authority and its member agencies will continue to cooperate with the CUWCC and Metropolitan to identify future opportunities for water conservation savings.

SECTION 4 SAN DIEGO COUNTY WATER AUTHORITY SUPPLIES

Historically, the Water Authority relied on imported water supplies purchased from Metropolitan to meet the needs of its member agencies. Metropolitan's supplies come from two primary sources, the State Water Project (SWP) and the Colorado River. After experiencing severe shortages from Metropolitan during the 1987-1992 drought, the Water Authority began aggressively pursuing actions to diversify the region's supply sources. Comprehensive supply and facility planning over the last 12 years provided the direction for implementation of these actions.

A Water Resources Plan developed in 1993 and updated in 1997 emphasized the development of local supplies and core water transfers. Consistent with the direction provided in the 1997 Water Resources Plan, the Water Authority entered into a Water Conservation and Transfer Agreement with IID, an agricultural district in neighboring Imperial County, in 1998. Through the transfer agreement, the Water Authority will receive 30,000 AF in 2005, with the volume increasing annually until it reaches 200,000 AF/YR in 2021.

To further diversify regional supplies, the Water Authority's 2000 Plan identified seawater desalination as a potential supply for meeting future demands. In response to the direction provided in the 2000 Plan, the Water Authority Board of Directors approved a Seawater Desalination Action Plan in 2001. More recently, in October 2006, the Water Authority Board of Directors approved the 2006 Desalination Action Plan, which reflects seawater desalination development, including a local supply program of participating Water Authority member agencies rather than an exclusively regional program of the Water Authority (**see Section 4.3.2**).



Water deliveries from the All-American Canal are expected by 2010.

The 2000 Plan identified the need for other competitive imported water sources to meet the demands of the region. In 2003, as part of the execution of the Quantification Settlement Agreement (QSA) on the Colorado River, the Water Authority was assigned rights to 77,700 AF/YR of conserved water from projects to line the All-American and Coachella Canals. Deliveries of this conserved water from the Coachella Canal reached the region in 2007, and deliveries from the All-American Canal are expected to begin by 2010. This section provides specific documentation on the existing and projected supply sources being implemented by the Water Authority.

Construction on the Coachella Canal.

SECTION 4.1 WATER AUTHORITY - IID WATER CONSERVATION AND TRANSFER AGREEMENT

On April 29, 1998, the Water Authority signed a historic agreement with IID for the long-term transfer of conserved Colorado River water to San Diego County. The Water Authority-IID Water Conservation and Transfer Agreement (Transfer Agreement) is the largest agriculture-to-urban water transfer in United States history. Colorado River water will be conserved by Imperial Valley farmers who voluntarily participate in the program and then transferred to the Water Authority for use in San Diego County.

4.1.1 IMPLEMENTATION STATUS

On October 10, 2003, the Water Authority and IID executed an amendment to the original 1998 Transfer Agreement. This amendment modified

certain aspects of the 1998 Agreement to be consistent with the terms and conditions of the QSA and related agreements. It also modified other aspects of the agreement to lessen the environmental impacts of the transfer of conserved water. The amendment was expressly contingent on the approval and implementation of the QSA, which was also executed on October 10, 2003. **Section 6.2.1** contains details on the QSA.

In 2003, the QSA was finalized at a signing ceremony at the Hoover Dam.

On November 5, 2003, IID filed a complaint in Imperial County Superior Court seeking validation of 13 contracts associated with the Transfer Agreement and the QSA. Imperial County and various private parties filed additional suits in Superior Court, alleging violations of the California Environmental Quality Act (CEQA), the California Water Code, and other laws related to the approval of the QSA, the water transfer, and related agreements. The lawsuits have been coordinated for trial. The IID, Coachella Valley Water District, Metropolitan, the Water Authority, and State are defending these suits and coordinating to seek validation of the contracts. Implementation of the transfer provisions is proceeding during litigation. For further information regarding the litigation, please contact the Water Authority's General Counsel.

4.1.2 EXPECTED SUPPLY

Deliveries into San Diego County from the transfer began in 2003 with an initial transfer of 10,000 AF. The Water Authority received 20,000 AF in 2004, 30,000 in 2005, and 40,000 in 2006. The quantities will increase annually to 200,000 AF by 2021, then remain fixed for the duration of the transfer agreement. The initial term of the Transfer Agreement is 45 years, with a provision that either agency may extend the agreement for an additional 30-year term.

Transfer water comes from the Imperial Valley.

During dry years, when water availability is low, the conserved water will be transferred under IID's Colorado River rights, which are among the most senior in the Lower Colorado River Basin. Without the protection of these rights, the Water Authority could suffer delivery cutbacks. In recognition for the value of such reliability, the 1998 contract required the Water Authority to pay a premium on transfer water under defined regional shortage circumstances.

The shortage premium period duration is the period of consecutive days during which any of the following exist:

- a Water Authority shortage;
- a shortage condition for the Lower Colorado River as declared by the Secretary; and
- a Critical Year.

Under terms of the October 2003 amendment, the shortage premium will not be included in the cost formula until Agreement Year 16.

4.1.3 TRANSPORTATION

The Water Authority entered into a water exchange agreement with Metropolitan on October 10, 2003, to transport the Water Authority-IID transfer water from the Colorado River to San Diego County. Under the exchange agreement, Metropolitan will take delivery of the transfer water through its Colorado River Aqueduct. In exchange, Metropolitan will deliver to the Water Authority a like quantity and quality of water. The Water Authority will pay Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. According to the water exchange agreement, Metropolitan will make delivery of the transfer water for 35 years, unless the Water Authority elects to extend the agreement another 10 years for a total of 45 years.

4.1.4 COST /FINANCING

The costs associated with the transfer are proposed to be financed through the Water Authority's rates and charges. In the agreement between the Water Authority and IID, the price for the transfer water started at $258/AF and increases by a set amount for the first five years. The 2005 price for transfer water is $276/AF. Procedures are in place to evaluate and determine market-based rates following the first five-year period.

Metropolitan conveys Colorado River water to the Water Authority.

In accordance with the October 2003 amended exchange agreement between Metropolitan and the Water Authority, the initial cost to transport the conserved water was $253/AF. Thereafter, the price would be equal to the charge or charges set by Metropolitan's Board of Directors pursuant to applicable laws and regulation, and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies. The transportation charge in 2005 is $258/AF.

The Water Authority is providing $10 million to help offset potential socioeconomic impacts associated with temporary land fallowing. IID will credit the Water Authority for these funds during years 16 through 45. At the end of the fifth year of the transfer agreement (2007), the Water Authority will prepay IID an additional $10 million for future deliveries of water. IID will credit the Water Authority for this up-front payment during years 16 through 30.

As part of implementation of the QSA and water transfer, the Water Authority also entered into an environmental cost-sharing agreement. The agreement specifies that the Water Authority will contribute $64 million for the purpose of funding environmental mitigation costs and contributing to the Salton Sea Restoration Fund..

4.1.5 WRITTEN CONTRACTS OR OTHER PROOF

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the Water Authority-IID Transfer.

4.1.6 EXISTING AND FUTURE SUPPLIES

Based on the terms and conditions in the Transfer Agreement, **Table 4-1** shows the anticipated delivery schedule of the conserved transfer water in 5-year increments. There is adequate documentation to demonstrate the availability of this supply, and therefore, the supply yields shown in **Table 4-1** will be included in the reliability analysis found in **Section 8** of this Updated 2005 Plan.

SECTION 4.2 ALL-AMERICAN CANAL AND COACHELLA CANAL LINING PROJECTS

As part of the QSA and related contracts, the Water Authority was assigned Metropolitan's rights to 77,700 AF/YR of conserved water from projects that will line the All-American Canal (AAC) and Coachella Canal (CC). The projects will reduce the loss of water that currently occurs through seepage, and the conserved water will be delivered to the Water Authority. This conserved water will provide the San Diego region with an additional 8.5 million acre-feet over the 110-year life of the agreement.

Table 4-1: Existing and Projected Water Authority – IID Transfer Supplies

YEAR	AF/YR
2005	30,000
2010	70,000
2015	100,000
2020	190,000
2025	200,000
2030	200,000

4.2.1 IMPLMENTATION STATUS

Earthwork for the Coachella Canal lining project began in November 2004, and involves approximately 37 miles of canal. National Environmental Policy Act (NEPA) and CEQA documentation is complete, including an amended Record of Decision by the U.S. Bureau of Reclamation (USBR). The amendment was required after revising the project design: instead of

lining the canal in place, the project entailed the construction of a parallel canal. The project was completed in 2006, and deliveries of conserved water started in 2007.

Construction on the All-American Canal lining project began in 2007.

Preliminary design-related activities have begun on the AAC lining project, including ground and aerial surveying, mapping cultural resources, and geotechnical investigations. The lining project consists of constructing a concrete-lined canal parallel to 24 miles of the existing AAC from Pilot Knob to Drop 3. NEPA and CEQA documentation is complete, environmental mitigation measures have been identified, and Endangered Species Act consultations are pending. Construction of the project is expected to be completed in 2010.

Coachella Canal lining construction

In July 2005, a lawsuit (*CDEM v United States*, Case No. CV-S-05-0870-KJD-PAL) was filed in the U. S. District Court for the District of Nevada on behalf of U.S. and Mexican groups challenging the lining of the AAC. The lawsuit, which names the Secretary of the Interior as a defendant, claims that seepage water from the canal belongs to water users in Mexico. California water agencies note that the seepage water is actually part of California's Colorado River allocation and not part of Mexico's allocation. The plaintiffs also allege a failure by the United States to comply with environmental laws. Federal officials have stated that they intend to vigorously defend the case.

4.2.2 EXPECTED SUPPLY

The AAC lining project will yield 67,700 AF of Colorado River water per year for allocation upon completion of construction. The CC lining project will yield 26,000 AF of Colorado River water each year available for allocation upon completion of construction. The October 10, 2003 Allocation Agreement states that 16,000 AF/YR of conserved canal lining water will be allocated to the San Luis Rey Indian Water Rights Settlement Parties. The remaining amount, 77,700 AF/YR, will be available to the Water Authority. According to the Allocation Agreement, IID has call rights to a portion (5,000 AF/YR) of the conserved water upon termination of the QSA for the remainder of the 110 years of the Allocation Agreement and upon satisfying certain conditions. The term of the QSA is for up to 75 years.

4.2.3 TRANSPORTATION

The October 10, 2003, Exchange Agreement between the Water Authority and Metropolitan also provides for the delivery of the conserved water from the canal lining projects. The Water Authority will pay Metropolitan's applicable wheeling rate for each acre-foot of exchange water delivered. In the Exchange Agreement, Metropolitan will deliver the canal lining water for the term of the Allocation Agreement (110 years).

4.2.4 COST/FINANCING

Under California Water Code Section 12560 et seq., the Water Authority will receive $200 million in state funds for construction of the projects. In addition, under California Water Code Section 79567, $20 million from Proposition 50 is also available for the lining projects. Additionally, the Water Authority will receive $35 million for groundwater conjunctive use projects as part of the agreement. The Water Authority would be responsible for additional expenses above the funds provided by the state.

The rate to be paid to transport the canal lining water will be equal to the charge or charges set by Metropolitan's Board of Directors pursuant to applicable law and regulation and generally applicable to the conveyance of water by Metropolitan on behalf of its member agencies.

In accordance with the Allocation Agreement, the Water Authority will also be responsible for a portion of the net additional Operation, Maintenance, and Repair (OM&R) costs for the lined canals. Any costs associated with the lining projects as proposed, are to be financed through the Water Authority's rates and charges.

4.2.5 WRITTEN CONTRACTS OR OTHER PROOF

Appendix E contains a list of the specific written contracts, agreements, and environmental permits associated with implementation of the canal lining projects.

4.2.6 FUTURE SUPPLIES

Table 4-2 shows the anticipated delivery schedule of conserved supplies from the canal lining projects in 5-year increments. Adequate documentation exists to demonstrate the availability of this supply, and therefore, the reliability analysis found in **Section 8** of this Updated 2005 Plan will show the supply yields shown in **Table 4-2**.

Table 4-2: Projected Supply from Canal Lining Projects (AF/YR)

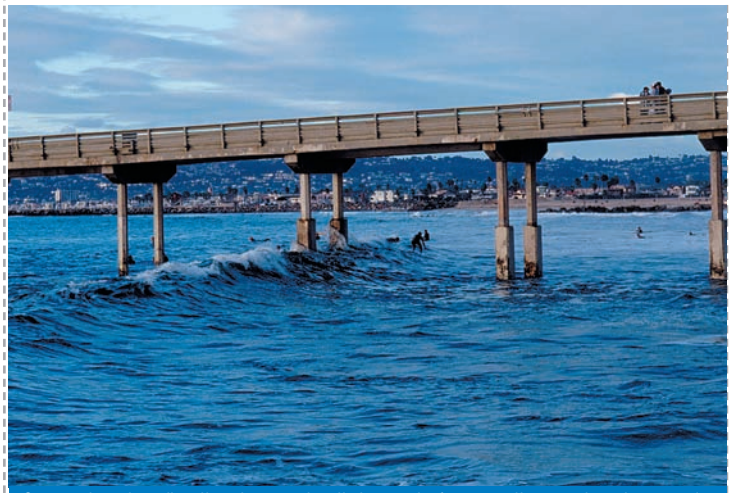
Year	CC Lining Project[1]	AAC Lining Project[2]	TOTAL
2005	0	0	0
2010	21,500	56,200	77,700
2015	21,500	56,200	77,700
2020	21,500	56,200	77,700
2025	21,500	56,200	77,700
2030	21,500	56,200	77,700

1 The project was completed in 2006, and deliveries started in 2007.
2 The estimated completion date is 2010.

SECTION 4.3 WATER AUTHORITY SEAWATER DESALINATION PROGRAM

The development of seawater desalination in San Diego County will assist the region in diversifying its water resources, reducing dependence on imported supplies, and providing a new drought-proof treated water supply.

The Water Authority has been evaluating seawater desalination as a potential highly reliable local water resource since the early 1990s. From 1991 to 1993, the Water Authority conducted detailed studies on the feasibility of developing a seawater desalination facility at the South Bay Power Plant in the City of Chula Vista and the Encina Power Station in the City of Carlsbad. During that period, the Water Authority also participated in a study for a desalination plant that would be sited at a power plant in Rosarito Beach, Mexico. The studies concluded that the environmental, regulatory, and cost issues combined to make desalinated seawater more expensive than other available water resources options.



Seawater desalination is a potential supply for meeting water demands.

Data gathered from recently completed projects worldwide seem to indicate that the cost of seawater desalination has decreased since the Water Authority completed its last study in 1993. This decrease is mainly due to significant technological advances in the development and manufacture of membranes. The reverse osmosis (RO) membranes used in the desalination process cost approximately half the price and are twice as productive as membranes produced ten to fifteen years ago.

Based on the potential reduction in project costs, the Water Authority's 2000 Plan identified seawater desalination as a potential supply for meeting future demands. In response to the direction provided in the 2000 Plan, the Water Authority's Board approved a Seawater Desalination Action Plan in January 2001. The 2001 Action Plan covered activities related to the evaluation of seawater desalination opportunities along the San Diego County coastline.

In June 2004, following the Water Authority's RWFMP process, the Water Authority Board of Directors approved adding $668 million to the CIP to develop a desalinated seawater supply at the Encina Power Station. However, due to uncertainties regarding the site owner's facility plans at the Encina Power Station and disparity in negotiations with the plant's private

developer, the Water Authority Board of Directors, in July 2006, decided not to certify the final environmental impact report for the regional project and not to pursue the project further.

4.3.1 REGIONAL SEAWATER DESALINATION

Even with the Water Authority Board of Director's action in July 2006, seawater desalination remains a key component of the Water Authority's diversification strategy. This Plan includes a goal of 56,000 acre-feet of local seawater desalination (see **Section 5.4**) that is expected to come from the local project at the Encina Power Station beginning in 2011, as well as a long-term regional goal of an additional 33,600 acre-feet by 2020.

In October 2006, the Water Authority Board of Directors approved the 2006 Desalination Action Plan. The plan focuses on quantifying and evaluating other local and regional water supply opportunities that can help to meet the anticipated goal of 89,000 acre-feet of new local and regional seawater desalination supplies by 2030. Given the importance of seawater desalination to San Diego county, the action plan also requires that the Water Authority stay actively engaged in the pursuit of external funding for desalination and the statewide policy debate regarding the implementation of seawater desalination as a significant new water supply for California.

4.3.2 DESALINATION ACTION PLAN

The 2006 Desalination Action Plan consists of the following elements:

COMPLETE SAN ONOFRE/ CAMP PENDLETON REGIONAL DESALINATION FEASIBILITY STUDY

The Water Authority is currently preparing a detailed feasibility study of a 50-100 mgd desalination facility located along the coastline of Marine Corps Base Camp Pendleton. The majority of the cost of the study is being funded by federal appropriation grant funding and Proposition 50 state grant funding. The study scope of work is being modified in response to changes in site conditions.

The San Onofre Nuclear Generating Station

EVALUATE OTHER POTENTIAL REGIONAL SEAWATER DESALINATION PROJECTS

In addition to Encina and Camp Pendleton, there are other potential regional project sites that could warrant further evaluation such as South County. With the South Bay Power Plant currently planned to be replaced with an air-cooled power plant and the environmental sensitivity of south San Diego Bay, it is unlikely that a desalination plant could be sited adjacent to the bay. However, other projects identified in the Feasibility Study of Seawater Desalination Development Opportunities for the San Diego/ Tijuana Region, completed by the Water Authority in March 2005, may warrant further attention. These projects include a site located adjacent to the International Boundary and Water Commission Treatment Plant on the U.S. side of the border that would utilize the International Outfall for concentrate discharge. The project could potentially provide up to 25 mgd to serve demand in the South County. The study also identified a potential project in Mexico located at the Rosarito Power Plant. There are planning activities occurring in Mexico related to a project at that location.

Environmental impacts are being studied.

EXPLORE AND QUANTIFY THE POTENTIAL TO DEVELOP SMALLER LOCAL SEAWATER DESALINATION AND BRACKISH WATER DESALINATION PROJECTS

Until now, the focus of the Water Authority's effort to implement desalination has been the development of larger, regional projects, with a capacity greater than 25 mgd. This is due to the economies of scale present at larger desalination facility sizes. However, smaller member agency-driven brackish and seawater desalination projects could also help to meet the regional need for new water supplies.

For example, the city of Oceanside recently released a request for proposals for a seawater desalination

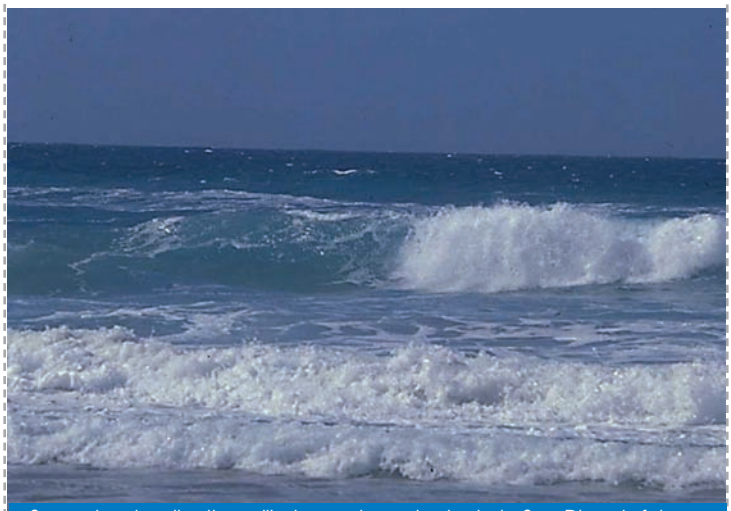
pilot facility and feasibility study. The purpose of the study is to develop accurate production and treatment data to facilitate the implementation of a 5-10 mgd seawater desalination project at the Mission Basin Groundwater Purification Facility Site. Feedwater for the project would come from extraction wells located at the mouth of the San Luis Rey River. Another local project example would be the development of a new, brackish desalination project in South County. The Sweetwater Authority was recently awarded Proposition 50 funds to study the feasibility of an Otay River brackish groundwater desalination project. With Proposition 50 funds also recently awarded to the Water Authority to study a regional concentrate conveyance pipeline in the South County, the opportunity exists to consider potential integration of these facilities with a proposed regional seawater desalination facility at the border.

Both of these potential projects highlight the potential to integrate local seawater desalination projects with existing or proposed groundwater desalination projects. By integrating these facilities together, the potential joint use of product water conveyance and concentrate discharge pipelines could significantly improve the economics of these facilities.

CONTINUE WATER AUTHORITY'S EFFORTS TO SECURE OUTSIDE FUNDING FOR SEAWATER DESALINATION PROJECTS

Past experience in developing local supplies illustrates the importance of external funding as a catalyst to project implementation. Through federal, state, and local funding partnerships, the risk of project development is shared along with the benefits of new supplies for California. These partnerships also minimize the cost to local ratepayers. For example, almost $95 million in federal Title XVI funds have gone to water recycling projects in San Diego County and have been instrumental in their implementation. To date, the Water Authority has received $985,026 in federal grant funding for its seawater desalination program, as well as $250,000 in state funding through Proposition 50.

The Water Authority is actively working to secure external funding from Metropolitan's Seawater Desalination Program. The funding would provide a $250 per AF incentive for its member agencies that have contracted for water purchases from the privately-owned Carlsbad Desalination Project currently being developed at the Encina Power Station. The Water Authority is also a member of the New Water Supply Coalition, formerly the U.S. Desalination Coalition. The purpose of the coalition is to pass federal legislation that would provide for the issuance of federal tax credit bonds for desalination, water recycling, and groundwater remediation projects.



Seawater desalination will play an important role in San Diego's future.

CONTINUE TO ADVOCATE FOR SEAWATER DESALINATION AT THE STATEWIDE LEVEL

Development of new supplies in California has always had a significant regulatory and legislative component in order to create a climate conducive to project implementation. Since the Water Authority first renewed its pursuit of seawater desalination as a water supply for San Diego County in 2001, it has been engaged in efforts both locally and statewide to facilitate the implementation of seawater desalination in California.

The Water Authority is working to facilitate the development of the privately-owned Carlsbad Desalination Project, including supporting the permitting of the project through state regulatory agencies such as the California Coastal Commission and the State Lands Commission. The Water Authority also participated on the State Desalination Task Force and currently is working with other Metropolitan member agencies developing seawater desalination projects to advocate for science-based and site-specific regulation for seawater desalination projects. This effort is focused on key state

permitting agencies including the State Water Resources Control Board and the California Coastal Commission. The Water Authority is also working with the Association of California Water Agencies (ACWA) Desalination Subcommittee to ensure that its policies are properly focused on ensuring the successful implementation of seawater and brackish water desalination projects in California. Continuation of this effort is important to assuring that the Water Authority maintains its options and flexibility with regard to future desalination project intake configuration.

4.3.3 WATER AUTHORITY SEAWATER DESALINATION PROGRAM GOAL

The Water Authority is currently focusing its efforts on the actions outlined in the Desalination Action Plan. Because seawater desalination will play an important role in both the near-term and long-term, the Water Authority established a long-term goal for future development of this supply. The goal for the Water Authority's Regional Seawater Desalination Program is 33,600 AF/YR starting in 2020, and continuing at this level through the 2030 planning period.

SECTION 4.4 SUMMARY OF WATER AUTHORITY SUPPLIES

Table 4-3 shows the documented Water Authority supplies existing and currently planned to assist in meeting future demands within the Water Authority's service area. In 2005, the Water Authority's IID transfer water accounted for 30,000 AF of supply. By 2030, deliveries of water from the IID transfer and AAC and CC Lining Projects will provide an expected supply of 277,700 AF/YR. The expected Water Authority supplies from **Table 4-3** are utilized in the reliability analysis included in **Section 8**.

Table 4-3: Projected Water Authority Supplies (AF/YR)

	2005	2010	2015	2020	2025	2030
IID Water Transfer	30,000	70,000	100,000	190,000	200,000	200,000
All-American Canal Lining Project	0	56,200	56,200	56,200	56,200	56,200
Coachella Canal Lining Project	0	21,500	21,500	21,500	21,500	21,500
TOTAL WATER AUTHORITY SUPPLIES	**30,000**	**147,700**	**177,700**	**267,700**	**277,700**	**277,700**

SECTION 5 MEMBER AGENCY SUPPLIES

Local resources developed and managed by the Water Authority's member agencies are critical to securing a diverse and reliable supply for the region. Local projects, such as recycled water and groundwater recovery, reduce demands for imported water and often provide agencies with a drought-proof supply. This section provides general information on the local resources being developed and managed by the member agencies. These supplies include surface water, groundwater, recycled water, and desalinated seawater.

The Water Authority, working closely with its member agencies, took the following steps to update the anticipated yields from the member agencies' local supplies:

1. Provided the member agencies with the projected supply numbers included in the Water Authority's 2000 Plan and requested they update the figures for their specific project(s);
2. Prepared revised projections based on input from agencies;
3. Separated the recycled water, groundwater, and seawater desalination projects into two categories, "verifiable" and "other potential projects," based on the likelihood of development. "Verifiable" projects are those with adequate documentation regarding implementation and supply utilization. "Other potential projects" are not far enough along in the planning process, but they are included with the verifiable projects to form an Updated 2005 Plan water supply goal;
4. Presented revised supply numbers to member agencies at several meetings and requested input; and
5. Distributed administrative draft of the 2005 Plan to member agencies for their review, providing them another opportunity to review and revise the updated local supply figures prior to the Water Authority's Board of Directors' approval.

Before 1947, the San Diego region relied on local surface water runoff in normal and wet weather years and on groundwater pumped from local aquifers during dry years when stream flows were reduced. As the economy and population grew, local resources became insufficient to meet the region's water supply needs. From the 1950s onward, the region became increasingly reliant on imported water supplies. Since 1980, a range of 5 to 36 percent of the water used within the Water Authority's service area has come from local sources, primarily from surface water reservoirs with yields that vary directly with annual rainfall. A small but growing share of local supply comes from recycled water and groundwater recovery projects, with additional local supply planned from seawater desalination. Yield from these projects are considered drought-proof since they are primarily independent of precipitation. In FY 2005, total local water sources provided eleven percent of the water used in the Water Authority's service area.

SECTION 5.1 SURFACE WATER

5.1.1 DESCRIPTION

Seven watersheds in San Diego County contain water supply reservoirs. These watersheds start at the crest of the Peninsular Range and drain into the Pacific Ocean. Runoff within these watersheds is largely developed. The oldest functional reservoir in the county, Cuyamaca Reservoir, was completed in 1887. The Olivenhain Reservoir, completed in 2003, is the region's newest. It is part of the Water Authority's ESP and has a storage capacity of 24,789 AF. Twenty-five surface reservoirs with a combined capacity of 593,915 AF are located in the Water Authority's service area (**Table 5-1**). **Figure 5-1** shows the location of local reservoirs.

5.1.2 ISSUES

MANAGEMENT

Managing the region's reservoir system to achieve the optimal use of local and imported water is an important element of resources planning. Local surface water supplies can offset dry-year shortfalls in imported water. However, water use records indicate that local reservoirs are generally operated to maximize the use of local supplies in wet and normal years in order to reduce the need for imported water purchases. While this mode of reservoir operation reduces losses due to evaporation and spills, it also results in increased demands for imported water during dry years when imported water is more likely to be in short supply. Most member agencies also maintain a portion of their storage capacity for emergency storage. Many local reservoirs could be operated to maintain carryover storage, but this practice would tend to decrease their average annual yield. An environmental analysis of dedicated carryover storage capacity is being evaluated as part of the expansion of the San Vicente Reservoir, which is being implemented under the ESP. The RWFMP identified carryover storage as necessary to supplement supplies during dry weather events and to maximize the efficient use of existing and planned infrastructure.

Major San Diego County Reservoirs

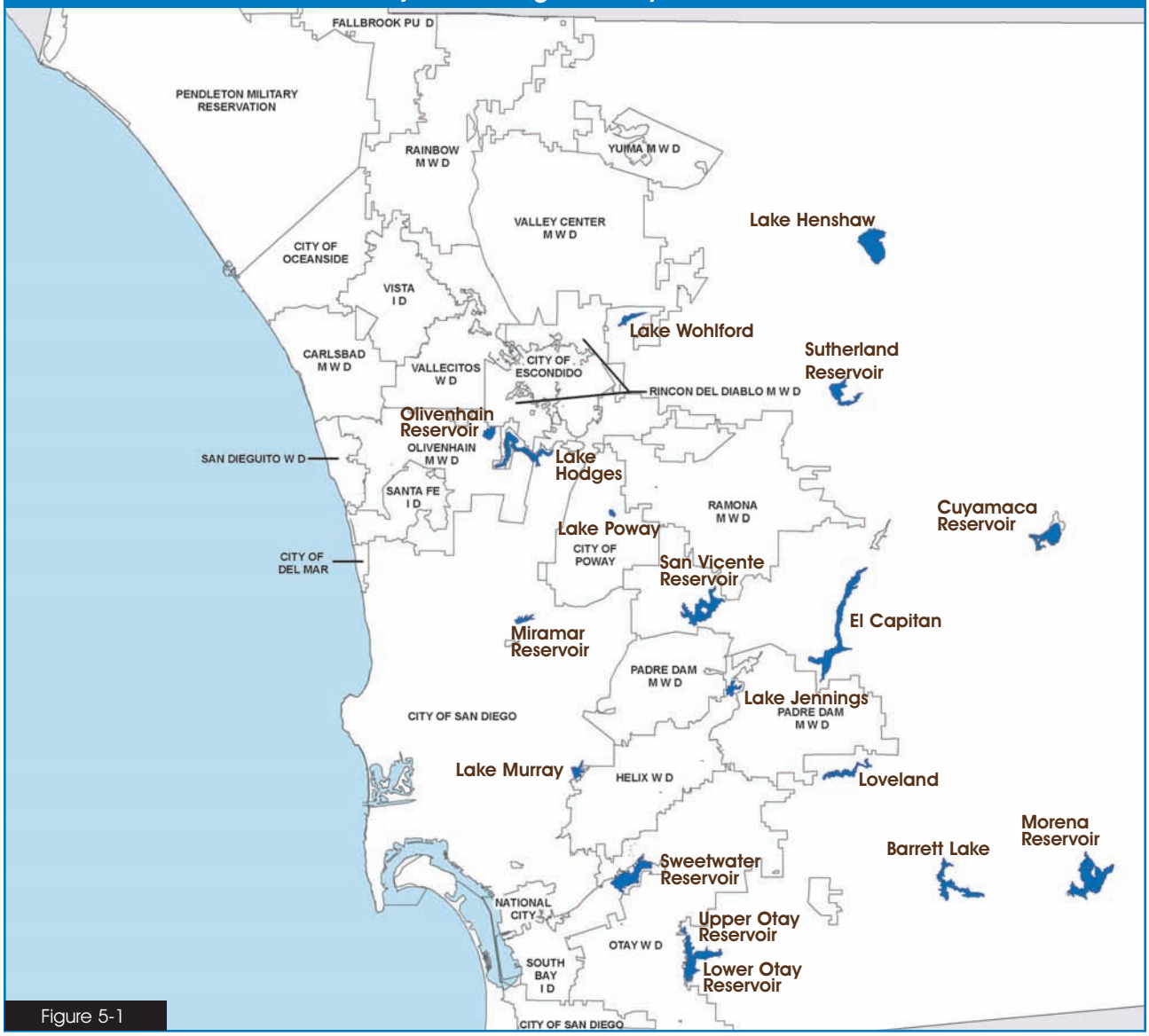


Figure 5-1

Table 5-1: Major San Diego County Reservoirs

MEMBER AGENCY		RESERVOIR	CAPACITY(AF)
Carlsbad M.W.D.	♦	Maerkle	600
Escondido, City of	♦	Dixon	2,606
Escondido, City of		Wohlford	6,506
Fallbrook P.U.D.	♦	Red Mountain	1,335
Helix W.D.		Cuyamaca	8,195
Helix W.D.	♦	Jennings	9,790
Poway, City of	♦	Poway	3,330
Rainbow M.W.D.	♦	Beck	625
Rainbow M.W.D.	♦	Morro Hill	465
Ramona M.W.D.	♦	Ramona	12,000
San Diego, City of		Barrett	37,947
San Diego, City of[1]	♦	El Capitan	112,807
San Diego, City of[2]		Hodges	33,550
San Diego, City of	♦	Lower Otay	49,510
San Diego, City of	♦	Miramar	7,185
San Diego, City of		Morena	50,207
San Diego, City of	♦	Murray	4,818
San Diego, City of	♦	San Vicente	90,230
San Diego, City of		Sutherland	29,685
San Dieguito W.D./ Santa Fe I.D.	♦	San Dieguito	883
SDCWA/Olivenhain M.W.D.	♦	Olivenhain	24,789
Sweetwater Authority		Loveland	25,387
Sweetwater Authority	♦	Sweetwater	28,079
Valley Center M.W.D.		Turner	1,612
Vista I.D.		Henshaw	51,774
TOTAL CAPACITY			**593,915**

♦ Connected to Water Authority's aqueduct system.

1 Imported water can be delivered via San Vicente.
2 System connection is part of the Emergency Storage Project.

WATER QUALITY

See **Section 7** for water quality information.

5.1.3 ENCOURAGING OPTIMIZATION OF LOCAL SURFACE WATER RESERVOIRS

To optimize the use of local storage, the Water Authority and its member agencies participate in Metropolitan's Surface Storage Operating Agreement (SSOA). The SSOA, initiated in October 2003, allows Metropolitan to store up to 70,000 AF/YR of water in the Water Authority's member agency reservoirs. The water is placed into storage in the winter months when demand is low and pipeline capacity is available, and withdrawn by the member agencies in the summer months when demand increases and pipeline capacity is restricted due to increased demands. Benefits of the SSOA include decreased peak demands on the Skinner Treatment Plant, enhancement of local storage operations, and a credit on the member agency's invoice when water is withdrawn from the reservoir by the member agency. Up to 32 percent of the regional water demands have been met in the peak demand months utilizing SSOA water.

5.1.4 PROJECTED SURFACE WATER SUPPLIES

Surface water supplies represent the largest single local resource in the Water Authority's service area. However, annual surface water yields can vary substantially due to fluctuating hydrologic cycles. Since 1980, annual surface water yields have ranged from a low of 24,000 AF to a high of 174,000 AF. Planned ESP projects are expected to increase local yield due to the more efficient use of local reservoirs; the volume has not been determined. Based on information provided by the Water Authority's member agencies, the local surface water supplies are assumed to have an average annual yield of 59,649 AF.

A list of the individual reservoirs, expected yield and basis for the supply figure can be found in **Appendix F, Table F-1. Table 5-2** shows the projected average surface water supply within the Water Authority's service area. Specific information on the projected yields from local reservoirs is expected to be included in the member agencies' 2005 Plans.

SECTION 5.2 GROUNDWATER

Groundwater is being used to meet demands throughout the Water Authority's service area, from the City of Oceanside in the north to National City in the south. This section provides a general description of groundwater development within the Water Authority's service area, the issues associated with development of this supply, and projected regional yield. Specific information required under the Act on groundwater basins and projects is expected to be included in the member agencies' 2005 Plans.

Table 5-2: Projected Water Supply (Normal Year – AF/YR)

YEAR	WATER SUPPLY AF/YR
2005[1]	45,521
2010	59,649
2015	59,649
2020	59,649
2025	59,649
2030	59,649

1 Based on FY 2005 totals.

5.2.1 DESCRIPTION

Agencies within the Water Authority's service area used approximately 17,844 AF of groundwater in FY 2005, which is lower than the average due to an extended period of low rainfall, which resulted in limited natural recharge into the basins. In fact, over the last five years groundwater production used to meet potable demands has been below average at about 17,000 AF/YR. Many private well owners also draw on groundwater to help meet their domestic water needs, which helps to offset demand for imported water. The amount of groundwater pumped by private wells is significant, but to date has not been accurately quantified.

Groundwater production in the Water Authority's service area is limited by a number of elements, including lack of storage capacity in local aquifers, availability of groundwater recharge, and degraded water quality. Narrow river valleys filled with shallow sand and gravel deposits are characteristic of the most productive groundwater basins in the San Diego region. Outside of the principal alluvial aquifers and farther inland, groundwater occurs in fractured crystalline bedrock and semi-consolidated sedimentary deposits where yield and storage are limited and the aquifers are best suited for lower-yielding domestic water supply wells. **Figure 5-2** shows the location of the principal alluvial groundwater basins located within the Water Authority's service area.

Although groundwater supplies are less plentiful in the San Diego region than in some other areas of California, such as the Los Angeles Basin in Southern California and the Central Valley in Northern

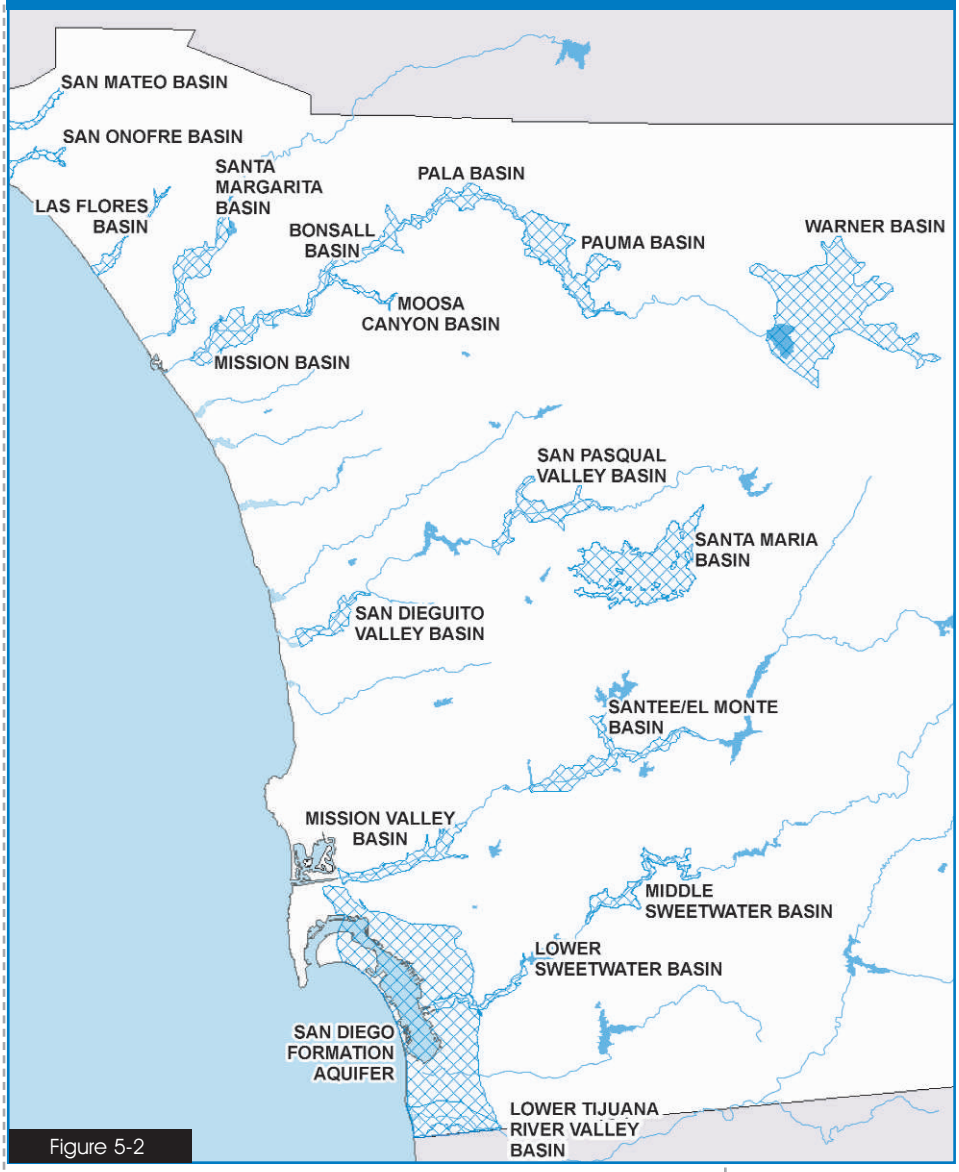


Figure 5-2

California, the Water Authority believes that sufficient undeveloped supplies exist that could help meet a greater portion of the region's future water supply and storage needs. Several agencies within the Water Authority's service area have documented potential projects that could provide an additional 21,400 AF/YR of groundwater production in the coming years. Existing, planned and potential projects can be grouped into the following three categories:

GROUNDWATER EXTRACTION AND DISINFECTION PROJECTS

These projects are generally located in basins with higher water quality levels, where extracted groundwater requires minimal treatment for use as a potable water supply. Examples of this type of groundwater project include projects currently operated by MCB Camp Pendleton, Yuima MWD, and the Sweetwater Authority (National City Well Field). Another high yielding basin is the upper San Luis Rey, which provides groundwater supplies to the Vista Irrigation District and City of Escondido and is operated in conjunction with surface water supplies. The unit cost of water produced from simple groundwater extraction and disinfection projects is generally well below the cost of imported water. Because most of the higher quality groundwater within the Water Authority's service area is already being fully utilized, a relatively small amount of this "least cost" groundwater is available for new supplies. However, these basins are good candidates for conjunctive-use operations, which can significantly increase the average annual production rate of groundwater.

BRACKISH GROUNDWATER RECOVERY PROJECTS

Groundwater that is high in Total Dissolved Solids (TDS) is typically found in basins that have been impacted by imported-water irrigation or by seawater intrusion resulting from the historical overdraft of coastal basins. Brackish groundwater recovery projects use desalination technologies, principally reverse osmosis, to treat extracted groundwater to potable water standards. The City of Oceanside's 6.37-mgd capacity Mission Basin Desalter and the Sweetwater Authority's existing 4.0-mgd Richard A. Reynolds Groundwater Desalination Facility are two currently operating brackish groundwater recovery projects in the Water Authority's service area. Unit costs for brackish groundwater recovery projects are considerably higher than those for simple groundwater extraction projects due to the additional treatment requirements, including concentrate disposal needs. However, where economical options exist for disposal of brine, this type of groundwater project has proven to be an economically sound water supply option.

GROUNDWATER RECHARGE AND RECOVERY PROJECTS

Artificial recharge and recovery projects, or conjunctive-use projects, improve groundwater basin yields by supplementing natural recharge sources with potable or recycled water, and/or inducing additional natural recharge. These projects can supply stored water to the region if imported deliveries are limited due to supply and facility constraints. The Water Authority and City of Oceanside completed a study in 2005 that evaluated the potential for a conjunctive-use project in the Mission Basin. Results from the study indicate that use of the basin for recharge and recovery may be limited due to the impact on sensitive riparian habitat and costs for recharge facilities. Oceanside plans to complete expansion of its existing demineralization facility and then monitor groundwater levels in the basin prior to proposing development of a potential conjunctive-use project. The study approach and information generated by this conjunctive-use study is being made available to other agencies within the Water Authority's service area considering development of such a project. Refer to **Section 5.2.3** for additional information on the study.

The City of Oceanside's groundwater desalter

5.2.2 ISSUES

Local agencies must consider a number of issues when developing groundwater projects, including economic and financial considerations, legal, institutional, regulatory, environmental, and water quality issues. These issues can limit the amount of groundwater development in San Diego County.

Please see **Section 5.3.4** for information on the Water Authority's Financial Assistance Program funding opportunities for facility planning, feasibility investigations, preliminary engineering studies, environmental impact reports, and research projects related to groundwater development.

ECONOMIC AND FINANCIAL CONSIDERATIONS

Because of the saline nature of the groundwater basins in San Diego County, the cost of groundwater development usually includes demineralization, which can be costly to construct and operate. One of the more costly elements is the facility necessary to dispose of the brine generated from the treatment process. To address this element, the United States Bureau of Reclamation (USBR), in coordination with numerous public agencies including the Water Authority, is conducting a multiyear planning study to evaluate brine concentrate management and disposal technologies.

INSTITUTIONAL, LEGAL, AND REGULATORY ISSUES

Institutional and legal issues can also impact project development. Because most basins involve multiple water agencies and numerous private wells, water rights are a concern. Agencies are often reluctant to implement groundwater development projects unless jurisdiction and water rights issues are resolved beforehand.

Uncertainty over future regulatory requirements for drinking water supplies can pose another barrier to project development. When developing facilities and compliance plans for groundwater recharge projects, agencies must take into account proposed or potential regulatory changes related to water quality issues. Some of the regulations for which changes are expected over the next decade include state and federal drinking water standards and California Department of Health Services groundwater recharge regulations.

ENVIRONMENTAL REGULATORY CONSTRAINTS

Regulatory issues related to environmental protection are common to many of the groundwater projects proposed within the Water Authority's service area. These issues include potential impacts to endangered species and groundwater-dependent vegetation. Impacts may occur if a project results in seasonal or long-term increases in the depth of the groundwater. Although potential environmental impacts can generally be mitigated, mitigation costs can reduce the cost-effectiveness of a project. Concentrate disposal requirements for brackish groundwater recovery projects can also constrain projects sited in inland basins without access to an ocean outfall.

Sweetwater Authority's demineralization facility

WATER QUALITY

See **Section 7** for water quality information.

5.2.3 PROJECTED GROUNDWATER SUPPLIES

The Water Authority worked closely with its member agencies to determine the projected yield from existing and planned groundwater projects. **Table 5-3** shows the estimated annual yield from groundwater projects in 5-year increments, based on the implementation schedules provided by the member agencies and the likelihood of development. The reliability analysis found in **Section 8** of this Updated 2005 Plan includes these projected supply yields. **Table F-2, Appendix F,** contains a detailed list of the projects and projected supplies.

Table 5-3: Projected Groundwater Supply (Normal Year – AF/YR)

YEAR	WATER SUPPLY AF/YR
2005[1]	17,844
2010	28,575
2015	30,345
2020	31,175
2025	31,175
2030	31,175

1 Based on FY 2005 totals.

Table 5-3 shows the increase in groundwater production from the current yield of 17,844 AF/YR resulting from the expansion of projects operated by the Sweetwater Authority and the City of Oceanside. To achieve this increase in groundwater yield, funding assistance is critical, as is overcoming the regulatory constraints associated with development.

The City of Oceanside anticipates that its proposed 6.37 mgd Mission Basin Desalter (4.0-mgd expansion) will be completed by the end of the year 2006. The project will include the development of the estimated remaining "safe yield" of the basin through expansion of the existing demineralization facility. The Sweetwater Authority is participating in studies with the United States Geological Survey to evaluate the San Diego Formation Aquifer and make safe use of the available yield from the aquifer.

REGIONAL GROUNDWATER GOAL

Maximizing groundwater development is critical to diversifying the region's water supply portfolio. Beyond the verifiable yield included in **Table 5-3**, the member agencies are considering developing an estimated 21,400 AF/YR of additional yield by 2030. These projects are generally not expansions of existing projects and are still in the planning and/or conceptual stage. Funding assistance and overcoming regulatory constraints is critical to the development of this additional supply. **Table F-2, Appendix F,** includes a list of the projects. When these projects become more certain, they will be included in future updates of the Water Authority's Urban Water Management Plan.

To highlight the importance of maximizing groundwater supplies within the region, a regional groundwater goal has been established: 52,575 AF/YR by 2030, in combination with the yields shown in **Table 5-3**.

CONJUNCTIVE-USE

As mentioned above, conjunctive-use projects can supply stored water to the region if imported deliveries are limited due to supply and/or facility constraints. The City of San Diego, Otay Water District, Olivenhain Municipal Water District, and the City of Oceanside are considering developing conjunctive-use projects in the future. **Table F-2, Appendix F,** includes the estimated potential storage yield from these projects. If developed, they could provide 17,450 AF/YR of storage yield for the region by 2030.

Because the imported conjunctive-use projects produce minimum amounts of new yield, the regional reliability analysis in **Section 8** does not include the supply figures. In addition, the projects are still in the conceptual and/or planning stages.

Results from the Lower San Luis Rey River Valley Groundwater Storage and Recovery Feasibility Study, prepared by the Water Authority in conjunction with the City of Oceanside, also identifies significant constraints to the development of groundwater conjunctive-use projects in San Diego County.

These constraints relate to the following:

- Cost to install infrastructure to deliver and extract the recharge water;
- Injecting higher quality imported water into brackish basins and then having to demineralize the water when it is extracted;
- Potential impact on sensitive riparian habitat; and
- Lack of opportunities for spreading basins.

SECTION 5.3 WATER RECYCLING

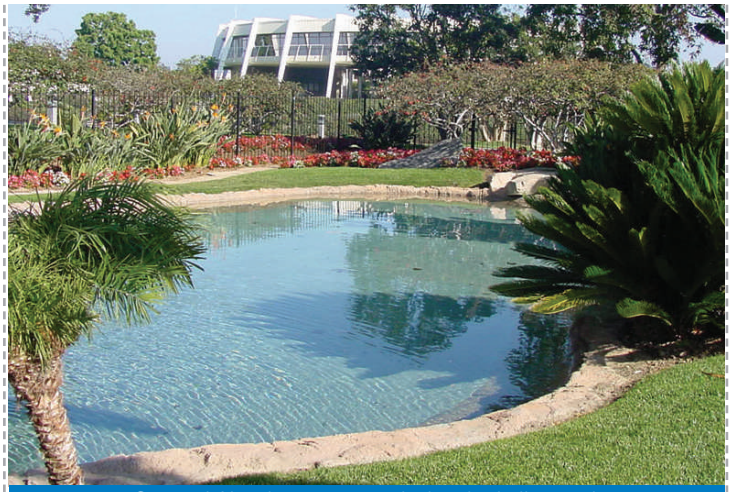
A fundamental element to developing a diverse supply mix for the region and to using existing water supplies more efficiently is through implementation of water recycling projects. This section provides a general description of recycled water development within the Water Authority's service area, the issues associated with developing this supply, and projected regional yield. Documentation on specific existing and future recycling projects is expected to be in the 2005 Plans for those agencies that include water recycling as a supply. The Water Authority coordinated the preparation of this section with its member agencies and those wastewater agencies that operate water recycling facilities within the Water Authority's service area.

5.3.1 DESCRIPTION

Water recycling is the treatment and disinfection of municipal wastewater to provide a water supply suitable for non-drinking purposes. Agencies in San Diego County use recycled water to fill lakes, ponds, and ornamental fountains; to irrigate parks, campgrounds, golf courses, freeway medians, community greenbelts, school athletic fields, food crops, and nursery stock; and to control dust at construction sites. Recycled water can also be used in certain industrial processes and for flushing toilets and urinals in non-residential buildings. As an example, the detention facility in the Otay Mesa area of San Diego County is dual-plumbed to allow use of recycled water for toilet and urinal flushing. However, current regulations allow only new buildings to be dual-plumbed for this specific use. Additional uses for recycled water are being identified and approved as local agencies and regulators become comfortable with its use.

5.3.2 ISSUES

Local agencies must consider a number of issues when developing recycled water projects, including economic and financial considerations, regulatory, institutional, public acceptance, and water quality concerns related to unknown or perceived health and environmental risks. These issues, if unresolved, can limit the amount of wastewater recycled in San Diego County. In fact, the impact from the challenges associated with recycled water are apparent when comparing the 2005 recycled water projections from the Water Authority's 2000 Plan (33,400 AF) to actual FY 2005 recycled water demand (11,479 AF). The following sections discuss some of the specific challenges associated with recycled water development.



General Atomics uses recycled water in its pond.

ECONOMIC AND FINANCIAL CONSIDERATIONS

The capital-intensive cost of constructing recycled water projects has traditionally been a barrier to project implementation. The up-front capital costs for construction of treatment facilities and recycled water distribution systems can be high, while full market implementation is usually phased in over a number of years, resulting in very high initial unit costs that affect cash flow in the early project years.

Costs associated with converting existing potable water customers to recycled water customers have also proved challenging. This situation is compounded by the seasonal nature of recycled water demands and the lack of large industrial water users in San Diego County that can use recycled water. The lack of sizeable opportunities for groundwater recharge storage compounds this situation. Recycled water demands tend to peak during the hot summer months and drop off during the winter

months when landscape irrigation demands are low. Projects that serve a large portion of irrigation demands, like the majority of the projects in the Water Authority's service area, often use only half of their annual production capacity due to these seasonal demand patterns. The costs of these projects tend to be higher than those of projects that serve year-round demands, since the project facilities must be sized to accommodate seasonal peaking. Projects that serve mostly irrigation demands also tend to have less stable revenue bases since irrigation demands are heavily influenced by hydrologic conditions.

To be financially feasible, a project's benefits must offset or exceed its associated costs.

The City of San Diego's South Bay Reclamation Plant

Project benefits can take the form of:

- Revenues from the sale of recycled water;
- increased supply reliability;
- increased control over the cost of future water supplies; and
- avoided water and wastewater treatment, storage, and conveyance costs.

Agencies developing recycled water projects must be able to quantify these benefits in order to determine the financial feasibility of a project. In addition, financial incentives and grant funding from the Water Authority, Metropolitan, and federal and state agencies are critical to offsetting project costs and project implementation.

REGULATORY

Two state agencies have primary responsibility for regulating the application and use of recycled water: the Department of Health Services (DHS) and the California Regional Water Quality Control Board (Regional Board). Planning and implementing water recycling projects entail numerous interactions with these regulatory agencies prior to project approval.

The DHS establishes the statewide effluent bacteriological and treatment reliability standards for recycled water uses in Title 22 of the California Administrative Code. Under Title 22, the standards are established for each general type of use based on the potential for human contact with recycled water. The highest degree of standards for recycled water is for unrestricted body contact.

The Regional Board is charged with establishing and enforcing requirements for the application and use of recycled water within the state. Permits are required from the Regional Board for each water recycling operation. As part of the permit application process, applicants are required to demonstrate that the proposed recycled water operation will not exceed the ground and surface water quality objectives in the basin management plan, and that it is in compliance with Title 22 requirements.

Coordination between the regulatory agencies responsible for monitoring development of recycled water is important, along with the development of a reasonable and consistent application of regulations. Regulatory agencies also need to work closely and cooperatively with project proponents in their efforts to satisfy the regulations and still be able to develop a much needed, cost-effective water-recycling project.

A regulatory issue that may hinder development of projects is the DHS groundwater recharge rule that requires treatment prior to injection of recycled water in order to reduce the total organic carbon (TOC) concentration to less than 2.0 mg/l. This requirement may increase the cost and reduce the ability to develop the limited opportunities for groundwater recharge in San Diego County.

INSTITUTIONAL

The primary institutional issue related to the development of water recycling in San Diego County is interagency coordination, such as when the wastewater agency that produces the recycled water is not the water purveyor within the reuse area. At those times, effective communication and cooperation between both agencies regarding the distribution of recycled water and providing service to the water customer is vital and should begin early in the planning process.

These institutional arrangements require contracts and/or agreements between the parties and/or agencies involved, the terms of which must be established on a case-by-case basis. The agreements usually define the reporting and compliance responsibilities, the amount of recycled water deliveries, water pricing, and a financing plan that identifies which agency will receive the financial incentives.

PUBLIC ACCEPTANCE

Without public acceptance, siting, financing, constructing, and operating a water-recycling project becomes increasingly difficult. The most successful means to obtaining public acceptance is through education and involvement. Agencies in the San Diego region have formed citizens' advisory groups and held public workshops in an effort to increase public involvement in projects. In the Water Authority's service area, the Regional Public Information and Customer Marketing Program is being developed to promote the increased use of recycled water.

Wastewater Treatment and Water Recycling Facilities

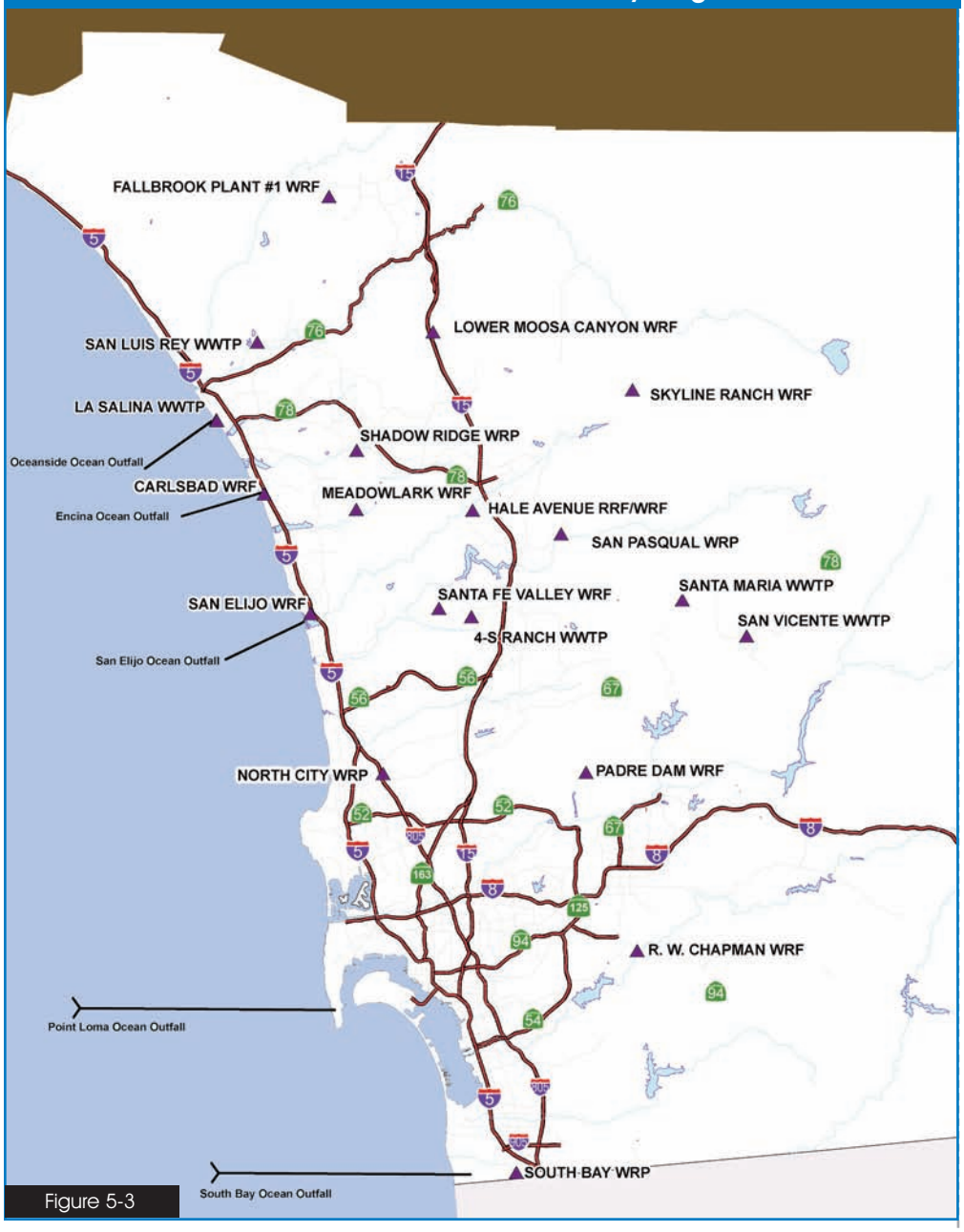


Figure 5-3

5.3.3 WASTEWATER GENERATION, COLLECTION, TREATMENT, AND DISPOSAL

Approximately 300-mgd of wastewater is currently being generated, collected, treated, and disposed of within the Water Authority's service area. Most of the large wastewater treatment plants are located along the coast for easy and convenient access to an ocean outfall. These plants serve most of the San Diego region's highly urbanized areas. **Figure 5-3** identifies the location of the wastewater treatment plants and the associated outfall systems. The coastal location of the plants is not always conducive to development of recycled water. Most of the market for recycled water is located at higher elevations, making distribution systems costly. **Table F-3, Appendix F,** shows a detailed list of the wastewater treatment plants within the county, their capacities at various levels of treatment, and the type of disposal. In addition, approximately 10- to 15-mgd of wastewater within the Water Authority's service area is generated and disposed of through private systems, such as septic tanks.

5.3.4 ENCOURAGING RECYCLED WATER DEVELOPMENT

The Act requires agencies to describe in their plan the actions, including financial incentives, that

Table 5-4: Programs to Encourage Recycled Water Use
Incentive Programs
Reclaimed Water Development Fund (Water Authority) Local Resources Program (Metropolitan)
Grants
Title XVI Funding Program (US Bureau of Reclamation) Proposition 13 Grant (State of California) Proposition 50 Grant (State of California)
Low -Interest Loans
Financial Assistance Program (Water Authority) State Revolving Fund (State of California) Water Reclamation Loan Program (State of California) Proposition 13 Loan (State of California)
Long-Term Contracts
Ensure price and reliability
Funding assistance to State Water Resources Control Board to fund staff position to expedite water recycling projects.
Rate Discounts
Public Education/Information
Regional Planning
Model Water Reclamation Ordinance and Implementation Handbook
Dual Plumbing Standards Prohibits Specific Potable Water Uses

agencies may take to encourage the use of recycled water. **Table 5-4** summarizes the programs used by the Water Authority's member agencies. The water-recycling agencies develop some of the programs, while others are developed or funded by the water providers, such as the Water Authority, Metropolitan, and state and federal agencies.

FUNDING PROGRAMS

Another important component of a successful recycling project is securing diversified funding and establishing funding partnerships. The Water Authority has focused on providing and facilitating the acquisition of outside funding for water-recycling projects.

A number of financial assistance programs available to San Diego County agencies include: the Water Authority's Financial Assistance Program (FAP) and Reclaimed Water Development Fund (RWDF); Metropolitan's Local Resources Program (LRP); the USBR Title XVI Grant Program; and the State Water Resources Control Board (SWRCB) low-interest loan programs. Together, these programs offer funding assistance for all project phases, from initial planning and design to construction and operation. Financial assistance programs administered by the Water Authority, Metropolitan, and the USBR provided $10.4 million to San Diego County agencies during FY 04. It is anticipated that approximately $7.9 million will be awarded in 2005 from these funding sources. These programs are projected to ultimately reuse approximately 54,000 AF/YR.

Financial Assistance Program. The Water Authority offers FAP funding to encourage facility planning; feasibility investigations; preliminary engineering studies; environmental impact reports; and research projects related to water recycling, groundwater development, and seawater desalination. Since its inception in June 1988, the FAP has provided local agencies with more than $1.8 million for water recycling studies, $797,000 for groundwater development studies, and over $200,000 for seawater desalination studies. Agencies may apply for FAP funding through either a loan or a grant. FAP funds are distributed on a loan basis for feasibility studies, master plans, facility plans, and environmental reports. Repayment of the

loan is required when the project has satisfactorily met CEQA requirements, or when the planned project is complete. Grant funding is also distributed through the FAP for research and development projects. To receive funding as a grant, the agency must have already secured partial funding for the project from another source.

Reclaimed Water Development Fund. To aid agencies in overcoming financial constraints associated with development of water-recycling projects, the Water Authority's Board of Directors adopted the RWDF program in April 1991, which provided incentive funding of up to $100/AF for beneficial reuse for recycling projects that demonstrated a financial need. Recently, the incentive level was increased to $147/AF. This incentive contribution offsets costs, especially in the early years of project start-up. In order to qualify, project expenses must exceed project revenues. To date, the Water Authority has entered into RWDF agreements with nine agencies for a combined project yield of 29,857 AF/YR. In FY 04, the Water Authority provided local agencies with $880,500 in RWDF incentives.

Local Resources Program. Metropolitan also has a program that currently underwrites local projects during the initial years of operation. The LRP provides incentives of up to $250 AF/YR for recycled water and groundwater recovery projects. Currently, fifteen water-recycling projects in San Diego County have agreements for LRP funding. Metropolitan provided $2,111,752 in FY 04, and $1,796,642 in FY 05, for LRP funding. Metropolitan also provided funding through its Groundwater Recovery Program (GRP) for two groundwater recovery projects in the amounts of $1,292,686 in FY 04, and $709,105 in FY 05.

The Reclamation Wastewater and Groundwater Study and Facilities Act – Title XVI. The Title XVI Grant Program is a significant source of funding for San Diego-area recycling projects. Title XVI of Public Law 102-575, the Reclamation Wastewater and Groundwater Study and Facilities Act, authorizes the federal government to fund up to 25 percent of the capital cost of authorized recycling projects, including the San Diego Area Water Reclamation Program, an inter-connected system of recycling projects serving the Metropolitan Sewage System service area. PL104-266, the Reclamation Recycling and Water Conservation Act of 1996, authorized two additional projects in northern San Diego County: the North San Diego County Area Water Recycling Project and the Mission Basin Brackish Groundwater Desalting Demonstration Project. To date, San Diego agencies have been authorized to receive more than $195 million under the Title XVI grant program, including more than $7.3 million obligated during Federal Fiscal Year (FFY) 04. A total of $94,591,000 has been received from this funding source to date. It is critical that funding from this program be maintained each year.

State Revolving Fund/Water Reclamation Loan Program. The SWRCB, through the Division of Financial Assistance, provides financial assistance for water-recycling projects in the form of low-interest loans and/or grants for project construction and grants for project planning. The State Revolving Fund (SRF) and the Water Reclamation Loan Program (WRLP) provides agencies with low-interest construction loans for water recycling and groundwater projects. This below-market interest rate can result in substantial savings on debt service. The SRF and WRLP loans carry an interest rate equal to 50 percent of the state's general obligation bond interest rate. Approximately $42 million was appropriated to the SWRCB in FY 03 and 04 for the funding of water-recycling projects. Additional funding for FY 03 from the SWRCB included $4 million from Proposition 13 and the 2000 Bond Law for San Diego-area water recycling projects. In FY 04, an additional $75,000 was awarded to local water-recycling projects through SWRCB funding sources. An example of funding recently awarded to one of the Water Authority's member agencies was the $1.08 million grant given to the Olivenhain Municipal Water District.

Drillers work at the Mission Basin Brackish Groundwater Desalting site.

California voters passed Proposition 50, known as the Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 on November 5, 2002. In spring 2005, more than $10 million was earmarked from this bond measure for San Diego area water- recycling projects. It is anticipated that disbursements will begin in late-2005.

POLICIES, ORDINANCES AND GUIDANCE DOCUMENTS

The Water Authority has adopted a number of policies, guidance documents, and a model ordinance to assist local agencies with water-recycling project implementation. Many local agencies have adopted the Water Authority-sponsored ordinance, which includes provisions that typically require new development projects to install recycled water systems. The ordinance also states that where allowed by law and available in sufficient quantities at a reasonable cost and quality, recycled water shall be the sole water supply delivered for non-potable uses.

TRAINING

The Water Authority, in partnership with other water agencies, offers a one-day course designed to provide irrigation supervisors with a basic understanding of recycled water. Completion of the Recycled Water

The Water Authority's one-day recycled water training class

Site Supervisor Training fulfills the training requirement as mandated by regulatory authorities. The class provides information to supervisors on the water recycling process, recycled water quality and safety issues, the duties and responsibilities of the supervisor, landscape irrigation fundamentals, maintenance and management, and cross connection control shut-down tests and inspections. Understanding similarities and differences between recycled and potable water is important to the successful operation of a recycled water system. The first class started in 1993 with 14 participants. At this time, more than 1,000 participants have been certified. Instructors include a state registered environmental health specialist, environmental assessor, water quality chemist/reclamation specialist, and landscape specialists.

OPTIMIZING THE USE OF RECYCLED WATER - REGIONAL PERSPECTIVE

While local agencies typically expand and develop their respective recycled water projects independently based on local interests, the Water Authority is conducting studies that will identify opportunities to expand the region's use of recycled water. These studies, namely, the San Diego County Water Authority Regional Recycled Water System Study, completed in March 2002, and the Regional Recycled Water Study – Phase II, scheduled for completion in December 2005, took a regional approach to water recycling project planning and development. Primary tasks to be completed under the Regional Recycling Water Study – Phase II include: developing strategies to overcome identified obstacles to water recycling; developing a marketing plan and regional strategies to market recycled water to target industries and customers; investigating and examining to what extent — and levels — TDS in source water affect the use and application of recycled water for local end-users; researching and identifying the impediments to the implementation of water repurification projects; and funneling planning grant funding to regional agencies to further expand the use of recycled water.

The Water Authority also participated in the California Recycled Water Task Force. This legislated task force identified constraints, impediments, and opportunities for the increased use of recycled water, and reported its findings to the California Legislature by July 1, 2003. Many of the recommendations identified in the completed report entitled, "Water Recycling 2030: Recommendations of California's Recycled Water Task Force," dated June 2003, have been regionally supported and adopted. Six of the key issue areas identified in the report are currently being addressed via the Phase II Study efforts and through legislative means either supported or initiated by the Water Authority. These areas include: (1) Funding for water recycling; (2) Public dialogue/ Public outreach; (3) Plumbing Code/Cross-connection control; (4) Regulations and permitting; (5) Economics of water recycling; and (6) Science and health/Indirect potable reuse.

5.3.5 PROJECTED RECYCLED WATER USE

The Water Authority worked closely with its member agencies to determine the projected yield from existing and planned recycled water projects. **Table 5-5** shows the estimated annual yield from the projects in 5-year increments, based on the implementation

schedules provided by the member agencies and the likelihood of development. These projected supply yields will be included in the reliability analysis found in **Section 8** of this Updated 2005 Plan. **Table F-4, Appendix F,** contains a detailed list of the projects and projected supplies.

Table 5-5: Projected Recycled Water Use (AF/YR)

YEAR	AF/YR
2005[1]	11,479
2010	33,668
2015	40,662
2020	45,548
2025	46,492
2030	47,584

1 Based on FY 2005 totals.

The increase in recycled water use shown in **Table 5-5**, from the current use of 11,479 AF/YR, is primarily from the expansion of existing facilities. The City of Carlsbad is constructing a new treatment and distribution system to deliver close to 3,000 AF/YR of recycled water. The Otay Water District is constructing a distribution system to deliver an estimated 5,000 AF/YR of recycled water by 2030 purchased from the City of San Diego's South Bay Water Reclamation Plant.

REGIONAL WATER RECYCLING GOAL

Maximizing recycled water development is critical to diversifying the region's water supply portfolio. Beyond the verifiable yield included in **Table 5-5**, the member agencies are considering development of an additional 6,829 AF/YR by 2030. These projects are still in the planning and/or conceptual stage. Funding assistance and overcoming regulatory constraints is critical to the development of this additional supply. **Table F-4, Appendix F,** contains a list of the projects. When development of these projects becomes more certain, they will be included in future updates of the Water Authority's Updated 2005 Plan. In order to highlight the importance of maximizing recycled water use within the region, a regional water recycling goal has been established. In combination with the figures shown in **Table 5-5**, the regional water-recycling goal is 54,413 AF/YR by 2030.

SECTION 5.4 SEAWATER DESALINATION

The development of local seawater desalination provides a number of benefits to the San Diego region. Seawater desalination will assist the region in diversifying its water resources, reduce dependence on imported supplies, and provide a new drought-proof, treated local water supply.

5.4.1 DESCRIPTION

Poseidon Resources is pursuing the development of a local, privately-owned desalination project located adjacent to the Encina Power Station. The project will consist of a reverse osmosis desalination treatment facility as well as ancillary intake, discharge, and product water distribution pipelines and facilities. Poseidon has executed water purchase agreements with the following Water Authority member agencies: Carlsbad Municipal Water District; Valley Center Municipal Water District; Rincon del Diablo Municipal Water District; and Sweetwater Authority; and is pursuing water purchase agreements with other member agencies. The facility is projected to ultimately produce 56,000 AF/YR of desalinated seawater by 2011. The major planning items completed to date include certification of an environmental impact report by the City of Carlsbad, approval of a concentrate discharge permit by the San Diego Regional Water Control Board, and submittal of a Coastal Development Permit application to the California Coastal Commission.

A local, privately owned desalination project is in the planning stages.

5.4.2 ISSUES

No large-scale seawater desalination facility has ever been permitted/constructed in California. Perhaps the most significant issue facing this desalination project as well as others proposed along the California coastline is the ability to permit the facility, including obtaining a Coastal Development Permit from the California Coastal Commission. This project must also secure arrangements for the delivery of product water from the facility to the local water agencies. These arrangements are currently in the planning stage.

5.4.3 PROJECTED SEAWATER DESALINATION SUPPLIES

Seawater desalination supplies represent a significant future local resource in the Water Authority's service area. To date, the local, privately-owned seawater desalination project has contracted with the Carlsbad Municipal Water District (up to 28,000 AF/YR depending on demands), Valley Center Municipal Water District (7,500 AF/YR), Rincon Del Diablo Municipal Water District (4,000 AF/YR), and Sweetwater Authority (2,400 AF/YR) to supply up to 41,900 AF/YR of desalinated seawater. The verifiable seawater desalination figure to be used in the Updated 2005 Plan will be based on the contract amounts and projected seawater desalination deliveries to Carlsbad MWD. As shown in **Table 5-6**, the verifiable projected local seawater desalination supplies vary each year based on Carlsbad MWD's demands (which are less than their desalinated seawater contract amount of 28,000 AF/YR). These projected supply yields will be included in the reliability analysis found in **Section 8** of this Updated 2005 Plan. There are several contingencies related to Poseidon's agreements with the member agencies that must be satisfied before implementation of the project and its ultimate yield can be determined. These contingencies include obtaining legal entitlements for construction of the project, determination of a mutually acceptable delivery interconnection point and delivery charge, and engagement of a third party exchange agency partner where physical delivery to the contracting agency is not practical.

Table 5-6: Projected Local Seawater Desalination Water Supplies[1] (Normal Year – AF/YR)

YEAR	AF/YR
2005	0
2010	0
2015	34,689
2020	36,064
2025	37,754
2030	40,000

1 Deliveries to Carlsbad MWD will vary based on their actual demands and local use of recycled water. See Appendix F-4 for information on Carlsbad MWD's projected recycled water use.

LOCAL SEAWATER DESALINATION GOAL

In order to highlight the importance of maximizing the supply of seawater desalination used within the region, a local seawater desalination goal has been established. The project proponent, Poseidon Resources, is pursuing additional agreements with other local water agencies for the remaining 16,000 AF of annual production. When the 16,000 AF/YR is combined with a verifiable maximum local supply of 40,000 AF/YR, a local seawater desalination goal of 56,000 AF/YR is established.

SECTION 5.5 SUMMARY OF MEMBER AGENCY SUPPLIES

Table 5-6 shows the projected supply figures for existing and projected local resources for the Water Authority's service area based on input from the member agencies. These supplies are considered verifiable and will be used in the regional reliability analysis included in **Section 8**.

The estimates for projected member agency local supplies included in **Table 5-7** could be even greater with increased funding opportunities, technological advances, and by successfully addressing regulatory and environmental issues. Maximizing groundwater, recycled water, and desalinated seawater development can provide further diversification of regional supplies. In order to highlight the importance of maximizing these supplies, a local resources goal has been established. In combination with the figures shown in **Table 5-7**, the total regional local resources goal, excluding supply from conjunctive use projects using imported or recycled water, is 220,683 AF/YR by 2030.

Table 5-7: Projected Member Agency Local Supplies (Normal Year - AF/YR)

Local Supply	2005[1]	2010	2015	2020	2025	2030
Surface Water	45,521	59,649	59,649	59,649	59,649	59,649
Groundwater	17,844	28,575	30,345	31,175	31,175	31,175
Recycled Water	11,479	33,668	40,662	45,548	46,492	47,584
Desalinated Seawater	0	0	34,689	36,064	37,754	40,000
Total Member Agency Supplies	**74,844**	**121,892**	**165,345**	**172,436**	**175,070**	**178,408**

1 Based on FY 2005 totals.

SECTION 6 METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

SECTION 6.1 DESCRIPTION

Metropolitan was formed in 1928 to develop, store, and distribute supplemental water in Southern California for domestic and municipal purposes. Metropolitan supplies water to approximately 18 million people in a service area that includes portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties. The Metropolitan service area, shown in **Figure 6-1**, covers a 70-mile-wide strip of the Southern California coastal plain, extending from the city of Oxnard on the north to the Mexican border. Close to half of the water used in this 5,200-square-mile region is supplied by Metropolitan, and about 90 percent of its population receives at least some of its water from Metropolitan.

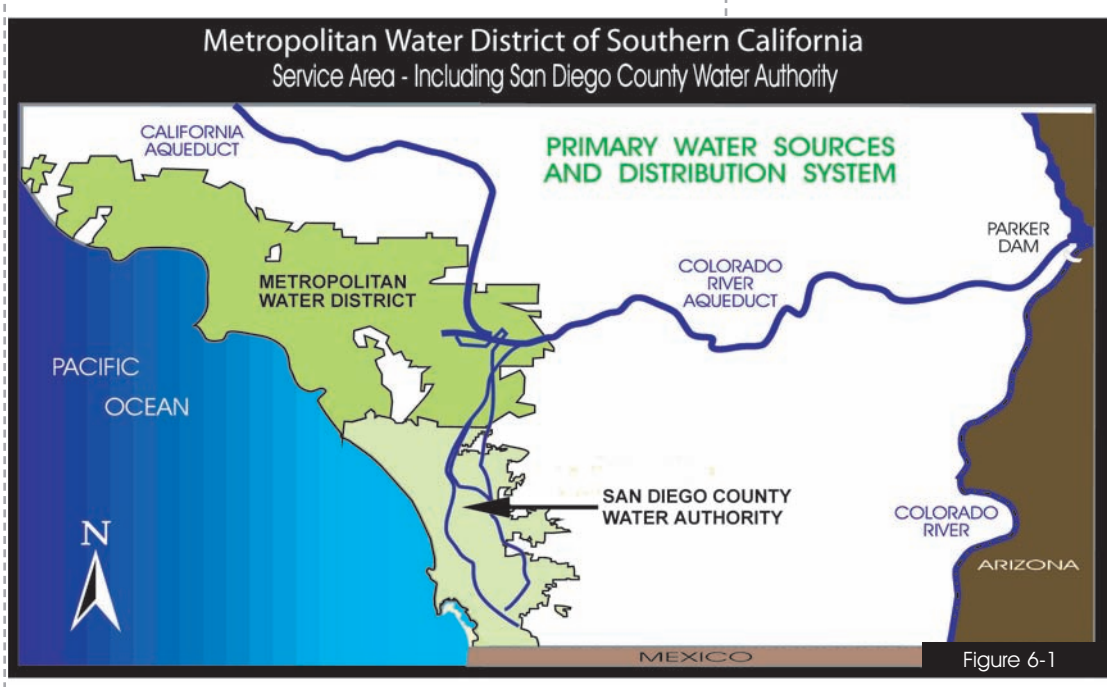


Figure 6-1

The Water Authority, one of 27 Metropolitan member agencies, is the largest agency in terms of deliveries, purchasing 518,625 AF, about 25 percent of all the water Metropolitan delivered in FY 05. The extent to which Metropolitan's member agencies rely upon Metropolitan supplies varies by the amount of local supplies available.

6.1.1 METROPOLITAN ACT SECTION 135; PREFERENTIAL RIGHT TO WATER

Under Section 135 of the Metropolitan Act, preferential rights are determined by each agency's total historic payments to Metropolitan from property taxes, stand-by charges, readiness-to-serve charges, and other revenue. Revenue resulting from the purchase of Metropolitan water is excluded, even though a portion of such revenues is used to pay for capital projects. While the Water Authority had a preferential right to 15.8 percent of Metropolitan's water in FY 04, it purchased about 25 percent of Metropolitan's available supply. At any time under preferential rights rules, Metropolitan may allocate water without regard to historic water use or dependence on Metropolitan. **Figure 6-2** shows the Water Authority's projected preferential rights for the years 2005 through 2030.

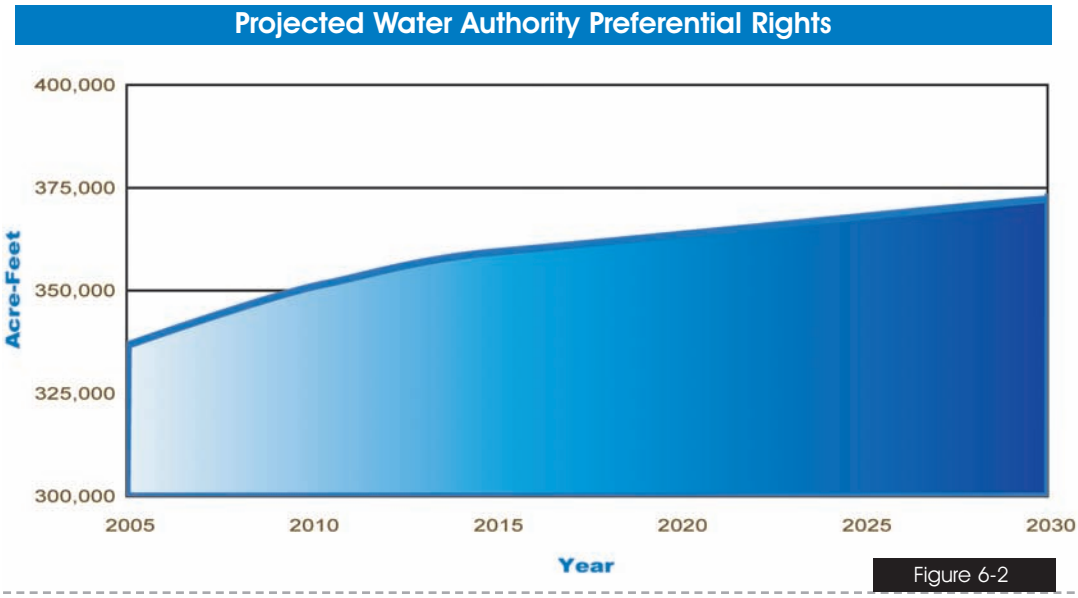


Figure 6-2

To seek clarification regarding the current application and legality of Section 135, the Water Authority Board of Directors voted in April 2004 to appeal an appellate court ruling that preserves Metropolitan's preferential right process. In July 2004, the State Supreme Court denied the Water Authority's appeal of an appellate court decision that Metropolitan might continue to exclude water purchases from the preferential rights calculation. The decision makes clear how much water the Water Authority may count on from Metropolitan should a member agency invoke its preferential right.

Metropolitan stated, consistent with Section 4202 of its Administrative Code, that it is prepared to provide the Water Authority's service area with adequate supplies of water to meet expanding and increasing needs in the years ahead. When, and as additional water resources are required to meet increasing needs, Metropolitan stated that it will be prepared to deliver such supplies. In their 2005 Regional Urban Water Management Plan (RUWMP), Section II.2, Metropolitan presents its supply availability at the regional level, rather than at the member agency level. With that, the Water Authority is not able to quantify the availability of imported supplies from Metropolitan specifically for the Water Authority. However, in its plan (Section II.2, *Evaluating Supply Reliability*), Metropolitan stated that it can maintain 100% reliability in meeting direct consumptive demand under the conditions that represent normal, single-dry, and multiple-dry years through 2030.

Inferring from the supply reliability finding stated by Metropolitan, the Water Authority concludes that Metropolitan is capable of supplying imported water to meet projected demands by the Water Authority under various hydrologic conditions if the supply targets identified in their 2005 RUWMP are met. Implementation risks exist in local supply development and imported supply projects and programs. The Water Authority is working with its counterparts at Metropolitan to help ensure that Metropolitan's planning is realized, and that the necessary programs and projects are implemented.

6.1.2 METROPOLITAN'S INTEGRATED RESOURCES PLAN

The Integrated Resources Plan (IRP) identifies a mix of resources (imported and local) that when implemented will provide 100 percent reliability for full-service demands through the attainment of regional targets set for conservation, local supplies, SWP supplies, Colorado River supplies, groundwater banking, and water transfers. The 2004 update to the IRP now includes a planning buffer supply to mitigate against the risks associated with implementation of local and imported supply programs. The planning buffer identifies an additional increment of water that could potentially be developed if other supplies are not implemented as planned. As part of implementation of the planning buffer, Metropolitan periodically evaluates supply development to ensure that the region is not over-developing supplies. If managed properly, the planning buffer will help ensure that the Southern California region, including San Diego County, will have adequate supplies to meet future demands. Specific information on Metropolitan's IRP and Water Surplus and Drought Management Plan (WSDM Plan) are contained in their 2005 RUWMP.

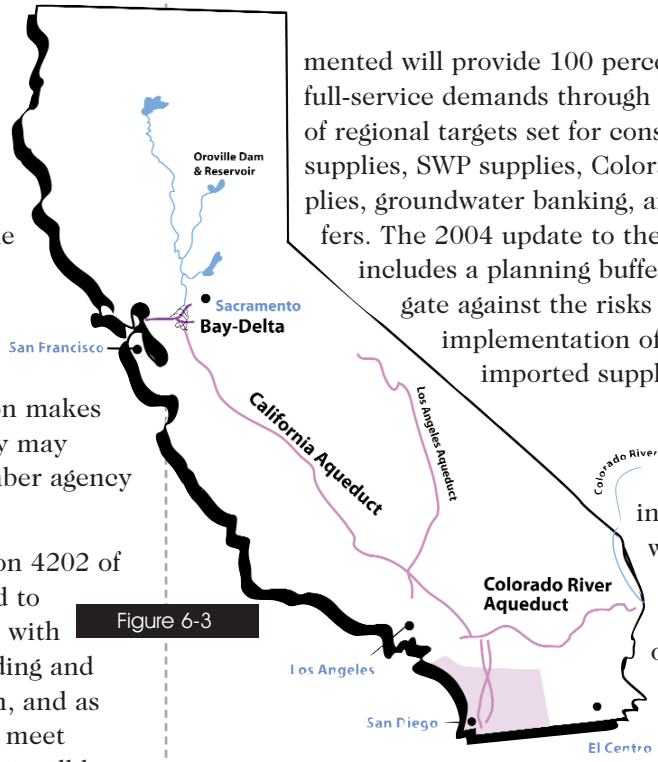


Figure 6-3

SECTION 6.2 METROPOLITAN'S WATER SUPPLIES

Metropolitan obtains its water from two sources: the CRA, which it owns and operates, and the SWP. **Figure 6-3** shows these imported water supply sources, and they are described below. Detailed documentation on Metropolitan's supplies can be found in its 2005 RUWMP.

6.2.1 COLORADO RIVER

Metropolitan was formed to import water from the Colorado River. During the 1930s, Metropolitan built the CRA to convey this water. Metropolitan's member agencies received the first deliveries in 1941. The aqueduct is more than 240 miles long, beginning at Lake Havasu on the Arizona/California border and ending at Lake Mathews in Riverside County. The aqueduct has capacity to deliver up to 1.3 million acre-feet per year (MAF/YR). **Figure 6-3** shows the location of the aqueduct.

RELIABILITY ISSUES

Before 1964, Metropolitan had a firm annual allocation of 1.212 million acre-feet (MAF) of Colorado River water through contracts with the U.S. Department of the Interior, which was enough to keep Metropolitan's aqueduct full. However, as a result of the U.S. Supreme Court decision in Arizona vs. California, Metropolitan's firm supply fell to 550,000 AF. Due to growth in demand from the other states and drought conditions, since 2003, Metropolitan's deliveries have been limited to their base apportionment plus water from a conservation program with IID.

Water availability from the Colorado River is governed by a system of priorities and water rights that has been established over many years. The Colorado River Lower Basin states (California, Arizona, and Nevada) have an annual apportionment of 7.5 MAF of water divided as follows: (1) California, 4.4 MAF; (2) Arizona, 2.8 MAF; and (3) Nevada, 300,000 AF. The 1931 Seven Party Agreement established California's priorities for water. As shown in **Table 6-1**, Metropolitan's 4th priority of 550,000 AF is junior to that of the first three priorities, 3.85 MAF to California agricultural agencies. Water used to satisfy priorities 5(a)-6(b) must come from unused allocations within California, Arizona, or Nevada, or from surplus.

Table 6-1: Seven Party Agreement Priorities

PRIORITY/DESCRIPTION		ACRE-FEET/YEAR
1	Palo Verde Irrigation District	Priorities 1, 2, and 3 shall not exceed 3,850,000
2	Yuma Project Reservation Division	Same as above
3(a)	Imperial Irrigation District and lands in Imperial and Coachella valleys to be served by All-American Canal	Same as above
3(b)	Palo Verde Irrigation District	Same as above
4	Metropolitan Water District	550,000
5(a)	Metropolitan Water District	550,000
5(b)	City/County of San Diego[1]	112,000
6(a)	Imperial Irrigation District	
6(b)	Palo Verde Irrigation District	300,000
	TOTAL	5,362,000

1 In 1946, San Diego's rights were merged with and added to the rights of Metropolitan as one condition of the Water Authority's annexation to Metropolitan.

In recent years, Arizona and Nevada have increased water demand to near-apportionment levels, limiting the availability of unused apportionments to Metropolitan. Arizona's demand has been substantially increased by deliveries to an in-state groundwater banking program. Nevada began banking water under an interstate water banking rule established by the Department of Interior in 1999, which allows Nevada to bank water in Arizona for Nevada's future use.

By June 2005, storage in Lake Mead was 59 percent of capacity.

Five consecutive years of drought conditions throughout the Colorado River Basin were somewhat relieved during the winter of 2004-05, and water storage levels in the main reservoirs rebounded from a rapid and steep decline. Inflow into Lake Powell was above average for water year 2005 and for the first time since 1999, the water surface elevation in Lake Powell increased. As of the end of June 2005, storage in Lake Powell was 51 percent of capacity; storage in Lake Mead was 59 percent of capacity. The draft U.S. Bureau of Reclamation Annual Operating Plan for Colorado River System Reservoirs anticipates a "partial domestic surplus" condition for calendar year 2006, which provides limited surplus water for Metropolitan. However, since the Interim Surplus Guidelines were implemented in 2001, Metropolitan has not taken any surplus water, and instead has left those supplies as system storage in Lake Mead. It is not yet clear whether Metropolitan will take any available surplus water in calendar year 2006.

ENVIRONMENTAL CONSIDERATIONS

In 1994, the U.S. Fish and Wildlife Service (USFWS) designated 1,980 miles of the Colorado River and its tributaries in Colorado, Utah, New Mexico, Arizona, California, and Nevada as critical habitat for four endangered species of native fish. In response to the 1994 designation, the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) was formed. The program is a partnership of federal agencies; state and local agencies in Arizona, California, and Nevada, including the Water Authority; Native American tribes; and other non-federal participants. The partnership is responding to the need to balance the legal use of lower Colorado River water resources and the conservation of threatened and endangered species and their habitats in compliance with the federal Endangered Species Act (ESA). Taking over ten years to develop, the LCR MSCP was approved in April 2005. The program is designed to benefit at least 26 species and restore a range of habitats along the lower Colorado River, including 8,132 acres of riparian, marsh, and backwater habitat. The $626 million program will be cooperatively funded and implemented by the partnership over the next 50 years. By meeting the needs of fish and wildlife under the ESA and preventing the listing of additional species, the program provides greater certainty of continued water and power supplies from the river for Nevada, California, and Arizona.

Photo: Bureau of Reclamation

The "endangered" Humpback chub

CURRENT SUPPLIES

Metropolitan currently has a firm supply from two sources: its fourth priority of 550,000 AF/YR, and the yield of a conservation program that Metropolitan completed with IID in 1988. This program currently yields about 106,000 AF/YR, giving Metropolitan a total supply of approximately 656,000 AF/YR. Under certain conditions, however, Metropolitan must provide 50,000 AF/YR of the conservation program water to the Coachella Valley Water District (CVWD). Thus, Metropolitan's firm supply is now about 606,000 AF/YR. The remaining 600,000 AF/YR of water needed to fill the CRA must come from the unused apportionments of other states or from surplus water.

QUANTIFICATION SETTLEMENT AGREEMENT AND FUTURE SUPPLIES

The Water Authority, together with CVWD, IID, and Metropolitan, entered into the QSA in October 2003. The QSA resolved longstanding disputes regarding Colorado River water use among the agencies, and established a water budget for the agricultural agencies. This permitted the implementation of several water conservation and transfer agreements, including the Water Authority's transfer agreement with IID.

Transfers from IID began in late-2003 with the signing of the QSA. The Water Authority will receive up to 200,000 AF of water per year after an initial 19-year ramp-up in the water deliveries. Other supplies include about 77,700 AF/YR from conservation projects to line the AAC and CC, located in Imperial and Coachella valleys.

The SWP's Banks Pumping Plant lifts water to the California Aqueduct.

6.2.2 STATE WATER PROJECT

Metropolitan's other water source, the SWP, is owned by the State of California and operated by the DWR. The project stretches more than 600 miles, from Lake Oroville in the north to Lake Perris in the south. Water is stored at Lake Oroville and released when needed into the Feather River, which flows into the Sacramento River and to the Sacramento-San Joaquin River Delta (Delta). In the north Delta, water is pumped into the North Bay Aqueduct for delivery to

Napa and Solano counties. In the south Delta, water is diverted into the SWP's Banks Pumping Plant, where it is lifted into the 444 mile-long California Aqueduct. Some of this water flows into the South Bay Aqueduct to serve areas in Alameda and Santa Clara counties. The remainder flows southward to cities and farms in central and southern California. In the winter, when demands are lower, water is stored at the San Luis Reservoir located south of the Delta. SWP facilities provide drinking water to 23 million Californians and 755,000 acres of irrigated farmland. **Figure 6-3** (on page 6-2) shows the California Aqueduct.

A big portion of the county's imported water moves through the Delta.

RELIABILITY ISSUES

The reliability of SWP supplies is limited by both the level of SWP supply development and pumping restrictions due to state and federal environmental regulations. Actions taken by the CALFED Bay-Delta Program have improved the situation. *(See below for more on the impact of CALFED on SWP supplies.)*

When approved by the voters in the 1960s, the SWP was planned to deliver 4.2 MAF to 32 contracting agencies. Subsequent contract amendments reduced total contracted deliveries to 4.13 MAF and the number of contracting agencies to 29. Metropolitan's contracted entitlement is 2,011,500 AF/YR, or almost 49 percent of the annual total. It is important to note that when voters approved construction of the SWP in 1960, state planners did not expect the full amount of contracted water to be needed for at least the first 20 years of the project. As such, the planners anticipated that the facilities needed to produce the full contracted amount would be constructed over time as demands on the system increased. However, decisions about these additional facilities were repeatedly deferred as public attitudes and environmental regulations changed and costs increased. New state and federal environmental laws put some potential water supply sources off limits to development. More stringent water quality standards adopted by the SWRCB to protect the San Francisco Bay/Sacramento-San Joaquin River Delta (Bay-Delta) have also reduced the amount of water available for diversion. At the same time, California's population and water demand continued to grow.

By the late 1980s, the SWP could not meet contractor demands during drought periods. During the initial years of the 1987 – 1992 drought, DWR maintained SWP deliveries using water stored at Lake Oroville and the San Luis Reservoir. In 1991, however, the SWP delivered only 549,113 AF of entitlement water. Of this amount, Metropolitan received 381,070 AF, or about 20 percent of its annual entitlement.

DWR's *Draft 2005 State Water Project Delivery Reliability Report* projected average SWP deliveries to increase slightly, and multiple dry-year deliveries to remain generally unchanged. Minimum SWP deliveries may be as low as 4% to 5% of the full Table A basic contract amount in the single driest year (1977 hydrology). However, DWR has suggested that adjustments would be made to reflect more realistic operations where carryover storage and other provisions would enhance SWP dry-year deliveries to a level that is comparable in quantity to the previous reliability report from DWR.

ENVIRONMENTAL CONSIDERATIONS

In recent years, actions taken to protect the ecosystem of the Bay-Delta have placed additional restrictions on SWP operations. The Bay-Delta is the largest estuary on the west coast and supports more than 750 plant and animal species. However, 150 years of human activity, dating back to 19th century gold mining, has taken its toll on the Bay-Delta ecosystem and the fish that live there. Between 1989 and 1999, the winter-run Chinook salmon was designated, or "listed," as an endangered species

The "threatened" Chinook salmon

under the federal ESA and the Delta smelt, steelhead trout, and spring-run Chinook salmon were placed on the list of threatened species.

The degradation of the Bay-Delta ecosystem and the decline of Delta fisheries can be traced to numerous factors, including habitat loss, water diversions, pollution, over-fishing, and the introduction of non-native species. Regulatory protection efforts have nevertheless tended to focus on the operations of the SWP and the federal Central Valley Project (CVP).

For example, in 1999, the SWP was forced to reduce pumping by about 500,000 AF to protect Delta smelt and spring-run Chinook salmon. These pumping reductions were in addition to fish protection measures built into the water quality standards established by the SWRCB. Actions taken by CALFED have stabilized this situation over the past four years, but this situation is temporary unless further actions are taken to extend it over the longer-term.

Protecting habitats is part of the Bay-Delta Plan.

WATER QUALITY CONSIDERATIONS

Please see **Section 7** for water quality information.

CURRENT SUPPLIES

SWP delivery contracts were amended in 1995 to reflect principles developed under the December 1994 Monterey Agreement. Under the Monterey amendments, all SWP supplies are allocated to contractors in proportion to their contractual entitlements. Metropolitan's approximately 49 percent share of total SWP contract entitlements, entitles it to a proportionate share of SWP supplies. According to Metropolitan's RUWMP, Metropolitan received an average of 1.04 million AF/YR from the SWP from 1995-2004. From 2000-2004, the annual average was 1.46 MAF.

DWR's implementation of the Monterey Agreement was successfully challenged in court by the Planning and Conservation League and others. On September 15, 2000, the Third District Court of Appeal reversed a trial court ruling for DWR and ordered a new environmental impact report (EIR) and a trial on the validity of the agreement. DWR is conducting the new environmental review, which is due for completion in 2005.

A CALFED Bay-Delta Program goal is levee system integrity.

FUTURE SUPPLIES AND THE CALFED BAY-DELTA PROGRAM

Metropolitan's Integrated Water Resources Plan Update (IRP Update), adopted by the Metropolitan Board of Directors in July 2004, indicates that Metropolitan's SWP target for a dry year (based on 1977 hydrology) is 463,000 AF in 2010, and 650,000 AF in 2020. The IRP Update also estimates that in the 2020-2025 period, Metropolitan's annual supply range from the SWP will be between 418,000 AF and 1.74 MAF. This figure does not include another 75,000 to 200,000 AF estimated from San Luis Reservoir carryover storage, 200,000 AF from planned CALFED projects, and 45,000 AF from the Sacramento Valley Water Management Agreement (the latter two programs are still in development and subject to change). The 2005 RUWMP estimates that the SWP will be capable of serving 1.5 MAF to Metropolitan through 2030 in an average year.

Work being done by the CALFED Bay-Delta Program, which is administered by the California Bay-Delta Authority, is expected to provide the greatest opportunity for SWP supply reliability and water quality improvements. However, the outcome of this process remains uncertain. The state and federal governments organized the CALFED Program in 1995 to develop and implement a balanced, comprehensive, and long-term plan to restore the Bay-Delta's ecological health and improve water management for beneficial uses of the estuary. CALFED is working in four inter-related, over-arching categories: ecosystem restoration, levee stability, water

quality improvement, and water supply reliability. The CALFED Program made the transition from planning to implementation in 2000 with the release of the Record Of Decision, final programmatic environmental EIS/EIR and *California's Water Future: A Framework for Action*.

The elements of the CALFED Program that have the greatest potential for increasing the reliability and quality of SWP supplies are included in the Delta Improvements Package (DIP), approved by the California Bay-Delta Authority in 2004 as the first major action by CALFED to implement its long-term Bay-Delta plan. Among the activities in the DIP, the most important are improvements to the existing Delta conveyance system, including expansion of the permitted capacity of the SWP pumping plant from its current level of 6,680 cfs to 8,500 cfs (and ultimately to 10,300 cfs subject to certain conditions). The conveyance system improvements would improve the reliability and quality of SWP supplies by allowing the SWP to increase pumping during those times of the year when additional water is available and when water quality is highest, and they would reduce pumping when endangered fish are migrating through the Delta. The improvements will also increase the amount of pumping capacity available for other purposes, such as water transfers.

CALFED has a long-term Bay-Delta plan.

The ability of CALFED to work with its member agencies to implement the DIP and other projects was called into question by a state appellate court decision issued on October 7, 2005, concerning CALFED's programmatic environmental impact report (PEIR), which served as the foundation of the Bay-Delta Program record of decision. While the court upheld the PEIR on a number of issues in the case, it concluded that the PEIR should have analyzed an alternative that reduced water exports from the Delta. The court also found that the PEIR inadequately discussed the environmental impacts of diverting water to meet CALFED's goals and did not include sufficient information about the Environmental Water Account. The state attorney general has asked the court for a rehearing of its ruling. If the decision stands, CALFED will have to draft a supplement to its PEIR that considers the "reduced exports" alternative, at the very least. It is currently unclear how much the ruling may affect programs and projects involving the Bay-Delta that are being undertaken by CALFED member agencies.

Another essential element of the CALFED Program is the Environmental Water Account (EWA), a pilot program that provides water at critical times for meeting ecosystem needs while minimizing water supply impacts on water-users. In addition, new surface and groundwater storage could also enhance the reliability and quality of SWP supplies. The CALFED framework calls for the construction of up to 4.75 MAF of new surface and groundwater storage over the life of the CALFED Program; however, it is not known whether any of the new storage would be constructed as part of the SWP.

The amount of water produced through the proposed conveyance improvements will depend on how the individual facilities are operated and on the level of assurances provided by the state and federal regulatory agencies. The EWA provides the SWP and CVP with regulatory assurances intended to ensure that the projects will not face additional water supply impacts due to regulatory actions taken under the federal ESA or other federal or state laws or regulations. However, while the EWA has been extended as a pilot program through 2007, it has not yet been made permanent. If CALFED succeeds in its mission of restoring stability to the Bay-Delta system, and the EWA, and the regulatory assurances, are extended beyond the initial four-year period, then the improvements described in the DIP have the potential to increase Metropolitan's share of average SWP supplies by between 93,000 and 168,000 AF/YR. If CALFED is not successful, and the Bay-Delta system continues to decline, Metropolitan's SWP supplies could even decrease in size and quality relative to existing levels.

SECTION 7 WATER QUALITY

The Act requires that the Updated 2005 Plan include information, to the extent practicable, on the quality of existing supply sources and the manner in which water quality affects water supply reliability. This section summarizes water quality issues associated with supplies serving the San Diego region. Information on Colorado River and SWP supplies came in part from Metropolitan's 2005 RUWMP.

The Colorado River

SECTION 7.1 COLORADO RIVER

High salinity levels and perchlorate contamination represent two areas of concern regarding the quality of Colorado River supplies. In Moab, Utah, a pile of radioactive waste near the Colorado River is also considered to be a potential threat to the Colorado River's water quality. Research on the potential impact to water quality is inconclusive, but removal of the radioactive waste is being investigated.

SALINITY

The salts in the Colorado River System are indigenous and pervasive, mostly resulting from saline sediments in the basin that were deposited in prehistoric marine environments. They are easily eroded, dissolved, and transported into the river system. Agricultural development and water diversions over the past 50 years increase the already high naturally occurring levels of TDS.

Water imported via the CRA has a TDS averaging around 650 mg/l during normal water years. During the high water flows of 1983-1986, salinity levels in the CRA dropped to a historic low of 525 milligrams per liter (mg/l). However, during the 1987-1990 drought, higher salinity levels returned. During an extreme drought, CRA supplies could exceed 900 mg/l. High TDS in water supplies leads to high TDS in wastewater, which lowers the usefulness of the water and increases the cost of recycled water. (Refer to **Section 7.5** for details on salinity impacts to water recycling.) In addition to the link between water supply and water quality, high levels of TDS in water supplies can damage water delivery systems and home appliances.

To reduce the effects of high TDS levels on water supply reliability, Metropolitan approved a Salinity Management Policy in April 1999. One of the policy goals is to blend Colorado River supplies with lower-salinity water from the SWP to achieve delivered water salinity levels less than 500 mg/l TDS. In addition, to foster interstate cooperation on this issue, the seven basin states formed the Colorado River Basin Salinity Control Forum (Forum). To lower TDS levels in Colorado River supplies, the Forum develops programs designed to prevent a portion of the abundant salt supply from moving into the river system. The Colorado River Basin Salinity Control Program targets the interception and control of non-point sources, such as surface runoff, as well as wastewater and saline hot springs.

PERCHLORATE

Ammonium perchlorate is used as the main component in solid rocket propellant, and it can also be found in some types of munitions and fireworks. Ammonium perchlorate and other perchlorate salts are readily soluble in water, dissociating into the perchlorate ion, which does not readily interact with the soil matrix or degrade in the environment. The primary human health concern related to perchlorate is its effects on the thyroid. Perchlorate has been detected at low levels in Metropolitan's CRA water supply.

Because of the growing concerns over perchlorate levels in drinking water, in 2002 Metropolitan adopted a Perchlorate Action Plan. Objectives include expanded monitoring and reporting programs and continued tracking of remediation efforts in the Las Vegas Wash. Metropolitan has been conducting monthly monitoring of Colorado River supplies. The perchlorate originates in the Las Vegas Wash, and the most likely source was a chemical manufacturing site located in Henderson, Nevada. The Nevada Department of Environmental Protection manages a comprehensive groundwater remediation program in

the Henderson area. As of December 2004, the amount of perchlorate entering the Colorado River system from Henderson has been reduced from approximately 900 pounds per day (lb/day) to less than 150 lb/day.

SECTION 7.2 STATE WATER PROJECT

The Delta

The quality of SWP water as a drinking water source is affected by a number of factors, most notably seawater intrusion and agricultural drainage from peat soil islands in the Delta. SWP water contains relatively high levels of bromide and total organic carbon, two elements that are of particular concern to drinking water agencies. Bromide and total organic carbon combine with chemicals used in the water treatment process to form disinfection by-products that are strictly regulated under the federal Safe Drinking Water Act (SDWA). Wastewater discharges from cities and towns surrounding the Delta also add salts and pathogens to Delta water, and they reduce its suitability for drinking and recycling.

MEETING WATER STANDARDS

Water agencies treat all water to meet stringent state and federal drinking water standards before delivering it to customers. However, source water of poor quality will make it increasingly expensive and difficult to meet such standards. The California Urban Water Agencies (CUWA) retained the assistance of a panel of drinking water quality and treatment experts to evaluate the source water quality necessary to allow agencies treating Delta water to comply with future drinking water regulations under a plausibly conservative regulatory scenario. The expert panel identified target bromide and total organic carbon concentrations of 50 parts per billion (ppb) and 3 parts per million (ppm), respectively. These targets were written into the Record Of Decision (ROD) adopted by CALFED in 2000.

The ROD states that CALFED will either achieve these targets at Clifton Court Forebay and drinking water intakes in the south and central Delta, or it will achieve an "equivalent level of public health protection using a cost-effective combination of alternative source waters, source control, and treatment technologies." CALFED did not establish a similar target for the salinity of Delta water, a particular concern in Southern California, because of the high salinity levels in Colorado River water, but the 2004 CALFED Drinking Water Quality Program Plan lists two "numeric targets," less than 220 ppm over a 10-year average and less than 440 ppm as a monthly average.

Actions to protect Delta fisheries have exacerbated existing water quality problems by forcing the SWP to shift its diversions from the springtime to the fall, when salinity and bromide levels are higher. Closure of the Delta Cross-Channel gates to protect migrating fish has also degraded SWP water quality by reducing the flow of higher quality Sacramento River water to the SWP pumps at critical times.

The State Water Project

Water supplies from the SWP have significantly lower TDS levels than the Colorado River, averaging 250 mg/l in water supplied through the East Branch and 325 mg/l on the West Branch. Because of this lower salinity, Metropolitan blends SWP water with high salinity CRA water to reduce the salinity levels of delivered water. However, both the supply and the TDS levels of SWP water can vary significantly in response to hydrologic conditions in the Sacramento-San Joaquin watersheds.

The TDS levels of SWP water can also vary widely over short periods of time. These variations reflect seasonal and tidal flow patterns, and they pose an

additional problem to blending as a management tool to lower the higher TDS from the CRA supply. For example, in the 1977 drought, the salinity of SWP water reaching Metropolitan increased to 430 mg/l, and supplies became limited. During this same event, salinity at the Banks pumping plant exceeded 700 mg/l. Under similar circumstances, Metropolitan's 500 mg/l salinity objectives could only be achieved by reducing imported water from the CRA. Thus, it may not be possible to maintain both salinity standards and water supply reliability unless salinity levels of source supplies can be reduced.

The CALFED Bay-Delta Program's EIS/EIR, Technical Appendix, July 2000 Water Quality Program Plan identified targets that are consistent with TDS objectives in Article 19 of the SWP Water Service Contract: a ten-year average of 220 mg/l and a maximum monthly average of 440 mg/l. These objectives were set in the 1960s when Metropolitan expected to obtain a greater proportion of its total supplies from the SWP. Because of reductions in expected SWP deliveries, Metropolitan's Board believes that this standard is no longer appropriate, so it has adopted a statement of needs from the Bay-Delta. Under the drinking water quality and salinity targets element, the Board states its need "to meet Metropolitan's 500 mg/l salinity-by-blending objective in a cost-effective manner while minimizing resource losses and ensuring the viability of recycling and groundwater management programs."

SECTION 7.3 SURFACE WATER

The region's water quality is influenced by a variety of factors depending on its source. As stated above, water from the Colorado River and from Northern California are vulnerable to a number of contributors to water quality degradation. Regional surface and groundwater are primarily vulnerable to increasing urbanization in the watershed, agriculture, recreational uses, wildlife, and fires.

Source water protection is fundamentally important to all of California. The DHS requires large utilities delivering surface water to complete a Watershed Sanitary Survey every five years to examine possible sources of drinking water contamination. The survey includes suggestions for how to protect water quality at the source.

A similar requirement from the United States Environmental Protection Agency (EPA) calls for utilities to complete a Source Water Assessment (SWA). Information collected in SWAs is used to evaluate changes in potential sources of contamination and to help determine if more protection measures are needed. The EPA requires utilities to complete a SWA that uses information collected in the sanitary surveys. The SWA is also used to evaluate the vulnerability of water sources to contamination and also helps determine whether more protective measures are needed.

The monitoring of key constituents in source waters is critical in helping to identify constituents that should be controlled at the source and to determine the best ways to operate the water system so as to improve the quality of water delivered to the consumer. The effect of urban runoff on receiving water quality is a recently recognized problem. Most of the work up to the present has centered on characterizing urban runoff: measuring concentrations of various constituents, attempting to relate these concentrations to such factors as land use type and rainfall intensity, and studying the effects of these constituents on street surfaces.

It appears that considerable quantities of contaminants, heavy metals in particular, may enter the receiving waters through urban runoff. The federal Water Pollution Control Act Amendments of 1972 stress future "control of treatment of all-point and non-point sources of pollution." Thus, the federal government has concluded that non-point sources, such as urban runoff, are indeed harmful to the aquatic environment and that measures should be taken to control such emissions.

There are four basic approaches to controlling pollution from urban runoff:

- Prevent contaminants from reaching urban land surfaces;
- Improve street cleaning and cleaning of other areas where contaminants may be present;
- Treat runoff prior to discharge to receiving waters; and
- Control land use and development.

Which approach or combination of approaches is most effective or economical has not yet been studied extensively. Thus, only the basic characteristics of each approach can be discussed. In addition to these direct approaches, measures to reduce the volume of runoff from urban areas are also available.

The fourth approach, control land use and development, is to encourage controls on urbanization in order to reduce the volume of runoff. The usual pattern is that increased urbanization leads to higher runoff coefficients, reflecting the many impervious surfaces associated with development. Roof drains to storm sewers, paved parking lots and streets, installation of storm sewers, filling of natural recharge areas, and increased efficiency in realigned and resurfaced stream channels all are characteristics of urban growth.

Urban growth impacts surface water.

Development near streams and on steep slopes harms water resources. It is less disruptive to develop the lower portions of a watershed than the headwater areas, both from the standpoint of the length of channel affected and the extent of channel enlargement necessary to convey storm water. Use of porous pavements and less reliance on roof connections to storm drains and more emphasis on local recharge would reduce the peak volume of runoff from storms. An area's mass emissions of urban drainage constituents should be quantified. Urban planning should be more cognizant of land constraints to permit greater natural recharge where possible and feasible, and to discourage intensive development of steep land, particularly in headwater areas.

To address the issues associated with surface water quality, the Water Authority, the City of San Diego, and the County of San Diego formed a Regional Water Management Group to coordinate development of an Integrated Regional Water Management Plan (IRWMP) for the San Diego region. An important element in the IRWMP is to protect and enhance the region's local surface water quality. As part of this process, projects will be identified and implemented to assist in watershed protection, and thereby protect the quality of surface water supplies.

Integrated Regional Water Management Plan

In the past, regional surface water quality has been considered good to excellent. Water quality can vary with imported water inflows and surface water contamination. Source water protection is considered a key element in regional water quality. The Water Authority and its member agencies are working together to improve watershed awareness and management. Currently, the most significant water quality issue that affects the public is algae blooms, which can create taste and odor problems.

In San Diego County, DHS has primacy over the implementation of the SDWA. The SDWA regulates source water protection to ensure public health through the multiple barrier approach, an approach that anticipates that the public will participate in source water protection. Member agencies in the Water Authority's service area that have surface water have a good, long-standing, working relationship with DHS.

SECTION 7.4 GROUNDWATER

Two water quality parameters that can affect reliability of groundwater resources in San Diego County are contamination from Methyl Tertiary Butyl Ether (MTBE) and high salinity levels.

SALINITY

Increased TDS in groundwater basins occurs either when basins near the ocean are over drafted, leading to seawater intrusion, or when agricultural and urban

Groundwater demineralization facility

return flows add salts to the basins. Much of the water used for agricultural or urban irrigation infiltrates into the aquifer, so where high TDS irrigation water is used or where the water transports salts from overlying soil, the infiltrating water will increase the salinity of the aquifer. Using this resource requires costly demineralization projects. (Refer to **Section 5.2.1** for discussion on groundwater recovery projects.)

To protect the quality of these basins, the Regional Board often places restrictions on the salinity levels of water used for basin recharge or for irrigation of lands overlying the aquifers. Where these restrictions are in place, water reuse and aquifer recharge may be restricted, or expensive mitigation measures may be required.

METHYL TERTIARY BUTYL ETHER

Until recently, MTBE was the primary oxygenate in virtually all the gasoline used in California. In January 2004, the Governor's executive order to remove MTBE from gasoline became effective, and now ethanol is the primary oxygenate. MTBE is very soluble in water and has low affinity for soil particles, thus allowing the chemical to move quickly in the groundwater. MTBE is also resistant to chemical and microbial degradation in water, making treatment more difficult than the treatment of other gasoline components.

MTBE presents a significant problem to local groundwater basins. Leaking underground storage tanks and poor fuel-handling practices at local gas stations may provide a large source of MTBE. Improved underground storage tank requirements and monitoring, and the phase-out of MTBE as a fuel additive, will probably decrease the likelihood of MTBE groundwater problems in the future.

SECTION 7.5 RECYCLED WATER

Water quality, as it pertains to high salinity supplies, is a significant implementation issue for recycled water projects. High TDS source water poses a special problem for water recycling facilities because conventional treatment processes are designed to remove suspended particles, but not dissolved particles. TDS removal, or demineralization, requires an advanced treatment process, which can increase project costs significantly.

Residential use of water typically adds 200 to 300 mg/l of TDS to the wastewater stream. Self-regenerating water softeners can add another 60 to 100 mg/l. Infiltration of brackish groundwater into sewer lines can also cause an increase in TDS. If an area receives a water supply with TDS of more than 700 mg/l, and residents add 300 mg/l or more through normal use, the recycling facility will produce recycled water with a TDS concentration of 1,000 mg/l or higher.

Figure 7-1 shows the average TDS at several of the existing and projected water recycling treatment plants. In general, TDS concentrations over 1,000

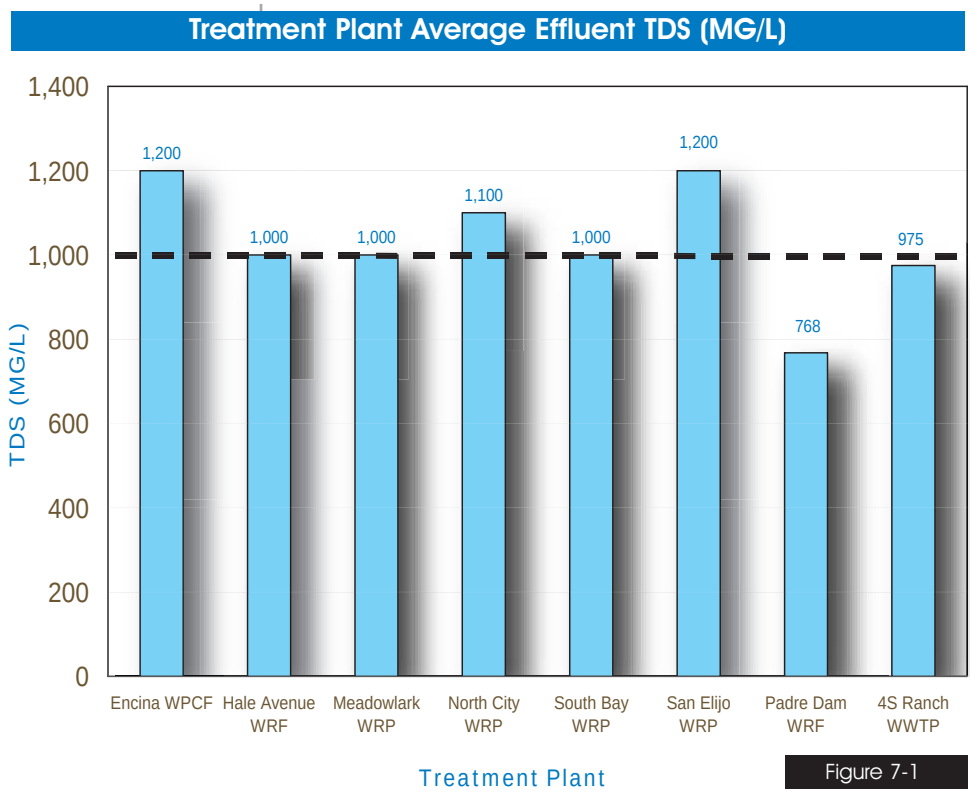


Figure 7-1

Seawater desalination is the wave of the future.

mg/l become problematic for irrigation and industrial reuse customers. This problem greatly limits the potential uses and marketability of recycled water, particularly for agricultural purposes, because certain crops and nursery stock cannot be irrigated with high-TDS water.

SECTION 7.6 SEAWATER DESALINATION

The feedwater source for the proposed regional seawater desalination project at the Encina Power Station in Carlsbad is the Pacific Ocean. The salinity of the Pacific Ocean in San Diego County is fairly stable, with a TDS concentration around 34,000 mg/l. To address TDS concentrations at this level, the desalination facility will use a RO membrane treatment process to reduce the TDS to less than 350 mg/l, resulting in approximately 99 percent removal of TDS and a supply that meets drinking water standards.

Prior to the RO process, the feedwater will be pretreated to remove suspended solids, including organic material. The RO process will then remove the dissolved solids. Next, the product water will be post-treated to prevent corrosion in the distribution system and improve the aesthetic quality of the water. This process generally involves adding alkalinity to the treated water. The final step, a disinfection process, provides a disinfection residual in the treated water.

A single-pass RO process of seawater generally results in about 50 percent recovery of treated water. The remaining 50 percent is discharged as concentrate, with about twice the salinity of the original feedwater. The concentrate will be diluted to avoid negative impacts to the marine environment from the elevated salinity levels at the point of discharge.

SECTION 8 WATER SUPPLY RELIABILITY

As stated in the Act, every urban water supplier shall include, as part of its plan, an assessment of the reliability of its water supply. The water supply and demand assessment must compare the total projected water use with the expected water supply over the next 20 years in 5-year increments. This reliability assessment is required for normal, single dry-year, and multiple dry water years. The assessment contained in the Updated 2005 Plan projects reliability through the next 25 years to correspond with the growth forecast developed by SANDAG and ensure compliance with Senate Bills 610 and 221. In addition to the expected mix of resources utilized in the reliability assessment, a resources goal has been established. The goal includes the expected supplies plus other potential projects that are important to maximizing development of local resources, but are still in the conceptual phase. This section presents a summary of the water demands and supplies within the Water Authority's service area along with the reliability assessment and resources goal.

SECTION 8.1 DEVELOPMENT OF PROJECTED WATER RESOURCES MIX

In summary, development of the projected mix of resources to meet future demands was based on the following factors:

I. Local agency information on projected water recycling, groundwater, surface water, and local seawater desalination supplies (**Section 5**);

II. Update of the Water Authority's 2000 Plan to reflect Board action taken over the last five years related to the following items:

a. Adoption of QSA related agreements (**Section 6.2.1**);
b. Fourth Amendment to the Transfer Agreement (**Section 4.1**); and
c. Agreement between Metropolitan and the Water Authority regarding assignment of agreements related to the AAC and CC Lining Projects (**Section 4.2**).

SECTION 8.2 NORMAL WATER YEAR ASSESSMENT

Table 8-1 shows the normal year assessment, summarizing the total water demands for the Water Authority through the year 2030, along with the supplies necessary to meet demands under normal conditions. **Section 2** contains a discussion of the normal year water demands in the Water Authority's service area. If the Water Authority and member agency supplies are developed as planned, along with implementation of Metropolitan's IRP, no shortages are anticipated within the Water Authority's service area in a normal year through 2030.

Table 8-1: Normal Water Year Supply and Demand Assessment (AF/YR)[1]

	2010	2015	2020	2025	2030
Water Authority Supplies					
IID Water Transfer	70,000	100,000	190,000	200,000	200,000
AAC and CC Lining Projects	77,700	77,700	77,700	77,700	77,700
Subtotal	147,700	177,700	267,700	277,700	277,700
Member Agency Supplies					
Surface Water	59,649	59,649	59,649	59,649	59,649
Water Recycling	33,668	40,662	45,548	46,492	47,584
Groundwater	17,175	18,945	19,775	19,775	19,775
Groundwater Recovery	11,400	11,400	11,400	11,400	11,400
Seawater Desalination	0	34,689	36,064	37,754	40,000
Subtotal	121,892	165,345	172,436	175,070	178,408
Metropolitan Water District Supplies	445,858	399,855	311,374	342,870	372,922
TOTAL PROJECTED SUPPLIES	715,450	742,900	771,510	795,640	829,030
TOTAL ESTIMATED DEMANDS w/Conservation	715,450	742,900	771,510	795,640	829,030

1 Normal water year demands based on 1960 – 2002 hydrology.

SECTION 8.3 DRY WATER YEAR ASSESSMENT

In addition to a normal water year assessment, the Act requires an assessment to compare supply and demands under single dry and multiple dry water years over the next 20 years, in five-year increments. **Section 2** describes the derivation of the dry water year demands. **Table 8-2** shows the single dry-year assessment. The projected groundwater and surface water yields shown in the table are based on historic 1991 supplies during the 1987-1992 drought years. The supplies available from projected recycling and groundwater recovery projects are assumed to experience little, if any, reduction in a dry-year. The Water Authority's existing and planned supplies from the IID transfer, canal lining projects, and seawater desalination are also considered "drought-proof" supplies as discussed in **Section 4**. Therefore, estimated normal yields from these supplies are also included in the analysis.

In accordance with the Act, **Tables 8-3, 8-4, 8-5, 8-6,** and **8-7** show the multiple dry water year assessments in five-year increments. The member agencies' surface and groundwater yields shown in these tables are reflective of supplies available during the 1987-92 drought in years 1990, 1991 and 1992.

As shown in the above tables, if the projected Water Authority and member agency supplies are developed as planned, along with implementation of Metropoli-

Table 8-2: Single Dry Water Year Supply and Demand Assessment
Five Year Increments (AF/YR)

	2010	2015	2020	2025	2030
Water Authority Supplies					
IID Water Transfer	70,000	100,000	190,000	200,000	200,000
AAC and CC Lining Projects	77,700	77,700	77,700	77,700	77,700
Subtotal	147,700	177,700	267,700	277,700	277,700
Member Agency Supplies					
Surface Water	22,284	22,284	22,284	22,284	22,284
Water Recycling	33,668	40,662	45,548	46,492	47,584
Groundwater	10,838	10,838	10,838	10,838	10,838
Groundwater Recovery	11,400	11,400	11,400	11,400	11,400
Seawater Desalination	0	34,698	36,064	37,754	40,000
Subtotal	78,190	119,882	126,134	128,768	132,106
Metropolitan Water District Supplies	541,760	498,388	431,726	442,142	473,224
TOTAL PROJECTED SUPPLIES	767,650	795,970	825,560	848,610	883,030
TOTAL ESTIMATED DEMANDS w/Conservation	767,650	795,970	825,560	848,610	883,030

Multiple Dry Water Year Supply and Demand Assessment
5-Year Increments (AF/YR)

Table 8-3

	2006	2007	2008
Water Authority Supplies	40,000	71,500	71,500
Member Agencies	56,670	60,230	80,900
Metropolitan Supplies	647,850	618,050	602,630
TOTAL ESTIMATED SUPPLIES	744,520	749,780	755,030
TOTAL ESTIMATED DEMANDS	744,520	749,780	755,030

Table 8-4

	2011	2012	2013
Water Authority Supplies	157,700	167,700	177,700
Member Agencies	101,012	100,431	116,970
Metropolitan Supplies	512,698	500,149	488,480
TOTAL ESTIMATED SUPPLIES	771,410	777,280	783,150
TOTAL ESTIMATED DEMANDS	771,410	777,280	783,150

Table 8-5	2016	2017	2018
Water Authority Supplies	177,700	177,700	207,700
Member Agencies	109,214	108,149	124,194
Metropolitan Supplies	514,116	521,301	481,376
TOTAL ESTIMATED SUPPLIES	801,030	807,150	813,270
TOTAL ESTIMATED DEMANDS	801,030	807,150	813,270

Table 8-6	2021	2022	2023
Water Authority Supplies	277,700	277,700	277,700
Member Agencies	114,752	112,960	128,288
Metropolitan Supplies	438,228	445,180	435,022
TOTAL ESTIMATED SUPPLIES	830,680	835,840	841,010
TOTAL ESTIMATED DEMANDS	830,680	835,840	841,010

Table 8-7	2026	2027	2028
Water Authority Supplies	277,700	277,700	277,700
Member Agencies	117,524	115,873	131,343
Metropolitan Supplies	463,256	472,057	463,727
TOTAL ESTIMATED SUPPLIES	858,480	865,630	872,770
TOTAL ESTIMATED DEMANDS	858,480	865,630	872,770

tan's IRP, no shortages are anticipated within the Water Authority's service area under single dry-year or multiple dry water years through 2030. However, the Water Authority is at risk for shortages should the supplies identified in Metropolitan's IRP not be developed as planned or a Metropolitan member agency such as the City of Los Angeles invoke its Section 135, Preferential Right to Water (discussed in **Section 6.1.1**). To alleviate this risk, the Water Authority is pursuing the following options: 1) the development of additional storage; and 2) development of additional seawater desalination. Storage opportunities include local carryover storage facilities to accumulate and store water during periods of availability, as well as the acquisition of out-of-the-region conjunctive-use facilities to develop additional groundwater storage (refer to **Section 1.5.1** for discussion on the Water Authority's proposed carryover storage project). A combination of storage and new supply appears to provide the most reliable solution to alleviating risks during a dry period.

SECTION 8.4 RELIABILITY OF SUPPLY

The previous sections identify the diverse mix of resources planned to meet future demands in both a normal and dry-year. Implementation of this regional resource mix will require development of projects and programs by the Water Authority, its member agencies, and Metropolitan. The Water Authority coordinated with its member agencies and Metropolitan during preparation of the Updated 2005 Plan on the future demands and supplies projected for the region. The steps being taken by the member agencies and Metropolitan to develop supplies are addressed in their respective urban water management plans. **Section 4** contains the steps taken and remaining actions necessary to develop and maintain the Water Authority supplies.

The Act requires that, for any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, that the agency describe, to the extent practicable, plans to replace that source with alternative sources or water demand management measures. As stated throughout the Updated 2005 Plan, the Water Authority and its member agencies are planning to develop a diverse supply of resources. The unavailability of any one supply source will be buffered because of the diversity of the supplies; the region is not reliant on a single source. To replace or supplement an existing supply, the Water Authority could take steps to increase development of transfers or seawater desalination. Member agencies could also further maximize development of recycled water, groundwater, and seawater desalination. With a successful conservation program already in place, the Water Authority and its member agencies could effectively implement extraordinary conservation measures to assist in ensuring reliability. Another element of reliability is Metropolitan's IRP planning buffer, described in **Section 6.1.2**, which identifies an additional increment of water that could be potentially developed if other supplies are not implemented as planned. A combination of these resources would be necessary to ensure a reliable supply.

Quail Botanical Gardens irrigates with recycled water.

As stated in **Section 4.3.1** and **5.3**, seawater desalination remains a key component of the region's diversification strategy. However, because there are a number of factors that could affect implementation of seawater desalination, alternative options are being considered. This includes accelerating construction of an additional imported water conveyance pipeline, Pipeline 6, that would allow for additional supply deliveries from Metropolitan. With a regional seawater desalination project in place, Pipeline 6 would not be needed until approximately 2023. To meet demands without seawater desalination, preliminary results from Metropolitan's draft System Overview Study show that Pipeline 6 would be needed by 2018 and that it would take an estimated nine years to construct. A decision on implementation of a seawater desalination project prior to 2009 would allow adequate time to construct the facility.

Activities associated with implementation of Pipeline 6 include the following:

- Coordination between Metropolitan and the Water Authority regarding planning and design of the pipeline is ongoing; and
- An alignment for the entire approximately 30-mile pipeline was identified in the original 1993 Environmental Impact Report. Metropolitan is conducting a feasibility study to re-visit the 1993 alignment and evaluate alternative alignments north of the San Luis Rey River in light of changed conditions since 1993. The Water Authority plans to conduct a similar feasibility study of Pipeline 6 alignments south of the San Luis Rey River. Based on these updated feasibility studies, an updated environmental analysis for the project is also planned.

SECTION 8.5 REGIONAL WATER SUPPLY GOALS

As stated in **Sections 4 and 5**, those projects with adequate documentation regarding implementation and supply utilization or existing projects already planned for expansion were considered for inclusion in the assessments discussed in **Sections 8.2 and 8.3**. In addition to these verifiable projects, the Water Authority and its member agencies have conceptually identified other potential projects. Combining the verifiable projects and these conceptual projects forms the regional water supply goals.

These supply goals are critical to the region for a number of reasons. The Water Authority and member agencies must continue to strive to develop cost-effective local resources that can further diversify

2030 Water Supply Goals

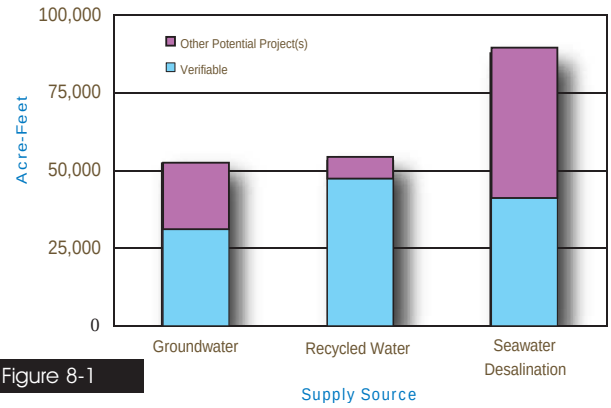


Figure 8-1

the region's supplies and reduce demands for imported water from Metropolitan. They provide objectives for the region to work towards by resolving any funding, regulatory, and other constraints associated with implementation. **Figure 8-1** shows the water supply goals for groundwater, recycled water, and seawater desalination.

The Water Authority worked with its member agencies to determine the verifiable supplies to be included in the assessment and those projects to be included in the supply goals. Including the verifiable supplies contained in the assessment, the regional groundwater production goal is 52,575 AF/YR by 2030. The recycled water goal is 54,413 AF/YR by 2030. The specific local projects are listed in **Table F-2** and **F-4** in **Appendix F**.

The total regional seawater desalination goal for 2030 is 89,600 AF/YR. The goal is achieved through implementation of 40,000 AF/YR of verifiable supply from the local project at the Encina Power Station, based on the contracted amounts and supply utilization, 16,000 AF/YR of additional local supply from the same project, and 33,600 AF/YR of regional supply (Water Authority goal). Refer to **Sections 4.3** and **5.4** for additional information on the derivation of the verifiable and goal supply figures.

SECTION 9 SHORTAGE CONTINGENCY ANALYSIS

The Act requires that urban water agencies conduct a water shortage contingency analysis as part of their Updated 2005 plan. This section includes the Water Authority's analysis, which addresses a catastrophic shortage situation and drought management.

SECTION 9.1 CATASTROPHIC WATER SHORTAGE

A catastrophic water shortage occurs when a disaster, such as an earthquake, results in insufficient available water to meet the region's needs or eliminates access to imported water supplies. The following section describes the Water Authority's Emergency Response Plan (ERP) and the ESP, both developed to protect public health and safety and to prevent or limit economic damage that could occur from a severe shortage of water supplies.

9.1.1 EMERGENCY RESPONSE PLAN

The Water Authority's ERP provides staff with the information necessary to respond to an emergency that causes severe damage to the Water Authority's water distribution system or impedes the Water Authority's ability to provide reliable water service to its member agencies. The ERP describes the situations and incidents that will trigger the activation of the Water Authority's ERP and Emergency Operations Center (EOC). It also provides direction and strategies for responding to a crisis.

The Water Authority's ERP includes:

- Authorities, policies, and procedures associated with emergency response activities;
- EOC activities – including EOC activation and deactivation guidelines;
- Multi-agency and multi-jurisdictional coordination, particularly between the Water Authority, its member agencies, and Metropolitan in accordance with Standardized Emergency Management System (SEMS) guidelines;
- Emergency staffing, management, and organization required to assist in mitigating any significant emergency or disaster;
- Mutual Aid Agreements and covenants that outline the terms and conditions under which mutual aid assistance will be provided;
- Pre-emergency planning and emergency operations procedures.

In addition, the Water Authority's ERP Manual uses a step-by-step approach to emergency response planning by providing such procedural tools as action checklists, resource and information lists, personnel rosters, and listings of established policies and procedures. The Water Authority's plan parallels many of the same plan components contained in the Unified San Diego County Emergency Services Organization's "Operational Area Emergency Plan" (OAEP). In turn, the OAEP serves to support and supplement the Water Authority's ERP.

The San Vicente Reservoir is important to the next phase of the ESP.

9.1.2 WATER AUTHORITY'S EMERGENCY STORAGE PROJECT

In June, 1998, the Water Authority's Board authorized implementation of the ESP to reduce the risk of potential catastrophic damage that could result from a prolonged interruption of imported water due to earthquake, drought, or other disasters.

The ESP is a system of reservoirs, pipelines, and other facilities that will work together to store and move water around the county in the event of a natural disaster. The facilities are located throughout San Diego County and are being constructed in phases. The entire project is expected to be complete by 2012. Its initial phase includes the recently completed 318-foot-high Olivenhain Dam and accompanying 24,789 AF Olivenhain Reservoir. When completed, the ESP will provide 90,100 AF of stored water for emergency purposes to meet the county's needs through at least 2030.

In sizing the ESP, the Water Authority assumed a 75 percent level of service to all Water Authority

member agencies during an outage and full implementation of the water conservation BMPs.

The following steps from the final draft of the August 2002 Emergency Water Delivery Plans show the methodology for calculating the allocation of ESP supplies to member agencies in a prolonged outage situation without imported supplies:

1. Estimate the duration of the emergency (i.e. time needed to repair damaged pipelines);
2. Determine each member agency's net demand during the emergency period by adding M&I water demands and agricultural water demands and then subtracting recycled water supplies;
3. Determine each member agency's useable local supplies during the emergency period (local supplies include surface water and groundwater);
4. Determine each member agency's level of service based on usable local supplies and net demand;
5. Adjust the allocation of ESP supplies based on a member agency's participation in the IAWP. IAWP customers will be required to take a reduction in deliveries during a water shortage due to an emergency at double the system-wide reduction up to a maximum of 90%. Water not delivered to IAWP customers will be redistributed to member agencies based on the "system-wide" level of service targets;
6. Determine the amount of local supplies that can be transferred between member agencies, with transfers occurring only after a member agency has a level of service greater than 75% based on their usable local supplies; and
7. Allocate delivery of useable ESP storage supplies and Metropolitan supplies to member agencies with the goal of equalizing the level of service among the member agencies.

The Board of Directors may authorize that supplies from the ESP be used in a prolonged drought situation where imported and local supplies do not meet 75 percent of the Water Authority's member agencies M&I demands.

SECTION 9.2 DROUGHT MANAGEMENT PLANNING

9.2.1 INTRODUCTION

The last major drought in California occurred between 1987 and 1992 and caused severe water supply shortages throughout the state. During early March 1991, at the peak of the drought, Metropolitan's SWP supplies were reduced by 90 percent. Subsequently, Metropolitan voted to impose a 50 percent reduction in imported deliveries to the Water Authority. The results of Metropolitan's cutback would have been devastating to the Water Authority's businesses and residents except for the miracle March rainfall that occurred later that month. These rains allowed the SWP to reduce its level of cutback to 80 percent, and Metropolitan later rolled back its call for reduction from 50 to 31 percent. Even at this level the Water Authority was impacted more than other Metropolitan members because of its high dependence upon imported supplies from Metropolitan.

Since the 1987-1992 drought, the Water Authority and its member agencies have developed plans and implemented projects to reduce reliance on a single supply source. As mentioned in **Section 8**, if projected supplies are developed as planned and Metropolitan's IRP is fully implemented, no shortages are anticipated within the Water Authority's service area through 2030. While the region has plans to provide a high level of reliability, there will always be some level of uncertainty associated with maintaining and developing local and imported supplies. Therefore, the Water Authority developed a comprehensive Drought Management Plan (DMP) in the event that the region faces supply shortages due to drought conditions. The sections below describe the development of the DMP. A copy of the DMP is included in this Updated 2005 Plan as **Appendix G**.

Drought-tolerant plants thrive if water is scarce.

In 1999, Metropolitan adopted the Water Surplus and Drought Management Plan (WSDM Plan) to integrate planned operational actions with respect to both surplus and shortage situations. (For further details on the WSDM Plan actions, refer to Metropolitan's 2005 RUWMP.) The WSDM Plan's final action, to be taken in an extreme shortage stage, is the implementation of an allocation plan. An allocation plan was not developed as part of the WSDM Plan, and it

is not known when Metropolitan will consider and adopt such a plan. During development of the DMP, the Water Authority made assumptions regarding the Metropolitan supplies available during drought stages. The Water Authority will adjust the DMP as necessary following Metropolitan's adoption of an allocation plan.

One of the requirements of the shortage contingency analysis included in the Act is an estimate of the minimum supplies available during each of the next three years. **Table 8-3** of **Section 8.3** shows this estimate. The sections below address other requirements of the Act applicable to the Water Authority.

9.2.2 DMP PURPOSE

The DMP provides the Water Authority and its member agencies with a series of actions to take when faced with a shortage of imported water supplies from Metropolitan due to drought conditions. The potential actions will help the region minimize the impacts of shortages and ensure an equitable allocation of supplies.

The DMP includes a drought response matrix containing actions to be taken by the Water Authority at different drought stages. One of the actions, if warranted, is an allocation of available supplies. The Water Authority developed an allocation methodology to include in the DMP. This methodology determines the supplies available to member agencies and how local resources will be handled. A communication strategy was also prepared to help the Water Authority and its member agencies implement the DMP actions. When ultimately faced with a supply shortage, there may be factors unknown at this time that could influence the actions taken. The DMP will provide guidance on how to move forward and minimize the impacts of a shortage situation.

9.2.3 DMP TECHNICAL ADVISORY COMMITTEE

Preparing and implementing a DMP for the San Diego region required input and support from the Water Authority's member agencies. Recognizing the importance of member agency involvement, the Water Authority formed a TAC – Technical Advisory Committee – to provide input on development of the DMP. The TAC included a representative from each of the member agencies. The meetings were facilitated to ensure full involvement from all participants.

To gain an initial understanding of the TAC members' positions on the DMP elements, each member completed a questionnaire. Results from this questionnaire provided valuable information used to develop a set of principles for preparing the DMP.

Proposed elements of the DMP that were developed through the DMP TAC meetings are presented in **Sections 9.2.4, 9.2.5,** and **9.2.6**.

9.2.4 DMP PRINCIPLES

The TAC developed principles to provide guidance to the Water Authority and its member agencies in developing and implementing the DMP. The principles are grouped under elements of the DMP.

Overall Plan

1. The DMP will be developed in cooperation with the member agencies and include all aspects of drought planning - including steps to avoid rationing, drought response stages, allocation methodology, pricing, and communication strategy.

Communication Strategy

2. An on-going, coordinated and regional public outreach program shall be developed by the Water Authority that provides a clear and consistent message to the public regarding water supplies and specific conservation measures. The outreach program will also recognize and support member agency communication efforts that address specific retail level allocations.
3. A Drought Coordination Team, made up of one representative from each member agency, will be established to assist the Water Authority in implementation of the DMP. This includes items such as formulation and implementation of the public outreach program, timing of drought stages, selection of drought supply actions, and addressing potential issues surrounding implementation of the shortage allocation methodology.
4. The drought management plan should specify actions and timing of communications.

Drought Supply Enhancement

5. The Water Authority and its member agencies will work cooperatively to avoid and/or minimize rationing during droughts through supply enhancement and voluntary demand reduction measures.

6. Future Water Authority carryover storage supplies will be managed and utilized to assist in meeting demands during drought periods. Member agencies will be encouraged to develop carryover storage.
7. The Water Authority will consider securing option and/or spot water transfers to meet the reliability goal set by the Board. The cost of this regional supply will be melded into the Water Authority's supply costs for all classes of service that benefit.
8. Subject to the Water Authority's wheeling policy, if a member agency purchases transfer water from a source other than the Water Authority, the full cost of the transfer, including, but not limited to, purchase costs, wheeling costs, and administrative costs, will be borne by said member agency.
9. ESP supplies may be available when any member agency's non-interruptible firm demands drop below a 75 percent service level.
10. The quantities of supplies from the ESP to be removed from storage will be based on a minimum amount necessary to meet essential health, safety, and firefighting needs, and maximum amount based on the need to ensure adequate supplies remain for a catastrophic event (e.g. earthquake).

Drought Response Stages

11. Develop drought response stages, which at a minimum, accomplish the following:
    - Can be easily communicated to the public;
    - Flexible to handle unexpected changes in demand and supply conditions;
    - Includes percent reduction (voluntary or mandatory) per stage; and
    - Includes both supply augmentation and emergency demand reduction methods.
12. Targets for achieving the emergency demand reduction measures should take into account the region's already aggressive long-term water conservation program.
13. The decision on when, and in which sequence drought augmentation supplies will be utilized during different stages will include consideration of the following factors:
    - Location – Out-of-region supplies will be utilized in the earlier stages, prior to in-county storage, because these supplies are more vulnerable to implementation risks such as seismic events;
    - Cost – Priority will be given to maximizing supply reliability and at the same time using the most cost-effective supplies; and
    - Limitations – Potential restrictions on the use of drought augmentation supplies is a factor in determining supply availability (e.g. potential restrictions on ESP supplies).

Allocation Methodology

14. The allocation methodology will be equitable, easy to administer, contain financial penalties and pricing signals, and a communication strategy to ensure member agencies and the public are informed and understand the need to conserve.
15. In order to protect the economic health of the entire region, it is very important for the allocation methodology to avoid large, uneven retail impacts across the region. The methodology should include a minimum level of retail agency reliability to ensure equitable allocation among the member agencies.
16. With the exception of allocating water from the ESP, the Water Authority shall make no distinction among customers paying the same M&I rate (e.g. non-Interim Agricultural Water Program (IAWP) agriculture, residential, commercial, and industrial).
17. Additional IAWP cutbacks beyond the initial 30 percent faced by IAWP customers should be equally applied to both IAWP and M&I customers.
18. A member agency that has developed local projects and instituted conservation measures should not be penalized in the computation of allocations.
19. To help balance out the financial costs and risks associated with development of local resources, the shortage allocation methodology should provide an incentive to those member agencies that have developed local supplies.
20. The base-year, upon which allocations will be derived, will be based on historic demands. Adjustments to the base-year will be made for demographic changes, growth, local supplies, demand hardening, and supplies allocated under interruptible service programs.
21. A member agency's base-year will be adjusted to reflect the regional financial contribution from the Water Authority for development of local projects. The adjustment will take into account the risks associated with developing the local projects.
22. A member agency will not be able to market its unused allocation to other agencies within the Water Authority's service area at a cost higher than the Water Authority's charges for those supplies.
23. Penalty rates, along with other demand reduction measures, will be used by the Water Authority to encourage conservation during a drought.

9.2.5 DROUGHT RESPONSE MATRIX

The Act requires information on the stages of action to be undertaken in response to water supply shortages, including up to a 50 percent reduction in water supply. To meet the requirements, the Water Authority, with input from the TAC, developed a regional drought response matrix. The matrix provides guidance to the Water Authority and member agencies in selecting potential regional actions to lessen the severity of shortage conditions. Member agencies will independently adopt retail-level actions to manage potential shortages.

As shown in **Table 9-1**, the matrix proposes three main stages and identifies potential actions available to the Water Authority at each stage. To determine the specific actions that should be taken at each stage, the Water Authority and its member agencies will evaluate conditions specific to the timing and supply availability along with other pertinent variables. Numerous variables can influence the reduction levels adopted during a drought. These variables include, but are not limited to, SWP allocation, conditions on the Colorado River, Water Authority supplies, local storage, local demands, and timing.

MATRIX STAGES AND ACTIONS

Three drought stages have been identified in the matrix. The first stage of the drought response matrix is considered voluntary. The voluntary stage would likely occur when Metropolitan has been experiencing shortages in its imported water supply (from either the Colorado River or the SWP, or both) and is withdrawing water from storage due to the drought conditions to meet normal demands. Actions initiated at this stage include monitoring supply conditions and storage levels, calling for voluntary conservation, and utilizing a prudent amount of supplies from Water Authority planned carryover storage. These actions would continue throughout the drought stages.

The second stage, supply enhancement, could occur in year three or four of a dry period and represents that point in time when Metropolitan reduces water deliveries to its member agencies. The Water Authority's Board of Directors will then consider the potential actions in this stage, or others that may surface, to eliminate any cutbacks to the member agencies from the reduction in Metropolitan supplies.

The final stage follows once both Metropolitan and the Water Authority Board have exhausted all supply enhancement options due to lack of supplies and/or increasing costs, and mandatory cutbacks are required. The actions taken at this stage include implementation of the allocation methodology and potential utilization of ESP supplies. As stated in the DMP Principles, ESP supplies may be available when any member agency's non-interruptible firm demands drop below a 75 percent service level. In addition, the quantities of supplies utilized from ESP storage will be based on a minimum amount necessary to meet essential health, safety, and

Table 9-1: Drought Response Matrix — Firm Demands

	STAGES		
Potential SDCWA Drought Actions	Voluntary	SDCWA Supply Enhancement	Mandatory Cutbacks
Ongoing BMP implementation	X	X	X
Communication strategy	X	X	X
Monitoring supply conditions & storage levels	X	X	X
Call for voluntary conservation	X	X	X
Draw from SDCWA carryover storage	X	X	X
Secure transfer option contracts	X	X	X
Buy phase 1 spot transfers (cost at or below Tier 2 rate)		X	X
Call transfer options		X	X
Buy phase 2 spot transfers (cost at or above Tier 2 rate)		X	X
Implement allocation methodology			X
Utilize ESP Supplies			X

firefighting needs, and maximum amount based on the need to ensure adequate supplies remain for a catastrophic event (e.g. earthquake).

9.2.6 SUPPLY ALLOCATION METHODOLOGY

With the implementation of the member agencies' local projects, the Water Authority's core supplies, and potential drought supply enhancement supplies, the impact from supply shortages from Metropolitan on M&I customers will be reduced and potentially avoided. Preparing a supply allocation methodology is important in order to be prepared for situations that warrant an allocation of supplies to the member agencies. Implementing a supply allocation plan is part of the Water Authority's drought response matrix.

Starting with the accepted principles listed in **Section 9.2.4,** the Water Authority worked with the TAC to develop a methodology that is equitable and that recognizes the investments made by agencies that have developed local supplies. The Water Authority's current rate structure notes two classes of service, M&I and IAWP. They receive different levels of service based on the rate paid and are managed separately in the allocation methodology.

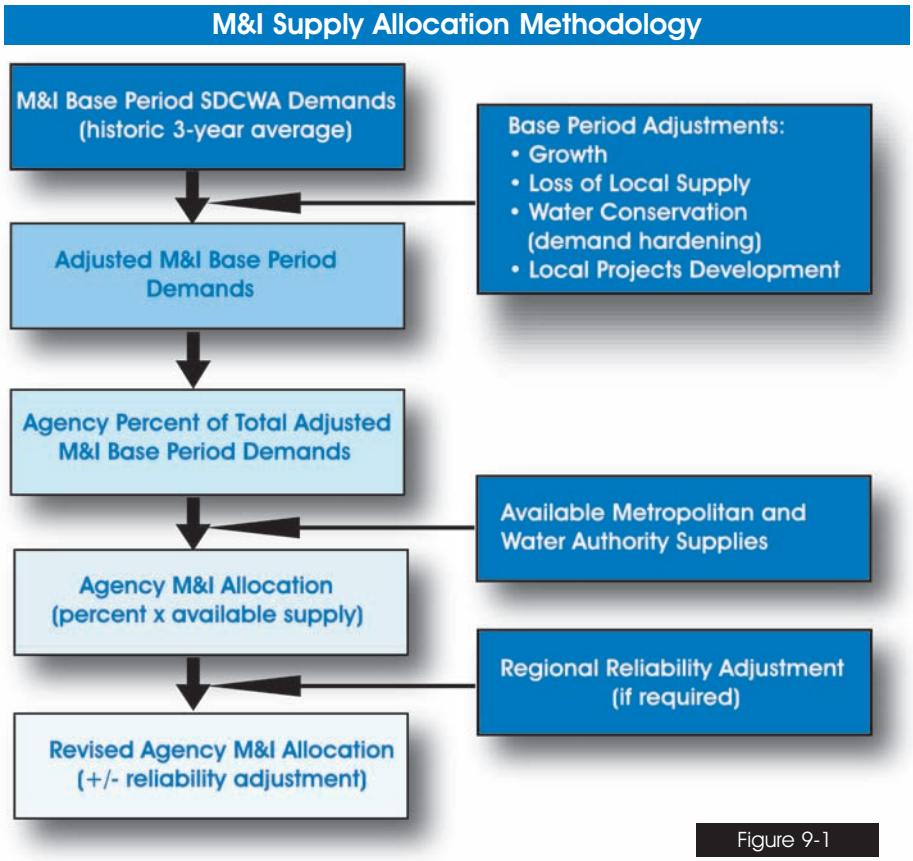


Figure 9-1

IAWP customers have agreed to a reduced level of service in exchange for a discounted supply rate from Metropolitan. Metropolitan prepared draft IAWP Reduction Guidelines that state that IAWP customers will be cut by 30 percent prior to cutbacks to M&I customers. The guidelines do not specify stages and/or levels of cutbacks beyond 30 percent. Based on the guidelines and Principle 17, up to a 30 percent cut will be made to the IAWP base prior to M&I cutbacks. Beyond 30 percent, supplies will be allocated equally between IAWP and M&I. In preparing the allocation methodology for the DMP, the Water Authority incorporated the conditions included in the guidelines.

The Water Authority developed a separate allocation methodology for those customers paying the M&I rate. They include residential, commercial, industrial, and non-IAWP agricultural customers. **Figure 9-1** provides the general approach to allocate supplies to M&I customers in a shortage situation.

The elements of the proposed allocation methodology:

HISTORICAL BASE PERIOD

A historic base period demand is required to establish an agency's pre-allocation demand on the Water Authority. Base period M&I demands are calculated using data from the three most recently completed fiscal years immediately preceding the year in which an allocation process is needed due to supply shortages. Each agency's base period M&I demand is established by calculating their three-year average of demand.

Base period demands for agriculture are certified through Metropolitan's IAWP program and are calculated using a different approach. For IAWP demands, only the most recently completed single fiscal year prior to the imposition of an allocation is considered. This calculation is required by Metropolitan's Draft IAWP Reduction Guidelines.

ADJUSTMENTS

M&I adjustments to be applied to the base period were developed to equitably account for relevant factors in calculating each agency's allocation. Such factors include growth, demand hardening levels due to conservation, local supply availability from groundwater and surface reservoirs, and efforts taken by local agencies to develop reliable local projects such as recycled water, groundwater recovery, and seawater desalination. The adjustments are intended to acknowledge unique agency characteristics and provide an incentive for agencies to decrease their reliance on imported supplies over the long-term. Consistent with the Draft IAWP Reduction Guidelines, no adjustments are made to the IAWP base demand.

ADJUSTED BASE PERIOD

An agency's adjusted base period M&I demand is calculated by adding the applicable adjustments to their initial base period M&I demand. The adjusted base period M&I demand amount is then used to generate an agency's pro-rata percent share of the total adjusted base period M&I demand. It is this percentage that is used to calculate an agency's imported M&I supply allocation volume.

ALLOCATION OF AVAILABLE SUPPLIES

To determine the amount of the Water Authority and Metropolitan supplies that will be available to each member agency, a member agency's percent share of the total M&I adjusted base period is calculated. This percent is then applied to supplies available for M&I demands to derive an allocation for each member agency. For IAWP customers, a percent share of the total IAWP base-year demands is calculated. This percent is applied to the IAWP supplies available following the initial 30 percent cutback and subsequent cutbacks to calculate an allocation of IAWP supplies for each member agency.

REGIONAL RELIABILITY ADJUSTMENT (IF NEEDED)

In accordance with Principle 15, which states, *"In order to protect the economic health of the entire region, it is very important for the allocation methodology to avoid large, uneven retail impacts across the region. The methodology should include a minimum level of retail agency reliability to ensure equitable allocation among the member agencies,"* a regional M&I reliability floor was established. The floor, if needed, is set at 5% below the region's total M&I level of service and is triggered when the net cutback to total Water Authority supplies reaches or exceeds 30 percent. Taking into account the supply development by the Water Authority, its member agencies, and Metropolitan, this level of cutback is very unlikely.

9.2.7 REVENUE IMPACTS

The Water Authority has taken significant steps to reduce potential revenue impacts resulting from fluctuating water sales. In FY 1990, the Water Authority created a Rate Stabilization Fund (RSF) to provide funds that would mitigate the need for rate increases in the event of an unexpected decline in water sales. The RSF is structured in accordance with Board policy to maintain a minimum balance of at least 25 percent of the Water Authority's net water sales revenue. RSF is constrained by a maximum balance of 100 percent of the average annual water sales projected over a four-year period. As a result, the RSF is a crucial water rate management tool.

Additionally, on January 1, 2003, the Water Authority implemented a new rate structure that substantially increased the percentage of water revenues generated from fixed charges. This increase replaced the previous variable "postage stamp" rate, which historically generated as much as 80 percent or more of total annual revenues, with two fixed charges, and one variable rate. These new fixed charges – Customer Service and Storage – are key components to the Water Authority's future revenue stability.

9.2.8 MANDATORY WATER USE PROHIBITIONS

The Water Authority's powers to enforce restrictions on use are constrained by the provision of the County Water Authority Act, which states, "If available supplies become inadequate to fully meet the needs of its member agencies, the board shall adopt reasonable rules, regulations, and restrictions so that the available supplies are allocated among its member agencies for the greatest public interest and benefit." (West's Cal. Wat. C, Append. § 45-5, para. (11).) Pursuant to this authority, the Water Authority developed a drought management plan that includes rules and regulations for water allocation among its member agencies during a water shortage. These rules take into consideration whether its member agencies have developed shortage management plans to meet targeted reductions

in total water demand during a shortage. Because the Water Authority's member agencies, not the Water Authority, have the direct customer service relationship with water users, the member agencies have responsibility to address mandatory use prohibitions during water shortages in their individual urban water management plans.

9.2.9 PENALTIES FOR EXCESSIVE WATER USE

Should the Water Authority have to allocate imported water supplies from Metropolitan due to drought conditions, as identified in Section 5 of the Water Authority's DMP (**Appendix G**), Metropolitan can impose surcharges (penalty pricing) on water consumption in excess of the Water Authority's imported water allocation from Metropolitan. Penalties are expected to be severe, as much as three times Metropolitan's full service water rate. See **Appendix G, page D-9**, for more information on Metropolitan's Water Surplus and Drought Management Plan (WSDM Plan).

The Water Authority's Board of Directors has the authority to adjust water rates to reflect any penalties imposed by Metropolitan under Metropolitan's WSDM Plan or other allocation programs as determined necessary by the Board of Directors. Rates may also be adjusted based on any other allocation program implemented by the Water Authority as determined necessary by the Board of Directors. The Water Authority may also reduce the amount of water it allocates to a member agency if the member agency fails to adopt or implement water use restrictions.

SECTION 9.3 SUMMARY

The shortage contingency analysis included in this section and in **Appendix G** demonstrates that the Water Authority and its member agencies, through the ERP and ESP, are taking actions to prepare for and appropriately handle a catastrophic interruption of water supplies. The analysis also described the coordinated development of a DMP for the San Diego region. The DMP identifies the actions to be taken by the Water Authority to minimize the impacts of a supply shortage due to a drought and includes an allocation methodology to be used if cutbacks are necessary. The analysis and **Appendix G** address the appropriate requirements of the Act that are applicable to the Water Authority.

APPENDIX B

Excerpts from the December 2006
Master Plan for Water, Wastewater, and Recycled Water Services,
Final Draft Report (Un-annexed Area Option)
for the San Luis Rey Municipal Water District

Master Plan for Water, Wastewater and Recycled Water Services

FINAL DRAFT REPORT
(Un-annexed Area Option)

Prepared for:

San Luis Rey Municipal Water District
5328 Highway 76
Fallbrook, CA 92028

December 2006

Prepared by:
Infrastructure Engineering Corporation
717 Pier View Way
Oceanside, CA 92054

Table 4-8 – Water Demand/Wastewater Flow Projections for the SLRMWD Study Area

Area	Water EDUs	Wastewater EDUs	Water Use (gpd)	Wastewater Use (gpd)
Meadowood	1,785.0	1,165.0	892,500	291,250
Campus Park West	844.0	879.0	422,000	219,750
County of San Diego	909.7	240.9	454,850	60,213
Gregory Canyon Landfill	142.0	0.0	71,000	0
City Home	846.0	881.0	423,000	220,250
Pala Canyon	762.0	827.0	381,000	206,750
Warner Ranch	931.0	1,001.0	465,500	250,250
Pala Rey Ranch (McCarthy)*	1,320.0	1,400.0	660,000	350,000
TOTAL	***7,539.7***	***6,393.9***	***3,769,850***	***1,598,463***

*Potential Development occurring after 2010

SEE NOTE BELOW

4.3 Impacts of Recycled Water

A recycled water system analysis is provided in *Chapter 7* that addresses potential recycled water users and estimates potential recycled water demands. The development of a recycled water system within SLRMWD to serve irrigation demands could impact the recommended sizing of water supply facilities, including turnouts, storage reservoirs, pressure reducing stations and pipelines.

As the projected recycled water demands and proposed recycled water system are preliminary in nature, this Master Plan conservatively assumes that all demands outlined in the water demand projections above will be served by imported water and associated water facilities (i.e. turnouts, storage facilities, pressure reducing stations, and pipelines) have been sized accordingly.

NOTE:

3,769,850 gal/day = 4,217 acre-feet/year

$$3{,}769{,}850\,\frac{gal}{day} * \frac{ft^3}{7.49\,gal} * \frac{ac-ft}{43{,}560\,ft^3} * 365\,\frac{day}{year} = 4{,}217\,\frac{ac-ft}{year}$$

APPENDIX C

Appendix A to Official Statement
dated January 15, 2009 for $200,000,000
The Metropolitan Water District of Southern California
Water Revenue Bonds, 2008 Authorization, Series A

APPENDIX A[1]

The Metropolitan Water District of Southern California

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[1] Attached to Official Statement dated January 15, 2009, for $200,000,000 The Metropolitan Water District of Southern California Water Revenue Bonds, 2008 Authorization, Series A.

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INTRODUCTION

Formation and Purpose

The Metropolitan Water District of Southern California ("Metropolitan") is a metropolitan water district created in 1928 by vote of the electorates of eleven Southern California cities under authority of the Metropolitan Water District Act (California Statutes 1927, Chapter 429, as reenacted in 1969 as Chapter 209, as amended [herein referred to as the "Act"]). The Act authorizes Metropolitan to levy property taxes within its service area; establish water rates; impose charges for water standby and service availability; incur general obligation bonded indebtedness and issue revenue bonds, notes and short-term revenue certificates; execute contracts; and exercise the power of eminent domain for the purpose of acquiring property. In addition, Metropolitan's Board of Directors (the "Board") is authorized to establish terms and conditions under which additional areas may be annexed to Metropolitan's service area.

Metropolitan's primary purpose is to provide a supplemental supply of water for domestic and municipal uses at wholesale rates to its member public agencies. If additional water is available, such water may be sold for other beneficial uses. Metropolitan serves its member agencies as a water wholesaler and has no retail customers.

The mission of Metropolitan, as promulgated by the Board, is to provide its service area with adequate and reliable supplies of high quality water to meet present and future needs in an environmentally and economically responsible way.

Metropolitan's charges for water sales and availability are fixed by its Board, and are not subject to regulation by the California Public Utilities Commission or any other state or federal agency. Metropolitan imports water from two principal sources: northern California via the Edmund G. Brown California Aqueduct (the "California Aqueduct") of the State Water Project owned by the State of California and the Colorado River via the Colorado River Aqueduct owned by Metropolitan.

Member Agencies

Metropolitan is comprised of 26 member public agencies, including 14 cities, 11 municipal water districts, and one county water authority, which collectively serve the residents and businesses of more than 300 cities and numerous unincorporated communities. Member agencies request water from Metropolitan at various delivery points within Metropolitan's system and pay for such water at uniform rates established by the Board for each class of service. Metropolitan's water is a supplementary source of water for its member agencies. See "METROPOLITAN REVENUES—Principal Customers" for a listing of the ten member agencies with the highest water purchases from Metropolitan during the fiscal year ended June 30, 2008. No member is required to purchase water from Metropolitan. See "METROPOLITAN REVENUES—Rate Structure" and "—Member Agency Purchase Orders" for a discussion of the voluntary ten-year purchase order by which a member agency may commit to purchase water.

The following table lists the current 26 member agencies of Metropolitan.

Municipal Water Districts		Cities		County Water Authority
Calleguas	Las Virgenes	Anaheim	Los Angeles	San Diego
Central Basin	Orange County	Beverly Hills	Pasadena	
Eastern	Three Valleys	Burbank	San Fernando	
Foothill	West Basin	Compton	San Marino	
Inland Empire Utilities Agency		Fullerton	Santa Ana	
Upper San Gabriel Valley		Glendale	Santa Monica	
Western of Riverside County		Long Beach	Torrance	

Service Area

Metropolitan's service area comprises approximately 5,200 square miles and includes portions of the six counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura. When Metropolitan began delivering water in 1941, its service area consisted of approximately 625 square miles; its service area has increased by 4,575 square miles since that time. The expansion is primarily the result of annexation of the service areas of additional member agencies.

Of the total population in the six-county area, over 18 million people or 85 percent, live within Metropolitan's service area. The California Department of Finance estimates that by the year 2030 the six-county area will have a population of 27 million people, representing an increase of 5.5 million people over 2007 population levels.

The economy of Metropolitan's service area is exceptionally diverse. As measured in 2007, the economy of Metropolitan's service area has a gross domestic product larger than all but twelve nations of the world. Metropolitan provides between 40 and 60 percent of the water used within its service area in any year. For additional economic and demographic information concerning Metropolitan's service area, see Appendix E – "SELECTED DEMOGRAPHIC AND ECONOMIC INFORMATION FOR METROPOLITAN'S SERVICE AREA."

The climate in Metropolitan's service area ranges from moderate temperatures throughout the year in the coastal areas to hot and dry summers in the inland areas. Annual rainfall averages 13 to 15 inches along the coastal area, up to 20 inches in foothill areas and less than 10 inches inland. See "REGIONAL WATER RESOURCES" in this Appendix A.

METROPOLITAN'S WATER SUPPLY

Metropolitan faces a number of challenges in providing a reliable and high quality water supply for southern California. These include, among others: (1) population growth within the service area; (2) increased competition for low-cost water supplies; (3) variable weather conditions; and (4) increased environmental regulations for clean and safe drinking water. Metropolitan's resources and strategies for meeting these long-term challenges are set forth in its Integrated Water Resources Plan, as updated from time to time. (See "—Integrated Water Resources Plan" below.) Metropolitan's principal sources of water are the State Water Project and the Colorado River. Recent court decisions have restricted deliveries from the State Water Project as described below under

"METROPOLITAN'S WATER SUPPLY—State Water Project—*Endangered Species Act Considerations*." Record dry conditions in Metropolitan's service area in 2006-07, continuing dry conditions in the northern Sierra watershed for the State Water Project, including a record dry spring in 2008, and a multi-year drought in the Colorado River Basin have further affected water deliveries and storage. Programs and projects for addressing these challenges over the next five years are described under "METROPOLITAN'S WATER SUPPLY—Five-Year Supply Plan" in this Appendix A.

Integrated Water Resources Plan

Metropolitan, its member agencies, sub-agencies and groundwater basin managers developed an Integrated Water Resources Plan ("IRP") that was adopted by Metropolitan's Board of Directors (the "Board") in January 1996 as a long-term planning guideline for resources and capital investments. The purpose of the IRP was the development of a preferred resource mix (see METROPOLITAN'S WATER SUPPLY - The Preferred Resource Mix in this Appendix A) to meet the water supply reliability and water quality needs for the region in a cost-effective and environmentally sound manner.

In 2004, the Board adopted an updated IRP that reviewed the goals and achievements of the original IRP, identified changed conditions for water resource development and updated the resource targets through 2025. A key component of the updated plan was the addition of a planning buffer. The planning buffer provided for the identification of additional supplies, both imported and locally developed, to address uncertainty in future supplies and demands from factors such as the level of population and economic growth which directly drive water demands, water quality regulations, new chemicals found to be unhealthful, endangered species affecting sources of supplies, and periodic and new changes in climate and hydrology.

Metropolitan is currently in the process of working on the next IRP update, to evaluate supply reliability while incorporating changed conditions and new trends and managing uncertainties. It is expected to be completed in 2009.

The Preferred Resource Mix

Metropolitan's principal sources of water are the State Water Project and the Colorado River. The IRP's Preferred Resource Mix identifies a balance of local and imported water resources within Metropolitan's Service Area. Metropolitan expects that the resource targets and capital expenditure strategies for the Preferred Resource Mix will be continually reviewed and updated at least every five years to reflect changing demand and supply conditions.

The following paragraphs describe the elements of the Preferred Resource Mix.

State Water Project. State Water Project supplies are important for maximizing local groundwater potential and the use of recycled water since State Water Project water has a lower salinity content than Colorado River Aqueduct water and can be used to increase groundwater conjunctive use applications. See "METROPOLITAN'S WATER SUPPLY—State Water Project" in this Appendix A.

Colorado River Aqueduct. The Colorado River Aqueduct delivers water from the Colorado River, Metropolitan's original source of supply. Metropolitan has helped to fund and implement farm and irrigation district conservation programs, land management programs and water transfers and exchanges through arrangements with agricultural water districts in southern California and entities in Arizona and Nevada that use Colorado River water. See "METROPOLITAN'S WATER SUPPLY—Colorado River Aqueduct" in this Appendix A.

Water Conservation. Conservation and water use efficiency are the foundation of the IRP. Metropolitan has invested in conservation programs since the 1980's. Historically, most of the investments have been in water efficient fixtures in the residential sector. Future efforts will focus on outdoor water use, including landscaping, and commercial/industrial uses. See METROPOLITAN'S WATER SUPPLY – Water Conservation in this Appendix A.

Recycled Water. Reclaimed or recycled municipal and industrial water is not potable, but can be used for maintaining lawns, protecting groundwater basins from saltwater intrusion, industrial processes, and recharging local aquifers. Metropolitan offers financial incentives to member agencies for developing economically viable reclamation projects. See "REGIONAL WATER RESOURCES—Local Water Supplies" in this Appendix A.

Conjunctive Use. Conjunctive use entails storing surplus imported water during the winter months or wet years in local surface reservoirs and recharging local groundwater basins. This ensures that the stored supplies are available during dry months and droughts, thus increasing the supply reliability of the region. See "REGIONAL WATER RESOURCES—Local Water Supplies" and "CAPITAL INVESTMENT PROGRAM—Other Major Projects of Metropolitan's Capital Investment Plan—*Groundwater Storage Programs*" in this Appendix A.

Water Transfers. Under voluntary water transfer agreements, agricultural communities using irrigation water may periodically sell some of their water allotment to urban areas. The water is delivered through existing State Water Project or Colorado River Aqueduct facilities. Metropolitan's policy toward potential transfers states that the transfers must not harm the environment or contribute to the mining of local groundwater supplies. See "METROPOLITAN'S WATER SUPPLY—Water Transfer and Exchange Programs" in this Appendix A.

Groundwater Recovery. Natural groundwater reservoirs serve an important function as storage facilities for local and imported water. When groundwater storage becomes contaminated, water agencies have to rely more heavily on imported surface water supplies. Treatment for polluted groundwater is quite costly and poses some environmental challenges. Metropolitan offers financial incentives to help fund member agency groundwater recovery projects. See "REGIONAL WATER RESOURCES—Local Water Supplies" in this Appendix A.

Desalination. Desalination may eventually become an important component in the Preferred Resource Mix. Metropolitan has signed agreements with three of its member agencies, and is finalizing agreements with two member agencies, to provide incentives for projects targeted to produce 142,000 acre-feet of water annually through desalination of ocean water.

State Water Project

General. One of Metropolitan's two major sources of water is the State Water Project, which is owned by the State of California (the "State") and operated by the State Department of Water Resources (the "Department of Water Resources"). This project transports Feather River water stored in and released from Oroville Dam and unregulated flows diverted directly from the San Francisco Bay/Sacramento-San Joaquin River Delta ("Bay-Delta") south via the California Aqueduct to four delivery points near the northern and eastern boundaries of Metropolitan. The total length of the California Aqueduct is approximately 444 miles.

In 1960, Metropolitan signed a contract (as amended, the "State Water Contract") with the Department of Water Resources. Metropolitan is one of 29 agencies that have long-term contracts for water service from the Department of Water Resources, and is the largest agency in terms of the number of people it serves (over 18 million), the share of State Water Project water that it has contracted to receive (approximately 46 percent), and the percentage of total annual payments made to the Department of Water Resources by agencies with State water contracts (approximately 60 percent in 2007). For information regarding Metropolitan's obligations under the State Water Contract, see "METROPOLITAN EXPENDITURES—State Water Contract Obligations" in this Appendix A. Upon expiration of the State Water Contract term (currently in 2035), Metropolitan has the option to continue service under substantially the same terms and conditions. Metropolitan presently intends to exercise this option to continue service to at least 2052.

Water received from the State Water Project by Metropolitan over the past six years (2002 through 2007), including water from the water transfer, groundwater banking and exchange programs described under the heading "—Water Transfer and Exchange Programs" below, varied from a low of 1,413,322 acre-feet in calendar year 2002 to a high of 1,801,035 acre-feet in 2004. (An acre-foot is the amount of water that will cover one acre to a depth of one foot and equals approximately 326,000 gallons, which represents the needs of two average families in and around the home for one year.) Below-normal precipitation in the northern Sierra Mountains in the winter and spring of 2008, the seasons when most of the annual precipitation occurs, ended with record dry conditions during March and April of 2008. Metropolitan's allocation from the State Water Project for calendar year 2008 was 35% of its contracted-for amount, or 669,000 acre-feet. This allocation took into account the critically dry conditions in the northern Sierra Mountains and projected impacts of court-ordered restrictions, which have reduced water deliveries from the State Water Project (see "—*Endangered Species Act Considerations*" below). Metropolitan anticipates receiving approximately 1,008,000 acre-feet of water using the State Water Project's California Aqueduct in 2008, including deliveries from water transfer, groundwater banking and exchange programs. Management of the availability of State Water Project supplies through water marketing and groundwater banking plays an important role in meeting California water needs. See "—Water Transfer and Exchange Programs" in this Appendix A.

Due to these drought conditions and the court-ordered restrictions described below, on June 4, 2008, California Governor Arnold Schwarzenegger issued an Executive Order (the "Executive Order") proclaiming a condition of statewide drought. The Governor followed the Executive Order with a Proclamation of a State of Emergency (the "Proclamation") in nine counties (Sacramento, San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern) on June 12, 2008, to avert severe impacts to these agricultural areas from drought conditions and from reduced deliveries from

the federal Central Valley Project announced by the United States Bureau of Reclamation (the "Bureau of Reclamation"). The Proclamation directs the Department of Water Resources and other State agencies to provide relief for the nine counties.

The State Water Contractors, a California nonprofit corporation formed by agencies contracting with the Department of Water Resources for water from the State Water Project (the "State Water Contractors"), including Metropolitan, worked with the Department of Water Resources, Bureau of Reclamation and Central Valley Project contractors on actions to help implement the Executive Order and Proclamation, while protecting water quality in the California Aqueduct, and to shift water deliveries to San Joaquin Valley farmers in the summer months, while providing for the delivery of State Water Project allocations to Metropolitan and other contractors by the end of calendar year 2008. Metropolitan is unable at this time to assess all of the future impacts of the Executive Order and the Proclamation on its State Water Project supplies, although the Department of Water Resources will deliver all of Metropolitan's 2008 State Water Project allocation in 2008.

The Department of Water Resources announced its initial allocation to State Water Project contractors for 2009 of 15% of their contracted for amounts on October 30, 2008. This allocation reflects low carryover storage levels in State Water Project reservoirs, ongoing drought and court-ordered restrictions on water deliveries from the Bay-Delta to protect Delta smelt, as described under "—State Water Project Operational Constraints" in this Appendix A. Under a 15% allocation, Metropolitan would receive 287,000 acre-feet of water from the State Water Project. The Department of Water Resources will revisit the initial allocation as conditions change during the winter and spring and may increase the allocation as precipitation occurs.

Endangered Species Act Considerations

General. The listing of several fish species as threatened or endangered under the federal and/or California Endangered Species Acts (respectively, the "Federal ESA" and the "California ESA" and, collectively, the "ESAs") have impacted State Water Project operations and limited the flexibility of the State Water Project. An annual environmental water account established under the CALFED Bay-Delta Program as a means of meeting environmental flow requirements and export limitations has helped to mitigate these impacts. Currently, five species (the winter-run and spring-run Chinook salmon, Delta smelt, North American green sturgeon and Central Valley steelhead) are listed under the ESAs. In addition, in February 2008 the California Fish and Game Commission listed the longfin smelt as a candidate species for protection under the California ESA. Protective measures adopted by the Fish and Game commission for the longfin smelt are described under *"– State Water Project Operational Constraints"* below. The San Francisco Bay Institute, Center for Biological Diversity and Natural Resources Defense Council have also petitioned to list the longfin smelt for protection under the Federal ESA. The United States Fish and Wildlife Service announced in May 2008 that it will consider the Delta's longfin smelt population for such listing.

The Federal ESA requires that before any federal agency authorizes funds or carries out an action it must consult with the appropriate federal fishery agency to determine whether the action would jeopardize the continued existence of any threatened or endangered species, or adversely modify habitat critical to the species' needs. The result of the consultation is known as a "biological opinion." In the biological opinion the federal fishery agency determines whether the action would

cause jeopardy to a threatened or endangered species or adverse modification to critical habitat and recommends reasonable and prudent alternatives or measures that would allow the action to proceed without causing jeopardy or adverse modification. The biological opinion also includes an "incidental take statement." The incidental take statement allows the action to go forward even though it will result in some level of "take," including harming or killing some members of the species, incidental to the agency action, provided that the agency action does not jeopardize the continued existence of any threatened or endangered species and complies with reasonable mitigation and minimization measures recommended by the federal fishery agency. The United States Fish and Wildlife Service and National Marine Fisheries Service have issued biological opinions and incidental take statements that govern operations of the State Water Project and Central Valley Project with respect to the Delta smelt, the winter-run and spring-run Chinook salmon and the Central Valley steelhead. An additional biological opinion will be required for the North American green sturgeon, which was listed in April 2006. The Bureau of Reclamation initiated consultations with the United States Fish and Wildlife Service and National Marine Fisheries Service for new biological opinions with respect to the coordinated operations of the State Water Project and Central Valley Project in July 2006, following the filing of the challenges to the biological opinions and incidental take statements described under "*Federal ESA Litigation*" below.

Under the Federal ESA, critical habitat also must be designated for each listed species. Critical habitat has been designated for each of the listed species except for the green sturgeon. On September 8, 2008, the National Marine Fisheries Service issued its proposed rule designating habitat for the green sturgeon. The proposal includes as part of the designated habitat the lower Feather River, which could have an impact on State Water Project operations. The extent of any such impacts cannot be determined at this time.

Federal ESA Litigation. Litigation filed by several environmental interest groups *(NRDC v. Kempthorne; Pacific Coast Federation of Fishermen's Associations v. Gutierrez)* in the United States District Court for the Eastern District of California alleges that these biological opinions and incidental take statements inadequately analyzed impacts on listed species under the Federal ESA. On May 25, 2007, Federal District Judge Wanger issued a decision on summary judgment in *NRDC v. Kempthorne*, finding the United States Fish and Wildlife Service's biological opinion for Delta smelt to be invalid. On December 14, 2007, Judge Wanger issued his Interim Remedial Order and Findings of Fact and Conclusions of Law requiring that the State Water Project and Central Valley Project operate according to certain specified criteria until a new biological opinion for the Delta smelt is issued. Under the Interim Remedial Order, State Water Project operations were constrained in the winter and spring of 2007-08 by prevailing conditions and the status of the Delta smelt. Export restrictions during the winter and spring of 2007-08 reduced State Water Project deliveries to Metropolitan by approximately 250,000 acre-feet. The United States Fish and Wildlife Service released the new biological opinion on December 15, 2008. Based on the Water Allocation Analysis released by the Department of Water Resources on December 19, 2008, which analyzed the biological opinion's effects on State Water Project operations, export restrictions under median hydrologic conditions could reduce deliveries to Metropolitan by 300,000 to 700,000 acre-feet for 2009.

The plaintiffs' motion for summary judgment in *Pacific Coast Federation of Fishermen's Associations v. Gutierrez*, which challenges the National Marine Fisheries Service's Biological Opinion for the salmon and other fish species that spawn in rivers flowing into the Bay-Delta, was

argued before Judge Wanger on October 3, 2007. On April 16, 2008, Judge Wanger issued his summary judgment ruling invalidating the biological opinion for these salmonid species. Among other things, the court's summary judgment found that the no-jeopardy conclusions in the biological opinion were inconsistent with some of the factual findings in the biological opinion; that the biological opinion failed to adequately address the impacts of State Water Project and Central Valley Project operations on critical habitat and that there was a failure to consider how climate change and global warming might affect the impacts of the projects on salmonid species. Judge Wanger began a multi-day hearing on June 6, 2008 to evaluate the status of the salmonid species, and determine if a more extensive proceeding on interim remedies should be commenced. In July 2008, Judge Wanger issued a decision on the interim remedy proceeding, denying plaintiffs' requests for immediate modifications to certain Central Valley Project operations. However, the judge found that the project operators had failed to demonstrate that interim operation of the projects would not threaten irreparable harm, and thus continued the interim remedy proceeding on this issue. The court has indicated that it will consider the plaintiffs' requests for project operational changes, including restrictions on project exports from the Bay-Delta, if the plaintiffs file a motion seeking that relief. To date, the plaintiffs have not filed such a motion. If there are project operational changes as a result of such a motion, it may affect the volume and timing of exports from the State Water Project. Currently, the new biological opinion for salmonid species is due for release on March 2, 2009. Any interim remedy for salmonids that might include export restrictions would probably be in effect only until the new salmonid biological opinion is issued on March 2, 2009.

California ESA Litigation. In addition to the litigation under the Federal ESA, other environmental groups sued the Department of Water Resources on October 4, 2006 in the Superior Court of the State of California for Alameda County alleging that the Department of Water Resources was "taking" listed species without authorization under the California ESA. This litigation *(Watershed Enforcers, a project of the California Sportfishing Protection Alliance v. California Department of Water Resources)* requests that the Department of Water Resources be mandated to either cease operation of the State Water Project pumps, which deliver water to the California Aqueduct, in a manner that results in such "taking" of listed species or obtain authorization for such "taking" under the California ESA. On April 18, 2007, the Alameda County Superior Court issued its Statement of Decision in *Watershed Enforcers v. California Department of Water Resources*. The Statement of Decision finds that the Department of Water Resources is illegally "taking" listed fish through operation of the State Water Project export facilities. The Superior Court ordered the Department of Water Resources to "cease and desist from further operation" of those facilities within 60 days unless it obtains take authorization from the California Department of Fish and Game.

The Department of Water Resources appealed the Alameda County Superior Court's order on May 7, 2007. This appeal stays the order pending the outcome of the appeal. Also on May 7, 2007, the Department of Water Resources executed a memorandum of understanding with the California Department of Fish and Game to assist in reinitiated consultations with the United States Fish and Wildlife Service and National Marine Fisheries Service for new biological opinions on the coordinated operations of the State Water Project and Central Valley Project as they relate to the listed species of fish. In the memorandum of understanding, the Department of Water Resources and the California Department of Fish and Game agreed that the biological assessment and resulting biological opinions under the Federal ESA should be developed to include State Water Project operations that are consistent with the California ESA. After the new biological opinions and

incidental take statements for the listed species of fish are completed, the Department of Water Resources is expected to apply to the Department of Fish and Game for a consistency determination under the California ESA based on the new biological opinions and incidental take statements. On motion of all parties, the Court of Appeal has stayed the appeal until July 31, 2009. This stay is intended to allow time for the Department of Water Resources to obtain a consistency determination under the California ESA before the Court of Appeal decides the appeal.

State Water Project Operational Constraints. The Department of Water Resources has altered the operations of the State Water Project to accommodate species of fish listed under the ESAs. These changes in project operations have affected the manner in which water is diverted from the Bay-Delta and State Water Project deliveries. Restrictions on Bay-Delta pumping under the Interim Remedial Order in *NRDC v. Kempthorne* reduced deliveries of State Water Project water to Metropolitan by approximately 250,000 acre-feet in the winter and spring of 2007-08. The initial allocation to State Water Project contractors for 2009 of only 15% of their contracted amounts, announced by the Department of Water Resources on October 30, 2008, is based on its conservative projection of hydrology, continuing export restrictions to protect Delta smelt and 2009 contractor demands. The Department of Water Resources may revisit the allocation as conditions change during the winter and spring and may increase the allocation as precipitation occurs. Under a 15% allocation, Metropolitan would receive 287,000 acre-feet of water from the State Water Project.

On February 14, 2008, the California Fish and Game Commission, pursuant to its authority under the California ESA, adopted an emergency regulation authorizing the incidental take of longfin smelt by certain activities, including operation of the State Water Project. The longfin smelt is listed as a candidate species for protection under the California ESA. The Fish and Game Commission's emergency regulation includes measures for the protection of adult, larval and juvenile longfin smelt, which will be in effect until the Fish and Game Commission makes a final listing decision on the longfin smelt, which is expected in March 2009. On November 14, 2008, the Fish and Game Commission adopted a revised version of its emergency take regulation which contains new protective measures for longfin smelt. These protective measures may affect the operation of the State Water Project, and will be in effect from December 2008 through February 2009. Under the regulation, the Director of the Department of Fish and Game has ultimate authority to decide what protective measures to impose based upon real-time evidence of various conditions that exist during these months. The impact of the protective measures on project exports are unknown at this time, and depend upon future conditions and the exercise of discretion by the Director of the Department of Fish and Game. Assuming the imposition of the most protective of the possible measures during the maximum period of time that those measures may be imposed, the Department of Water Resources estimates that the protective measures could reduce State Water Project exports by 310,000 acre-feet to 700,000 acre-feet depending upon water-year conditions. Petitions for writs of mandate challenging the longfin smelt take regulation were filed on December 8, 2008 in Los Angeles County Superior Court by the State Water Contractors, federal Central Valley Project contractors and Kern County Water Agency. Motions for preliminary injunctions to enjoin enforcement of the longfin regulation were filed on December 29, 2008 and are currently set for hearing on January 28, 2009.

Operational constraints likely will continue until a long-term solution to the problems in the Bay-Delta is identified and implemented. The Delta Vision process, established by Governor Schwarzenegger, is aimed at identifying long-term solutions to the conflicts in the Bay-Delta,

including natural resource, infrastructure, land use and governance issues. In addition, state and federal resource agencies and various environmental and water user entities are currently engaged in the development of the Bay-Delta Conservation Plan (the "Bay-Delta Conservation Plan"), which is aimed at addressing ecosystem needs and securing long-term operating permits for the State Water Project. These efforts are described under "*—Bay-Delta Regulatory and Planning Activities*" below.

Other issues, such as the recent decline of some fisheries in the Delta and surrounding regions and certain operational actions in the Delta, may significantly reduce Metropolitan's water supply from the Delta. State Water Project operational requirements may be further modified through the consultation process for new biological opinions for listed species under the Federal ESA or by the California Department of Fish and Game's actions regarding a consistency determination under the California ESA. No assurances can be given as to whether or when new biological opinions or a consistency determination will be issued under the Federal ESA and California ESA, what the content of those opinions and determinations might be and how they might affect State Water Project and Central Valley Project operations, whether the Interim Remedial Order in *NRDC v. Kempthorne* may be modified, or whether appeal of the Alameda Superior Court ruling in the *Watershed Enforcers* litigation will be stayed until the consistency determination is obtained. In addition, success by plaintiffs in the recently-filed C-WIN litigation (see *"–Bay-Delta Regulatory and Planning Activities"* below) could result in additional restrictions on State Water Project and Central Valley Project operations. Decisions in these cases or future litigation, listings of additional species (such as the longfin smelt) or new regulatory requirements could adversely affect State Water Project operations in the future by requiring additional export reductions, releases of additional water from storage or other operational changes impacting water supply operations. Metropolitan cannot predict the ultimate outcome of any of the litigation or regulatory processes described above at this time or whether such outcome will result in any materially adverse impact on the operation of the State Water Project pumps, Metropolitan's State Water Project supplies or Metropolitan's water reserves.

"Area of Origin" Litigation. Four State Water Project contractors located north of the State Water Project's Bay-Delta pumping plant filed litigation against the Department of Water Resources on July 17, 2008, asserting that since they are located in the "area of origin" of State Water Project water they are entitled to receive their entire contract amount before any water is delivered to contractors south of the Bay-Delta. If the plaintiffs are successful in this litigation, State Water Project water available to Metropolitan in a drought period could be reduced by approximately 25,000 acre-feet each year or by as much as 40,000 acre-feet in an exceedingly dry year. Metropolitan and other State Water Project contractors located south of the Bay-Delta will move to intervene in this litigation.

Bay-Delta Regulatory and Planning Activities. The State Water Resources Control Board ("SWRCB") is the agency responsible for setting water quality standards and administering water rights throughout California. Decisions of the SWRCB can affect the availability of water to Metropolitan and other users of State Water Project water. The SWRCB exercises its regulatory authority over the Bay-Delta by means of public proceedings leading to regulations and decisions. These include the Bay-Delta Water Quality Control Plan ("WQCP"), which establishes the water quality objectives and proposed flow regime of the estuary, and water rights decisions, which assign responsibility for implementing the objectives of the WQCP to users throughout the system by

adjusting their respective water rights. The SWRCB is required by law to periodically review its WQCP to ensure that it meets the changing needs of this complex system.

Since 2000, SWRCB's Water Rights Decision 1641 ("D-1641") has governed the State Water Project's ability to export water from the Bay-Delta for delivery to Metropolitan and other agencies receiving water from the State Water Project. D-1641 allocated responsibility for meeting flow requirements and salinity and other water quality objectives established earlier by the WQCP. D-1641 was challenged in a dozen lawsuits, filed primarily by Bay-Delta interests and environmental groups. These cases were consolidated in a single action. D-1641 was, for the most part, affirmed by the California Court of Appeal in the *State Water Resources Control Board Cases* in February 2006. The Court of Appeal decision stated that the "public trust doctrine" does not mandate a preference for environmental purposes, but requires a balancing of competing interests; recognized the dual importance of the State Water Project to provide adequate supply and water quality for the Bay-Delta as well as export supplies; and held that determining the appropriate levels of water supply and Bay-Delta water quality requires a "balancing of all relevant factors and all of the competing interests in the water that flows through the Delta." The Court of Appeal held that SWRCB appropriately weighed that balance in adopting D-1641, although it returned D-1641 to SWRCB to reconsider its allocation of responsibility for implementation of two of the water quality objectives under the WQCP. The California Supreme Court denied petitions for review of the Court of Appeal's decision. In December 2006, SWRCB adopted limited amendments to D-1641 to cure the two issues identified by the Court of Appeal (the flow regime for salmon and deferral of a salinity objective to protect Bay-Delta agriculture). SWRCB also identified additional issues to review, which could result in future changes in water quality objectives and flows that could affect exports of water from the State Water Project.

Plaintiffs California Water Impact Network ("C-WIN") and California Sportfishing Protection Alliance filed a complaint in Sacramento Superior Court on December 1, 2008, that appears to raise several of the claims that were unsuccessfully asserted in the *State Water Resources Control Board Cases*. This action, *California Water Impact Network et al. v. Department of Water Resources, State Water Resources Control Board and U.S. Bureau of Reclamation*, alleges that State Water Project and Central Valley Project operations violate the "public trust doctrine" because increased exports have resulted in decreased fish populations; are unreasonable methods of diversions and use of water; violate the California Fish and Game Code requirement to leave sufficient water in the rivers below project dams; and have not complied with water quality objectives. This complaint seeks an order enjoining the Department of Water Resources and the Bureau of Reclamation from exporting water from the Bay-Delta and enjoining SWRCB from allowing the projects to export water until project operations comply with State law. Metropolitan is reviewing the complaint to determine how best to respond to this litigation in order to protect Metropolitan's State Water Project supply.

The CALFED Bay-Delta Program is a collaborative effort among 23 State and Federal agencies to improve water supplies in California and the health of the Bay-Delta watershed. On August 28, 2000, the federal government and the State issued a Record of Decision ("ROD") and related documents approving the final programmatic environmental documentation for the CALFED Bay-Delta Program. The ROD includes, among other things, pledges to restore the Bay-Delta ecosystem, improve water quality, enhance water supply reliability, and assure long-term protection for Bay-Delta levees. (See "METROPOLITAN'S WATER DELIVERY SYSTEM—Seismic

Considerations—*State Water Project Facilities*" in this Appendix A.) Three lawsuits were filed in the fall of 2000 challenging the sufficiency of the CALFED Bay-Delta Program Environmental Impact Report ("EIR") under the California Environmental Quality Act ("CEQA"). The EIR was upheld by the trial court, but invalidated by the Court of Appeal largely because the CALFED agencies failed to consider a project alternative of reducing exports from the Bay-Delta that, in the Court of Appeal's view, was feasible because it would curb population growth in southern California. On June 5, 2008, the California Supreme Court found that an EIR is not required to consider an alternative which does not meet the basic project objectives and ruled that the CALFED EIR fully complied with CEQA. The Supreme Court also found that the Court of Appeal erred in not distinguishing between pre-existing environmental problems in the Bay-Delta on one hand and the environmental effects of the CALFED Bay-Delta Program on the other. While recognizing that reducing exports may help address the Bay-Delta's existing environmental problems, the Supreme Court held that addressing existing problems was not the proper role for CEQA's alternatives.

Implementation of the CALFED Bay-Delta Program has resulted in an investment of $3 billion on a variety of projects and programs to begin addressing the Bay-Delta's water supply, water quality, ecosystem, and levee stability problems. To guide future development of the CALFED Bay-Delta Program and identify a strategy for managing the Delta as a sustainable resource, in September 2006, Governor Schwarzenegger established by Executive Order a Delta Vision process. The Delta Vision process is tied to legislation that created a cabinet-level committee tasked with developing a Strategic Vision for the Delta. The 41-member Delta Vision Blue Ribbon Task Force issued its Delta Vision Strategic Plan (the "Strategic Plan") on October 17, 2008, providing its recommendations for long-term sustainable management of the Bay-Delta. The Strategic Plan now is being reviewed by the Delta Vision Committee, chaired by the State Secretary for Resources, which was scheduled to provide its recommendations to the Governor by the end of 2008 for development of implementing legislation. A draft discussion document summarizing potential Delta Vision Committee recommendations was released on November 25, 2008. These recommendations include completing the Bay-Delta Conservation Plan and associated environmental assessments to permit ecosystem revitalization and conveyance water improvements, identifying and reducing stressors to the Bay-Delta ecosystem, strengthening levees, increasing emergency preparedness, continuing funding for the CALFED ecosystem restoration program, updating Bay-Delta regulatory flow and water quality standards to protect beneficial uses of water and continuing to work with the State Legislature on a comprehensive water bond package to fund Bay-Delta infrastructure projects. The Bay-Delta Conservation Plan is scheduled for completion during the third quarter of 2009, with acquisition of appropriate permits and completion of the associated environmental impact statement/impact report commencing thereafter.

Monterey Agreement Litigation. On September 15, 2000, the Third District Court of Appeal for the State of California issued its decision in *Planning and Conservation League; Citizens Planning Association of Santa Barbara County and Plumas County Flood Control District v. California Department of Water Resources and Central Coast Water Authority*. This case was an appeal of a challenge to the adequacy of the environmental documentation prepared with respect to certain amendments to the State Water Contract (the "Monterey Agreement") which reflect the settlement of disputes regarding the allocation of State Water Project water. The Court of Appeal held that the environmental documentation was defective in failing to analyze the environmental effects of the Monterey Agreement's elimination of the permanent shortage provisions of the State Water Contract. Metropolitan intervened in the case in order to fully participate in the issues before

the trial court. The parties negotiated a settlement agreement in the fall of 2002. All parties to the litigation and all 29 agencies that have long-term contracts for water service with the Department of Water Resources executed the settlement agreement, which allows continued operation of the State Water Project under the Monterey Agreement principles while a new environmental impact report is being prepared. A draft EIR was issued for public review in October 2007. The public comment period has concluded and the final EIR is expected to be available in early 2009.

Colorado River Aqueduct

General. The Colorado River was Metropolitan's original source of water after Metropolitan's establishment in 1928. Metropolitan has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior. Water from the Colorado River or its tributaries is also available to other users in California, as well as users in the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming (the "Colorado River Basin States"), resulting in both competition and the need for cooperation among these holders of Colorado River entitlements. In addition, under a 1944 treaty, Mexico has an allotment of 1.5 million acre-feet of Colorado River water annually except in the event of extraordinary drought, or serious accident to the delivery system in the United States, when the water allotted to Mexico would be curtailed. Mexico also can schedule delivery of an additional 200,000 acre-feet of Colorado River water per year if water is available in excess of the requirements in the United States and the 1.5 million acre-feet allotted to Mexico.

The Colorado River Aqueduct, which is owned and operated by Metropolitan, transports water from the Colorado River approximately 242 miles to its terminus at Lake Mathews in Riverside County. After deducting for conveyance losses and considering maintenance requirements, up to 1.2 million acre-feet of water a year may be conveyed through the Colorado River Aqueduct to Metropolitan's member agencies, subject to availability of Colorado River water for delivery to Metropolitan as described below.

California is apportioned the use of 4.4 million acre-feet of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to but not used by Arizona and Nevada when such supplies have been requested for use in California. Under the 1931 priority system that has formed the basis for the distribution of Colorado River water made available to California, Metropolitan holds the fourth priority right to 550,000 acre-feet per year. This is the last priority within California's basic apportionment of 4.4 million acre-feet. In addition, Metropolitan holds the fifth priority right to 662,000 acre-feet of water, which is in excess of California's basic apportionment. See the table "PRIORITIES UNDER THE 1931 CALIFORNIA SEVEN-PARTY AGREEMENT" below. Until 2002, Metropolitan had been able to take full advantage of its fifth priority right as a result of the availability of surplus water and apportioned but unused water. However, Arizona and Nevada increased their use of water from the Colorado River, leaving no unused apportionment available for California in 2002. In addition, a severe drought in the Colorado River Basin has reduced storage in system reservoirs. Prior to 2003, Metropolitan could divert over 1.2 million acre-feet in any year, but since that time, Metropolitan's deliveries of Colorado River water varied from a low of 633,000 acre-feet in 2006 to a high of approximately 905,000 acre-feet in 2008. Average annual net deliveries for 2003 through 2008 were approximately 762,000 acre-feet, with annual volumes dependent on availability of

unused higher priority agricultural water and increasing transfers of conserved water. See "—*Quantification Settlement Agreement*" and "—*Interim Surplus Guidelines*" below.

PRIORITIES UNDER THE 1931 CALIFORNIA SEVEN-PARTY AGREEMENT[1]

Priority	Description	Acre-Feet Annually
1	Palo Verde Irrigation District gross area of 104,500 acres of land in the Palo Verde Valley	3,850,000
2	Yuma Project in California not exceeding a gross area of 25,000 acres in California	
3(a)	Imperial Irrigation District and other lands in Imperial and Coachella Valleys[2] to be served by All-American Canal	
3(b)	Palo Verde Irrigation District - 16,000 acres of land on the Lower Palo Verde Mesa	
4	Metropolitan Water District of Southern California for use on the coastal plain	550,000
	SUBTOTAL	4,400,000
5(a)	Metropolitan Water District of Southern California for use on the coastal plain	550,000
5(b)	Metropolitan Water District of Southern California for use on the coastal plain[3]	112,000
6(a)	Imperial Irrigation District and other lands in Imperial and Coachella Valleys to be served by the All American Canal	300,000
6(b)	Palo Verde Irrigation District - 16,000 acres of land on the Lower Palo Verde Mesa	
	TOTAL	5,362,000
7	Agricultural use in the Colorado River Basin in California	Remaining surplus

Source: Metropolitan.

(1) Agreement dated August 18, 1931, among Palo Verde Irrigation District, Imperial Irrigation District, Coachella Valley County Water District, Metropolitan, the City of Los Angeles, the City of San Diego and the County of San Diego. These priorities were memorialized in the agencies' respective water delivery contracts with the Secretary of the Interior.

(2) The Coachella Valley Water District serves Coachella Valley.

(3) In 1946, the City of San Diego, the San Diego County Water Authority, Metropolitan and the Secretary of the Interior entered into a contract that merged and added the City and County of San Diego's rights to storage and delivery of Colorado River water to the rights of Metropolitan.

Metropolitan has taken steps to augment its share of Colorado River water through agreements with other agencies that have rights to use such water. Under a 1988 water conservation agreement (the "1988 Conservation Agreement") between Metropolitan and the Imperial Irrigation District ("IID"), IID has constructed and is operating a number of conservation projects that are currently conserving 105,000 acre-feet of water per year. In 2008, the conserved water augmented the amount of water available to Metropolitan by 89,000 acre-feet and, by separate agreement, to the Coachella Valley Water District ("CVWD") by 16,000 acre-feet.

In 1992, Metropolitan entered into an agreement with the Central Arizona Water Conservation District ("CAWCD") to demonstrate the feasibility of CAWCD storing Colorado River water in central Arizona for the benefit of an entity outside of the State of Arizona. Pursuant to this agreement, CAWCD created 80,909 acre-feet of long-term storage credits that may be recovered by CAWCD for Metropolitan. Metropolitan, the Arizona Water Banking Authority, and CAWCD executed an amended agreement for recovery of these storage credits in December 2007. In 2007, 16,804 acre-feet were recovered. Metropolitan anticipates recovery of as much as 28,600 acre-feet in 2008, has requested the recovery of 30,000 acre-feet for 2009, and expects to request the balance of the storage credits in 2010. Water recovered by CAWCD under the terms of the 1992 agreement allows CAWCD to reduce its use of Colorado River water, resulting in Arizona having an unused apportionment. The Secretary of the Interior is making this unused apportionment available to Metropolitan under its Colorado River water delivery contract.

Metropolitan and the Palo Verde Irrigation District ("PVID") signed the program agreement for a Land Management, Crop Rotation and Water Supply Program in August 2004. This program provides up to 118,000 acre-feet of water available to Metropolitan in certain years. The term of the program is 35 years. Fallowing of approximately 20,000 acres of land began on January 1, 2005. In 2005, 2006 and 2007, approximately 108,700 acre-feet, 105,500, and 72,300 acre-feet, respectively, of water were saved. Metropolitan's fallowing call is estimated to save 82,000 acre-feet in 2008 and 118,000 acre-feet in 2009.

In April 2008, Metropolitan's Board authorized the expenditure of $28.7 million to join the CAWCD and the Southern Nevada Water Authority ("SNWA") in funding the construction of a new 8,000 acre-foot off-stream regulating reservoir near Drop 2 of the All-American Canal in Imperial County. The reservoir is under construction by the Bureau of Reclamation and is anticipated to be completed in late 2010. The Drop 2 Reservoir is expected to save up to 70,000 acre-feet of water per year by capturing and storing water that would otherwise be lost. In return for its funding, Metropolitan received 100,000 acre-feet of water that is stored in Lake Mead until recovered, with annual delivery of up to 34,000 acre-feet of water through 2010 and up to 25,000 acre-feet between 2011 and 2036. Besides the additional water supply, the new reservoir will add to the flexibility of Colorado River operations.

Management of California's Colorado River Water Supply. With Arizona's and Nevada's increasing use of their respective apportionments and the uncertainty of continued Colorado River surpluses, in 1997 the Colorado River Board of California, in consultation with Metropolitan, IID, PVID, CVWD, the Los Angeles Department of Water and Power and the San Diego County Water Authority ("SDCWA"), embarked on the development of a plan for reducing California's use of Colorado River water to its basic apportionment of 4.4 million acre-feet when use of that basic allotment is necessary ("California Plan"). In 1999, IID, CVWD, Metropolitan and the State of

California agreed to a set of Key Terms aimed at managing California's Colorado River supply. These Key Terms were incorporated into the Colorado River Board's May 2000 California Plan that proposed to optimize the use of the available Colorado River supply through water conservation, transfers from higher priority agricultural users to Metropolitan's service area and storage programs.

Quantification Settlement Agreement. Many of the core elements of the California Plan are being put into effect under the October 2003 Quantification Settlement Agreement (the "QSA") executed by CVWD, IID and Metropolitan. The QSA establishes Colorado River water use limits for IID, CVWD and Metropolitan, provides for specific acquisitions of conserved water and water supply arrangements for up to 75 years, and restores the opportunity for Metropolitan to receive any "special surplus water" under the Interim Surplus Guidelines. (See "*–Interim Surplus Guidelines*" below.) The QSA also allows Metropolitan to enter into other cooperative Colorado River supply programs. Related agreements modify existing conservation and cooperative water supply agreements consistent with the QSA, and set aside several disputes among California's Colorado River water agencies.

Specific programs undertaken under the QSA include lining portions of the All-American and Coachella Canals, which is projected to conserve 100,000 acre-feet annually. As a result, 84,000 acre-feet of conserved water is projected to be delivered to SDCWA by exchange with Metropolitan and 16,000 acre-feet is projected to be delivered for the benefit of the San Luis Rey Settlement Parties by exchange under a water rights settlement annually. An amendment to the 1988 Conservation Agreement and the associated 1989 Approval Agreement extended the term of the 1988 Conservation Agreement and limited the amount of water used by CVWD to 20,000 acre-feet. By 2021, the transfer of water conserved annually by IID to SDCWA will reach 200,000 acre-feet (see discussion below under the caption "*–Sale of Water by the Imperial Irrigation District to San Diego County Water Authority*"). With full implementation of the programs identified in the QSA, at times when California is limited to its basic apportionment of 4.4 million acre-feet per year, Metropolitan expects to be able to annually divert to its service area 852,000 acre-feet of Colorado River water plus any unused agricultural water that may be available, as was the case from 2003 through 2005. This is further augmented by the PVID program, which provides up to 118,000 acre-feet of water per year. (Amounts of Colorado River water received by Metropolitan in 2003 through 2008 are discussed under the heading "–Colorado River Aqueduct–*General"* above.)

A complicating factor in completing the QSA was the fate of the Salton Sea. The Salton Sea is an important habitat for a wide variety of fish-eating birds as a stopover spot along the Pacific flyway. Some of these birds are listed as threatened or endangered species under the State and Federal ESAs. Located at the lowest elevations of an inland basin and fed primarily by agricultural drainage with no outflows other than evaporation, the Salton Sea is trending towards hyper-salinity, which has already impacted the Salton Sea's fishery. This fishery has historically been suitable habitat for the fish-eating birds. The transfer of water from IID to SDCWA, one of the core programs implemented under the QSA, would reduce the volume of agricultural run-off from IID into the Salton Sea, which in turn would accelerate this natural trend of the Salton Sea to hyper-salinity. See "*–Sale of Water by the Imperial Irrigation District to San Diego County Water Authority*" below. The appropriate mitigation for impacts to the Salton Sea from the IID-SDCWA transfer and the larger issue of Salton Sea restoration was addressed by State legislation implementing the QSA. In passing that legislation, the Legislature committed the State to undertake restoration of the Salton Sea ecosystem. Restoration of the Salton Sea is subject to selection and

approval of an alternative by the Legislature and funding of the associated capital improvements and operating costs. The Secretary for the California Resources Agency submitted an $8.9-billion preferred alternative for restoration of the Salton Sea to the Legislature in May 2007. While withholding authorization of the preferred alternative, in August 2008 the Legislature appropriated funds from Proposition 84 to undertake demonstration projects and investigations called for in the Secretary's recommendation. The QSA implementing legislation also established the Salton Sea Restoration Fund, which will be funded in part by payments made by the parties to the QSA and fees on certain water transfers among the parties to the QSA. Under the QSA agreements Metropolitan will pay $20 per acre-foot into the Salton Sea Restoration Fund for any special surplus Colorado River water that Metropolitan elects to take under the Interim Surplus Guidelines. Metropolitan also agreed to acquire up to 1.6 million acre-feet of water conserved by IID, excluding water transferred from IID to SDCWA (see "*—Sale of Water by the Imperial Irrigation District to San Diego County Water Authority*" below), if such water can be transferred consistent with plans for Salton Sea restoration, at an acquisition price of $250 per acre-foot (in 2003 dollars), with net proceeds to be deposited into the Salton Sea Restoration Fund. No conserved water has been made available to Metropolitan under this program. Metropolitan may receive credit for the special surplus water payments against future contributions for the Lower Colorado River Multi-Species Conservation Program (see "*—Environmental Considerations*" below). In consideration of these agreements, Metropolitan will not have or incur any liability for restoration of the Salton Sea. As part of an effort to mitigate the effects of the drought in the Colorado River Basin that began in 2000, Metropolitan elected not to take delivery of special surplus Colorado River water that was available from October 2003 through 2004 and from 2006 through 2007. No special surplus water is available in 2008.

Sale of Water by the Imperial Irrigation District to San Diego County Water Authority. On April 29, 1998, SDCWA and IID executed an agreement ("Transfer Agreement") for SDCWA's purchase from IID of Colorado River water delivered to IID. An amended Transfer Agreement, executed as one of the QSA agreements, set the maximum transfer amount at 205,000 acre-feet in 2021, with the transfer gradually ramping up to that amount over an approximately twenty-year period and then declining to 200,000 acre-feet per year beginning in 2023.

No facilities exist to deliver water directly from IID to SDCWA. Under the Transfer Agreement, conserved water from IID is delivered to SDCWA through existing facilities owned by Metropolitan. Metropolitan and SDCWA entered into an exchange contract that provides for conserved Colorado River water acquired by SDCWA from IID and water conserved from lining the All-American and Coachella Canals to be made available to Metropolitan for diversion at Lake Havasu. By exchange from the sources of water available to Metropolitan, an equal volume of water is delivered to SDCWA through Metropolitan's distribution system. The price payable by SDCWA for these deliveries is calculated using the charges set by Metropolitan's Board from time to time that are applicable to the conveyance of water by Metropolitan on behalf of its member agencies. See "METROPOLITAN REVENUES–Wheeling Charges" in this Appendix A. In 2007 a total of 73,125 acre-feet were delivered to SDCWA under the exchange contract, consisting of 50,000 acre-feet from IID and 23,125 acre-feet as a result of the completion of the Coachella Canal lining project. The same amounts are anticipated to be delivered in 2008, plus another 7,000 acre-feet that may become available from the All-American Canal lining project. Total 2009 exchange deliveries are projected to reach nearly 120,000 acre-feet.

QSA Related Litigation. On November 5, 2003, IID filed a validation action in Imperial County Superior Court, seeking a judicial determination that thirteen agreements associated with the IID/SDCWA water transfer and the QSA are valid, legal and binding. Other lawsuits also were filed challenging the execution, approval and subsequent implementation of the QSA on various grounds including failure to comply with CEQA, violations of the Water Code, breach of trust and fiduciary duties, unconstitutional taking of property rights, and deprivation of federal civil rights under 42 U.S.C. section 1983. Metropolitan filed an answer in IID's validation proceeding, and has been named as a defendant/respondent/cross-defendant in certain cases pertaining to the QSA and its related agreements. All of the QSA cases have been coordinated in Sacramento Superior Court. Two rounds of pleading challenges that ended in January 2005 narrowed the cases and claims in the coordinated proceedings. In 2005, the Third District Court of Appeal granted the County of Imperial's petition for review of rulings dismissing one County case and dismissing the CEQA causes of action from another. The Court of Appeal then stayed all lower court proceedings pending appellate review. On June 14, 2007, the Court of Appeal affirmed the Superior Court's decision. The Court of Appeal denied a petition for rehearing in July 2007, and the time to petition the California Supreme Court expired. The QSA litigation then resumed in the Superior Court where motions to dismiss some of the other QSA lawsuits and for a preliminary injunction were filed.

Success by plaintiffs in the lawsuits described above could delay the implementation of programs authorized under the QSA (described under "*–Quantification Settlement Agreement*" above) or result in increased costs or other adverse impacts. Such litigation is in its early stages and any adverse impact on Metropolitan or its Colorado River supplies cannot be adequately determined at this time.

The Navajo Nation has filed litigation against the Department of the Interior, specifically the Bureau of Reclamation and the Bureau of Indian Affairs, alleging that the Bureau of Reclamation has failed to determine the extent and quantity of the water rights of the Navajo Nation in the Colorado River and that the Bureau of Indian Affairs has failed to otherwise protect the interests of the Navajo Nation. The complaint challenges the adequacy of the environmental review for the Interim Surplus Guidelines (as defined under "*—Interim Surplus Guidelines*" below) and seeks to prohibit the Department of the Interior from allocating any "surplus" water until such time as a determination of the rights of the Navajo Nation is completed. Metropolitan has filed a motion to intervene in this action. In October 2004 the court granted the motions to intervene and stayed the litigation to allow negotiations among the Navajo Nation, federal defendants and Arizona parties. The stay has been extended until April 2009. The intervening parties may observe, but may not participate in the negotiations. Negotiations are continuing. This litigation has not delayed implementation of the QSA. Any adverse impact of this litigation on Metropolitan or its Colorado River supplies, if settlement negotiations are not successful, cannot be adequately determined at this time.

Interim Surplus Guidelines. In January 2001, the Secretary of the Interior adopted guidelines (the "Interim Surplus Guidelines") for use through 2016 in determining if there is surplus Colorado River water available for use in California, Arizona and Nevada. The purpose of the Interim Surplus Guidelines is to provide a greater degree of predictability with respect to the availability and quantity of surplus water through 2016. The Interim Surplus Guidelines were later extended through 2026 (See "*—Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell*

and Lake Mead" below.). The Interim Surplus Guidelines contain a series of benchmarks for reductions in agricultural use of Colorado River water within California by set dates.

Under the Interim Surplus Guidelines, Metropolitan initially expected to divert up to 1.25 million acre-feet of Colorado River water annually under foreseeable runoff and reservoir storage scenarios from 2004 through 2016. However, an extended drought in the Colorado River Basin reduced these initial expectations. From 2000 to 2004, snow pack and runoff in the Colorado River Basin were well below average. Although runoff was slightly above average in 2005, the runoff in 2006 and 2007 was again below average, making 2000 through 2007 the driest eight-year period on record. Slightly above-average runoff occurred in water year 2008, with unregulated inflow into Lake Powell totaling 102 percent of normal. As of January 1, 2009, storage in Lake Mead was at 48 percent of capacity and Lake Powell was at 56 percent of capacity. Metropolitan anticipates its 2009 diversion approval from the Bureau of Reclamation will total approximately 835,000 acre-feet including approximately 10,000 acre-feet for emergency delivery for Tijuana, Mexico.

SNWA and Metropolitan entered into an Agreement Relating to Implementation of Interim Colorado River Surplus Guidelines on May 16, 2002, in which SNWA and Metropolitan agreed to the allocation of unused apportionment as provided in the Interim Surplus Guidelines and on the priority of SNWA for interstate banking of water in Arizona. SNWA and Metropolitan entered into a storage and interstate release agreement on October 21, 2004. Under this program, Nevada can request that Metropolitan store unused Nevada apportionment in California. In subsequent years, Nevada may request recovery of this stored water. The stored water provides flexibility to Metropolitan for blending Colorado River water with State Water Project water and improves near-term water supply reliability. By December 31, 2008, Metropolitan stored 70,000 acre-feet of unused Nevada apportionment.

Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead. In November 2007, the Bureau of Reclamation issued a Final Environmental Impact Statement ("EIS") regarding new federal guidelines concerning the operation of the Colorado River system reservoirs. These new guidelines provide water release criteria from Lake Powell and water storage and water release criteria from Lake Mead during shortage and surplus conditions in the Lower Basin, provide a mechanism for the storage and delivery of conserved system and non-system water in Lake Mead and extend the Interim Surplus Guidelines through 2026. The Secretary of the Interior issued the final guidelines through a Record of Decision signed in December 2007. The Record of Decision and accompanying agreement among the Colorado River Basin States protect reservoir levels by reducing deliveries during drought periods, encourage agencies to develop conservation programs and allow the states to develop and store new water supplies. The Colorado River Basin Project Act of 1968 insulates California from shortages in all but the most extreme hydrologic conditions.

Intentionally-Created Surplus Program. Metropolitan and the Bureau of Reclamation executed an agreement on May 26, 2006 for a demonstration program that allowed Metropolitan to leave conserved water in Lake Mead that Metropolitan would otherwise use in 2006 and 2007. Only "intentionally-created surplus" water (water that has been conserved through an extraordinary conservation measure, such as land fallowing) was eligible for storage in Lake Mead under this program. See the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading "—Storage Capacity and Water in Storage" below. Metropolitan may store additional

intentionally-created surplus water in Lake Mead under the federal guidelines for operation of the Colorado River system reservoirs described above under the heading "*Lower Basin Shortage Guidelines and Coordinated Management Strategies for Lake Powell and Lake Mead*." The Secretary of the Interior will deliver intentionally created surplus water to Metropolitan in accordance with the terms of a December 13, 2007 Delivery Agreement between the United States and Metropolitan.

Environmental Considerations. Federal and state environmental laws protecting fish species and other wildlife species have the potential to affect Colorado River operations. A number of species that are on either "endangered" or "threatened" lists under the ESAs are present in the area of the Lower Colorado River, including among others, the bonytail chub, razorback sucker, southwestern willow flycatcher and Yuma clapper rail. To address this issue, a broad-based state/federal/tribal/private regional partnership that includes water, hydroelectric power and wildlife management agencies in Arizona, California and Nevada have developed a multi-species conservation program for the main stem of the Lower Colorado River (the Lower Colorado River Multi-Species Conservation Program or "MSCP"). The MSCP allows Metropolitan to obtain federal and state permits for any incidental take of protected species resulting from current and future water and power operations of its Colorado River facilities and to minimize any uncertainty from additional listings of endangered species. The MSCP also covers operations of federal dams and power plants on the river that deliver water and hydroelectric power for use by Metropolitan and other agencies. The MSCP covers 27 species and habitat in the Lower Colorado River from Lake Mead to the Mexican border for a term of 50 years. The total cost of the MSCP to Metropolitan will be about $88 million (in 2003 dollars), and will range between $0.8 million and $4.6 million annually.

The non-profit conservation organization Grand Canyon Trust filed litigation in December 2007 against the Bureau of Reclamation, alleging that the Bureau of Reclamation's planning for, and operation of, the Glen Canyon Dam (which impounds Lake Powell) does not comply with requirements of the National Environmental Policy Act and the Federal ESA. The Trust claims that the Bureau of Reclamation has failed to implement a reasonable and prudent alternative in the United States Fish and Wildlife Service's 1994 Biological Opinion for Glen Canyon Dam operations for the protection of endangered humpback chub and razorback sucker. Grand Canyon Trust alleges that the Bureau of Reclamation must develop and implement a water release program with steady high flows in the spring and low steady flows in the summer and fall during low water years. Grand Canyon Trust later named the U.S. Fish and Wildlife Service as a defendant. Metropolitan, IID and Central Arizona Water Conservation District have intervened in this case.

Quagga Mussel Control Program. In January 2007 quagga mussels were discovered for the first time in Lake Mead. Quagga mussels can reproduce quickly and, if left unmanaged, can clog intakes and raw water conveyance systems, alter or destroy fish habitats and affect lakes and beaches. Quagga mussels were introduced in the Great Lakes in the late 1980s. These organisms infest much of the Great Lakes basin, the St. Lawrence Seaway, and much of the Mississippi River drainage system. The most likely source of the quagga mussel infestation is recreational boats from water bodies around the Great Lakes, which were transported over 1,000 miles west to Lake Mead. In response to the Lake Mead finding, the California Department of Fish and Game created a multi-agency task force with Metropolitan as one of its members. The initial survey of the Colorado River to ascertain the extent of the quagga mussel colonization detected low densities in Lake Mead, Lake

Mohave and Lake Havasu and in the intake of the Central Arizona Project. Quagga mussels were also detected at the Colorado River Aqueduct intake pumping plant, Gene Wash and Copper Basin reservoirs, in portions of the Colorado River Aqueduct and in Lake Skinner. A three-week shutdown of the Colorado River Aqueduct for rehabilitation and repairs in March 2007 also permitted inspection for quagga mussels. Desiccation of mussels from emptying the aqueduct during the shutdown, followed by a week of chlorination to kill or limit spread of any remaining mussels after the aqueduct was placed back in service, helped control mussels found there. Shutdowns of the Colorado River Aqueduct in July 2007, October 2007 and March 2008 permitted additional quagga mussel inspection and facilitated control measures.

Metropolitan is presently working to enhance its ability to detect the mussels, studying mussel transport and settling in Metropolitan conveyance systems, assessing additional, more cost effective methods to control mussels and developing and implementing control strategies for mussels in Metropolitan's lakes and reservoirs. The California Department of Fish and Game has approved Metropolitan's recreational facilities and boating plan for Diamond Valley Lake and Lake Skinner, which requires inspection of boats and quarantine of those that are potential carriers of mussels. Future quagga mussel control efforts are expected to include infrastructure upgrades and recommendations on boating practices or additional facilities to control the spread of mussels in the Colorado River Aqueduct system and additional long-term measures. In September 2007, the Board appropriated $5.91 million for design and construction of interim chlorination facilities at Copper Basin and Lake Mathews, design of permanent chlorination facilities at Copper Basin, Lake Mathews and Diamond Valley Lake and related quagga mussel control measures. In February 2008, the Board appropriated $1.77 million for a new chlorine injection point at the Lake Skinner Outlet Conduit and for the procurement of liquid chlorine trailers and mobile chlorination units and in August 2008, the Board appropriated an additional $1.87 million to complete the chlorination facilities at Copper Basin and Lake Mathews. Metropolitan estimates that its costs for controlling quagga mussels could exceed $10 million per year.

Cadiz Litigation. Beginning in 1996, Metropolitan was negotiating with Cadiz Incorporated, a publicly-held agricultural company ("Cadiz"), regarding a potential off-stream storage and dry-year supply program to be located in the Cadiz and Fenner Valleys in eastern San Bernardino County, California. The proposed program included facilities to store and return water from the Colorado River Aqueduct, and to transfer indigenous groundwater to Metropolitan as a dry-year supply. In October 2002 Metropolitan's Board voted not to proceed with the Cadiz program. On January 13, 2006, Cadiz served Metropolitan with an action alleging that Metropolitan breached agreements to complete the environmental review of the program and to accept the pipeline right-of-way that could have been used by Cadiz with other potential project partners. Metropolitan contends that it had no obligation, under the agreements or otherwise, to proceed with the project, absent the approval of Metropolitan's Board, and that the Board had full discretion in determining not to proceed with the project. Cadiz's Second Amended Complaint seeks compensatory damages, including general damages in excess of $2 million, unspecified special damages (e.g. lost profits) and specific performance. Metropolitan is vigorously defending this action. However, if plaintiff is successful in all its contentions, an award for special damages and costs of specific performance could reach tens of millions of dollars. On October 19, 2007, the trial court granted Metropolitan's motion for summary adjudication on the causes of action for breach of contract, promissory estoppel, breach of implied contract and specific performance. Based on the trial court's ruling, only Cadiz's allegations of breach of fiduciary duty are left to be tried. Metropolitan's motion for judgment on

the pleadings was heard by the court on November 5, 2008. On November 10, 2008, the court granted Metropolitan's motion and granted Cadiz leave to amend its complaint regarding breach of fiduciary duty. Cadiz filed its Third Amended Complaint on November 26, 2008. Metropolitan's demurrer to the Third Amended Complaint was filed on December 23, 2008, with a hearing scheduled on February 4, 2009.

Soboba Band of Mission Indians Litigation. On April 20, 2000, the Soboba Band of Mission Indians filed a lawsuit against Metropolitan in U.S. District Court seeking an injunction requiring Metropolitan to repair the Colorado River Aqueduct's San Jacinto Tunnel to halt the flow of reservation groundwater into it, an award of damages against Metropolitan in an unspecified amount or restitution in lieu of damages, and attorneys' fees and costs. An agreement for settlement of this litigation, which requires Metropolitan to provide the Soboba tribe with approximately 20 acres of land and for Metropolitan to sell up to 9,000 acre-feet of replenishment water per year to Eastern Municipal Water District, was executed on June 7, 2006. Eastern Municipal Water District and the United States also have obligations to the Soboba tribe under the terms of the settlement. Implementing legislation was enacted July 31, 2008.

Water Transfer and Exchange Programs

General. California's agricultural activities consume approximately 34 million acre-feet of water annually, which is 80 percent of the total water used for agricultural and urban uses and 40 percent of the water used for all consumptive uses, including environmental demands. Voluntary water transfers and exchanges can make a portion of this agricultural water supply available to support the State's urban areas. Such existing and potential water transfers and exchanges are an important element for improving the water supply reliability within Metropolitan's service area and accomplishing the reliability goal set by Metropolitan's Board of Directors. Metropolitan is currently pursuing voluntary water transfer and exchange programs with State, federal, public and private water districts and individuals. The following are summary descriptions of some of these programs.

Arvin-Edison/Metropolitan Water Management Program. In December 1997, Metropolitan entered into an agreement with the Arvin-Edison Water Storage District ("Arvin-Edison"), an irrigation agency located southeast of Bakersfield, California. Under the program, Arvin-Edison stores water on behalf of Metropolitan. In January 2008, Metropolitan amended the agreement to enhance the program's capabilities and to increase the delivery of water to the California Aqueduct. Up to 350,000 acre-feet of Metropolitan's water may be stored and Arvin-Edison is obligated to return up to 75,000 acre-feet of stored water in any year to Metropolitan, upon request. The agreement will terminate in 2035 unless extended. To facilitate the program, new wells, spreading basins and a return conveyance facility connecting Arvin-Edison's existing facilities to the California Aqueduct have been constructed. The agreement also provides Metropolitan priority use of Arvin-Edison's facilities to convey high quality water available on the east side of the San Joaquin Valley to the California Aqueduct. Metropolitan's current storage account under the Arvin-Edison/Metropolitan Water Management Program is shown in the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading, "—Storage Capacity and Water in Storage" below.

Semitropic/Metropolitan Groundwater Storage and Exchange Program. In 1994 Metropolitan entered into an agreement with the Semitropic Water Storage District ("Semitropic"), located adjacent to the California Aqueduct north of Bakersfield, to store water in the groundwater basin underlying land within Semitropic. The minimum annual yield available to Metropolitan from the program is 31,500 acre-feet of water and the maximum annual yield is 223,000 acre-feet of water depending on the available unused capacity and the State Water Project allocation. Metropolitan's current storage account under the Semitropic program is shown in the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading, "—Storage Capacity and Water in Storage" below.

California Aqueduct Dry-Year Transfer Program. Metropolitan has entered into agreements with the Kern Delta Water District, the Mojave Water Agency (Demonstration Water Exchange Program) and the San Bernardino Valley Municipal Water District to insure against regulatory and operational uncertainties in the State Water Project system that could impact the reliability of existing supplies. The total potential yield for the three agreements is approximately 115,000 acre-feet of water per year.

Metropolitan entered into an agreement with San Bernardino Valley Municipal Water District in April 2001 to coordinate the use of facilities and State Water Project water supplies. The agreement allows for the minimum purchase of 20,000 acre-feet on an annual basis with the option to purchase additional water when available. Also, the program includes 50,000 acre-feet of carryover storage. In addition to water being supplied using the State Water Project, the previously stored water can be returned using an interconnection between the San Bernardino Central Feeder and Metropolitan's Inland Feeder. Metropolitan took delivery of approximately 30,000 acre-feet from San Bernardino Valley Municipal Water District under the agreement in calendar year 2007. This program terminates on December 31, 2014. Metropolitan entered into an agreement with Kern Delta Water District on May 27, 2003, for a groundwater banking and exchange transfer program to allow Metropolitan to store up to 250,000 acre-feet of State Water Contract water in wet years and permit Metropolitan, at Metropolitan's option, a return of up to 50,000 acre-feet of water annually during hydrologic and regulatory droughts. Additionally, Metropolitan entered into a groundwater banking and exchange transfer agreement with Mojave Water Agency on October 29, 2003. The agreement allows for Metropolitan to store water in an exchange account for later return. Metropolitan's current storage account under these programs is shown in the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading, "—Storage Capacity and Water in Storage" below.

Other Water Purchase, Storage and Exchange Programs in the San Joaquin and Sacramento Valleys. Metropolitan has been negotiating water purchase, storage and exchange programs with other agencies in the Sacramento and San Joaquin Valleys. These programs will involve the storage of both State Water Project supplies and water purchased from other sources to enhance Metropolitan's dry-year supplies and the exchange of normal year supplies to enhance Metropolitan's water reliability and water quality, in view of dry conditions and potential impacts from the ESA cases discussed above under the heading "—State Water Project—*Endangered Species Act Considerations*." Metropolitan has entered into agreements to purchase water transfer supplies for 2008 totaling 26,415 acre-feet from Western Canal Water District, Richvale Irrigation District, South Feather Water and Power Agency and South Sutter Water District at a price of up to $200 per acre-foot. After providing for conveyance losses, estimated at 20 percent, the effective unit

cost for these transfers is estimated to be approximately $250 per acre-foot. In addition, Metropolitan is pursuing water quality exchange partnerships with San Joaquin Valley agricultural districts, including the Friant Water Users Authority. The purpose of these partnerships is to improve the quality of water that Metropolitan receives via the California Aqueduct.

Metropolitan entered into an agreement with the Department of Water Resources in December 2007 to purchase a portion of the water released by the Yuba County Water Agency ("YCWA"). YCWA was involved in a SWRCB proceeding in which it was required to increase Yuba River fishery flows. Within the framework of agreements known as the Yuba River Accord, the Department of Water Resources and the Bureau of Reclamation entered into agreements for the long-term purchase of water from YCWA. Metropolitan and other State Water Project contractors entered into separate agreements with the Department of Water Resources for purchase of portions of the water made available. Metropolitan's agreement allows Metropolitan to purchase 13,750 acre-feet to 35,000 acre-feet per year of water supplies in dry years through 2025. Since the water would be purchased from the Sacramento Valley, Delta conveyance losses, which are estimated at 20 percent, would be applied.

Metropolitan/Coachella/Desert Water Agency Exchange and Advance Delivery Agreement. Metropolitan has agreements with the CVWD and the Desert Water Agency ("Desert") that require Metropolitan to exchange its Colorado River water for those agencies' State Water Project entitlement water on an annual basis. Because Desert and Coachella do not have a physical connection to the State Water Project, Metropolitan takes delivery of Desert's and CVWD's State Water Project supplies and delivers a like amount of Colorado River water to the agencies. In accordance with an advance delivery agreement executed by Metropolitan, CVWD and Desert, Metropolitan delivers Colorado River water in advance to these agencies for storage in the Upper Coachella Valley groundwater basin. In years when supplies are needed to meet local demands, Metropolitan has the option to receive the water supply and must pay the associated State Water Project transportation costs and CVWD and Desert may use the stored water. Metropolitan's current storage account under the CVWD/Desert program is shown in the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading, "—Storage Capacity and Water in Storage" below.

Other Agreements. Metropolitan is entitled to storage and access to stored water in connection with various storage programs and facilities. See "METROPOLITAN'S WATER SUPPLY—Colorado River Aqueduct" and "REGIONAL WATER RESOURCES—Local Water Supplies—*Conjunctive Use*" in this Appendix A, as well as the table "Metropolitan's Water Storage Capacity and Water in Storage" under the heading, "—Storage Capacity and Water in Storage" below.

Storage Capacity and Water in Storage

Metropolitan's storage capacity, which includes reservoirs, conjunctive use and other groundwater storage programs within Metropolitan's service area and groundwater and surface storage accounts delivered through the State Water Project or Colorado River Aqueduct, has increased to 5.0 million acre-feet. Approximately 674,000 acre-feet of stored water is emergency storage that is reserved for use in the event of supply interruptions from earthquakes or similar

emergencies (see "METROPOLITAN'S WATER DELIVERY SYSTEM—Seismic Considerations" in this Appendix A), as well as extended drought.

Metropolitan's ability to replenish water storage, both in the local groundwater basins and in surface storage and banking programs, has been limited by Bay-Delta pumping restrictions under the Interim Remedial Order in *NRDC v. Kempthorne*. Metropolitan replenishes its storage accounts when imported supplies exceed demands. Effective storage management is dependent on having sufficient years of excess supplies to store water so that it can be used during times of shortage. Historically, excess supplies have been available in about seven of every ten years. Metropolitan forecasts that, with anticipated supply reductions from the State Water Project due to pumping restrictions, it will need to draw down on storage in about seven of ten years and will be able to replenish storage in about three years out of ten. This reduction in available supplies extends the time required for storage to recover from drawdowns and could require Metropolitan to implement its water supply allocation plan during extended dry periods.

Over the past two years Metropolitan has drawn down approximately half of its stored water to meet demands. At its highest in July 2006, Metropolitan's storage was 2.74 million acre-feet. As of December 1, 2008, Metropolitan had approximately 1.6 million acre-feet of water in storage, as shown in the following table. Groundwater storage and other storage programs may have physical or contractual conditions that affect withdrawal capacity or limit the maximum amount that may be withdrawn each year.

METROPOLITAN'S WATER STORAGE CAPACITY AND WATER IN STORAGE (in Acre-Feet)

Water Storage Resource	Storage Capacity	Water in Storage December 1, 2008	Water in Storage January 1, 2008
Colorado River Aqueduct			
Desert / Coachella	800,000	59,591	121,387
Lake Mead ICS[1]	1,450,000	88,324	41,398
Arizona Storage Program	n/a	37,105	64,105
Hayfield Storage Program	n/a	73,300	73,300
Subtotal	**2,250,000**	**258,320**	**300,190**
State Water Project			
Arvin Edison Storage Program	250,000	161,200	189,400
Semitropic Storage Program	350,000	158,400	249,300
Kern Delta Storage Program	250,000	23,800	31,300
San Bernardino Valley MWD Coordinated Operating Agreement	50,000	50,000	50,000
Mojave Storage Program	75,000	15,600	18,900
Castaic Lake and Lake Perris	219,000	137,600	204,000
Subtotal	**1,194,000**	**546,600**	**742,900**
Within Metropolitan's Service Area			
Diamond Valley Lake	810,000	419,000	596,400
Lake Mathews	182,000	74,100	114,000
Lake Skinner	44,000	40,500	38,000
Subtotal	**1,036,000**	**533,600**	**748,400**
Member Agency Storage Programs			
Cyclic Storage, Conjunctive Use, and Supplemental Storage	662,000	253,100	323,000
Total	**5,142,000**	**1,591,620**	**2,114,490**

Source: Metropolitan.

(1) Water in storage as of December 1, 2008, includes 100,000 acre-feet credited in April 2008 in return for Metropolitan funding for the regulating reservoir near Drop 2 of the All-American Canal in Imperial County, less 34,000 acre-feet withdrawn during 2008. See "METROPOLITAN'S WATER SUPPLY—Colorado River Aqueduct" in this Appendix A.

Five-Year Supply Plan

In April 2008, Metropolitan staff began working with Metropolitan's member agencies on a Five-Year Supply Plan ("Supply Plan") to identify specific resource and conservation actions over the next five years to manage water deliveries under continued drought conditions and court-ordered restrictions. The Supply Plan focuses on six categories of resource options to improve Metropolitan's reliability over the next five years. These categories are:

Water Conservation. The Supply Plan targets the following water conservation strategies to increase and accelerate conservation savings by increasing the use of water efficient devices, affecting water use practices in Southern California and reducing prohibited uses of water: (1) increase outreach to heighten the public's awareness of the need to conserve, (2) increase resources and support for water use ordinances and conservation-based rate structures to motivate conservation, (3) accelerate the installation of water efficient devices, and (4) extend the existing Public Sector Water Efficiency Partnership Demonstration Program that provides water conservation incentives to public agencies, to reinforce Metropolitan's public messaging efforts to save water by public sector example and reduce water use. See "METROPOLITAN'S WATER SUPPLY – Water Conservation" in this Appendix A.

Colorado River Transactions. Metropolitan is pursuing additional supplies under the Palo Verde Irrigation District Land Management Program and water purchases from the Coachella Valley Water District. Investigations are also underway for participation with the Bureau of Reclamation in pilot operation of the Yuma Desalter that could yield 10,000 acre-feet per year. New initiatives also include potential advance delivery of the remainder of water stored in the Arizona Groundwater account, a water exchange with Arizona, and a transfer from California Indians. If successful, these programs on the Colorado River could provide up to an additional 100,000 to 150,000 acre-feet of Colorado River Aqueduct supply annually.

Near-Term Delta Actions. Near-term Delta actions being developed include measures that protect fish species and reduce supply impacts, such as habitat and hatchery projects, and physical and operational actions with the goal of reducing conflicts between water supply conveyance and environmental needs. The proposed Two-Gate System would provide movable barriers on the Old and Middle Rivers to modify flows and prevent vulnerable fish from being drawn toward the Bay-Delta pumping plants. The Two-Gate System is anticipated to protect fish habitat while allowing up to an estimated additional 200,000 acre-feet per year of water supply export from the Bay-Delta. The Two-Gate System is subject to operational studies; monitoring; environmental documentation and compliance; acquisition of right-of-way; and completion of design and construction.

State Water Project Transactions. The Department of Water Resources established the State Drought Water Bank (the "Drought Water Bank") for transfers in 2009 from willing sellers located upstream of the Bay-Delta to buyers through the State Water Project and Central Valley Project. Prospective buyers were required to give expressions of interest to the Department of Water Resources by October 15, 2008. Metropolitan is seeking to purchase up to 300,000 acre-feet from the Drought Water Bank. Purchases from the Drought Water Bank will be contingent on acquisition by the Department of Water Resources of supplies from willing sellers. Delivery of Drought Water Bank transfers will be contingent on sufficient capacity for export of this water through the Bay-

Delta. According to the Department of Water Resources, if precipitation during the winter of 2008-09 is average to relatively wet, capacity for export of the transfer water may not be available.

The Supply Plan also includes additional transfers with entities within the Bay-Delta (see "—Water Transfer and Exchange Programs" above) and investigations into the feasibility of crop rotation demonstration projects with Kern County agencies, as well as the return of existing transfers stored in Shasta Lake. In addition, Metropolitan may benefit from a water transfer between North Kern Water Storage District and Desert Water Agency by taking up to 27,500 acre-feet of State Water Project water over the next three years. This water, along with approximately 8,500 acre-feet of water transferred to Metropolitan in 2008, will be returned to Desert Water Agency in increments of 1,200 acre-feet per year over the next 30 years.

Groundwater Recovery. Groundwater that requires treatment and recovery for consumptive use is a resource that has the potential to yield significant amounts of supply. Based on groundwater inventories conducted by Metropolitan and the member agencies, it is estimated that there is over 300,000 acre-feet of groundwater that could be treated and recovered in Metropolitan's service area. Additionally, it is estimated that between 5,000 to 20,000 acre-feet could be supplied through the operation of wells in San Bernardino Valley Municipal Water District's ("SBVMWD") service area to deliver water to Metropolitan through the recently completed initial phase of the SBVMWD Central Feeder. The Hayfield groundwater basin located adjacent to the Colorado River Aqueduct has 70,000 to 100,000 acre-feet that could be extracted over the next five years. Also, more than 300,000 acre-feet of recovered groundwater accumulated from agricultural drainage in the San Joaquin Valley could be made available to Metropolitan if Metropolitan funds groundwater treatment facilities.

Local Resources. Several local resource projects such as reclamation and ocean desalination could be expanded and/or accelerated with a potential to be on line within the next five years. Mechanisms proposed to motivate this expansion and/or acceleration include funding of physical components of a project, including connections, treatment and delivery of water; funding local resource project feasibility studies, design and environmental review, and permitting; purchasing partial ownership of a project through funding a share of total project cost; purchasing contract rights for the delivery of a new water supply; and funding for the completion of hookups to existing recycled water distribution lines. The estimated combined yield of all projects submitted for evaluation exceeds 160,000 acre-feet by 2013.

Metropolitan's estimate of the dry year yield of the above Supply Plan actions is shown in the following table:

ESTIMATED YIELD OF FIVE-YEAR SUPPLY PLAN ACTIONS
(in Thousands of Acre-Feet (TAF))

	2009	2010	2011	2012	2013
Water Conservation	215	220	225	230	235
Colorado River Transactions	113	167	150	150	150
Near Term Delta Actions[1]	0	0	0	0	0
SWP Transactions	210	110	105	100	100
Groundwater Recovery	10	63	63	51	51
Local Resources	5	5	105	123	167
Total	553	565	648	654	703

Source: Metropolitan.

(1) Two-Gate System is estimated to provide up to 200 TAF when the State Water Project allocation is greater than about 35%. Yield is shown at 0 because of this contingency.

Water Conservation

The central objective of Metropolitan's water conservation activities is to help ensure adequate, reliable and affordable water supplies for Southern California by actively promoting efficient water use. The importance of conservation to the region has increased in 2008 because of drought conditions in the State Water Project watershed and court-ordered restrictions on Bay-Delta pumping, as described under "METROPOLITAN'S WATER SUPPLY—State Water Project" in this Appendix A. Water conservation is an integral component of Metropolitan's IRP, Preferred Resource Mix, Five-Year Supply Plan and Drought and Resources Management Plans, each described in this Appendix A under "METROPOLIAN'S WATER SUPPLY."

Metropolitan's conservation activities have largely been developed to assist its member agencies in meeting the "best management practices" ("BMP") of the California Urban Water Conservation Council's Memorandum of Understanding Regarding Urban Water Conservation in California ("CUWCC MOU") and to meet the conservation goals of the 2004 IRP Update. See "—Integrated Water Resources Plan" in this Appendix A. Under the terms of the CUWCC MOU and Metropolitan's Conservation Credits Program, Metropolitan co-funds member agency conservation programs designed to achieve greater water use efficiency in residential, commercial, industrial, institutional and landscape applications. Direct spending by Metropolitan on active conservation incentives from fiscal year 1989-90 through fiscal year 2007-08 was $223 million. The 2004 Integrated Water Resources Plan Update estimates that 1,100,000 acre-feet of water will be conserved annually in southern California by 2025. See "METROPOLITAN'S WATER SUPPLY—Integrated Water Resources Plan."

In August 2007, Metropolitan launched a significant public outreach campaign to urge consumers and businesses to voluntarily save water during current record dry conditions. The campaign combines radio, print and on-line advertising with media and community outreach efforts. Along with the message to save water, the campaign is intended to educate the public about the

uncertainties of future water supplies. Metropolitan's Board also authorized agreements with public agencies to provide financial incentives for water saving measures, ranging from $195 to $500 per acre-foot of potable water saved, up to a maximum of $15 million for the Public Sector Water Efficiency Partnership Demonstration Program. This program aims to continue public support for conservation through public agency accomplishments and efforts. Metropolitan estimated total water savings from this program of 40,000 acre-feet. The campaign was intensified following Metropolitan's declaration of a regional Water Supply Alert on June 10, 2008. Metropolitan urged cities, counties and water districts in its service area to achieve extraordinary conservation by adopting and enforcing drought ordinances, accelerating public outreach and conservation messaging, and developing additional local supplies. Metropolitan estimates that conservation resulting from these measures could reduce the demand for imported water supplies by about 200,000 acre-feet over the twelve months following this declaration.

If necessary, Metropolitan could implement its Water Supply Allocation Plan (described under "—Drought and Resources Management Plans" below), resulting in mandatory water allocations, to reduce water use and drawdowns from water storage reserves. Metropolitan's member agencies and retail water suppliers in Metropolitan's service area also have the ability to implement water conservation and allocation programs, and some of the retail suppliers in Metropolitan's service area have initiated conservation measures.

Drought and Resources Management Plans

Possible causes of water supply deficits are droughts, failures of major water transmission facilities, environmental restrictions and other adverse events. Metropolitan's current approach to managing water shortages has evolved from its experiences during the droughts of 1976-77 and 1987-92 into the Water Surplus and Drought Management Plan ("WSDM Plan").

The WSDM Plan, which was adopted by Metropolitan's Board of Directors in April 1999, establishes broad resource management strategies to meet full service demands. The WSDM Plan splits resource actions into two major categories: Surplus Actions and Shortage Actions. The WSDM Plan considers the region to be in surplus only after Metropolitan has met all demands for water, including replenishment deliveries. The Surplus Actions store surplus water, first inside then outside the region. The shortage actions of the WSDM Plan are split into three sub-categories: Shortage, Severe Shortage, and Extreme Shortage. Each category has associated actions that could be taken as a part of the response to prevailing shortage conditions. Conservation and water efficiency programs are part of Metropolitan's resource management strategy through all categories. Under Shortage conditions, Metropolitan may make withdrawals from storage based on location and ability to access and interrupt groundwater replenishment deliveries. Under Severe Shortage conditions, Metropolitan will call for extraordinary drought conservation, reduce agricultural water deliveries, exercise available options for water transfers and seek other water purchases. Under Extreme Shortage conditions, Metropolitan will allocate or reduce water deliveries to its member agencies.

Although the WSDM Plan provides principles for imported water supply allocation if the need should arise, the WSDM Plan stopped short of providing a detailed allocation plan. Beginning in 2007, Metropolitan staff, working with member agency staff, prepared a water allocation plan (the "Water Supply Allocation Plan") based on the principles contained in the WSDM Plan. The Water

Supply Allocation Plan was approved by the Board in February 2008. The Water Supply Allocation Plan provides a formula for equitable distribution of available supplies in case of extreme water shortages within Metropolitan's service area. A separate action of Metropolitan's Board will be required to implement the Plan and subject water deliveries to the allocation formula.

The Central Basin Municipal Water District ("Central Basin") filed litigation against Metropolitan in Los Angeles Superior Court, Central District, on April 16, 2008 challenging Metropolitan's adoption of the Water Supply Allocation Plan. The complaint alleges that the Water Supply Allocation Plan violates Central Basin's preferential right to purchase of water and, if implemented, will be a breach of Central Basin's member agency purchase order (see "METROPOLITAN REVENUES—Member Agency Purchase Orders" in this Appendix A); that Metropolitan inappropriately relied on exemptions under CEQA to avoid CEQA compliance; that the Board's adoption of the Water Supply Allocation Plan failed to address "environmental justice"; that the Water Supply Allocation Plan's penalty rate is unfair, unreasonably discriminates against Central Basin and is an unauthorized "special tax" enacted without voter approval; and that adoption of the Water Supply Allocation Plan violated California and United States constitutional rights regarding impairment of contract, due process and equal protection. The complaint seeks a writ of mandate setting aside adoption of the Water Supply Allocation Plan and seeks recovery of attorney's fees and other litigation costs. Metropolitan has filed the administrative record, which Central Basin moved to strike, and is preparing to file appropriate responses.

Metropolitan's member agencies and retail water suppliers in Metropolitan's service area also may implement water conservation and allocation programs within their respective service territories.

REGIONAL WATER RESOURCES

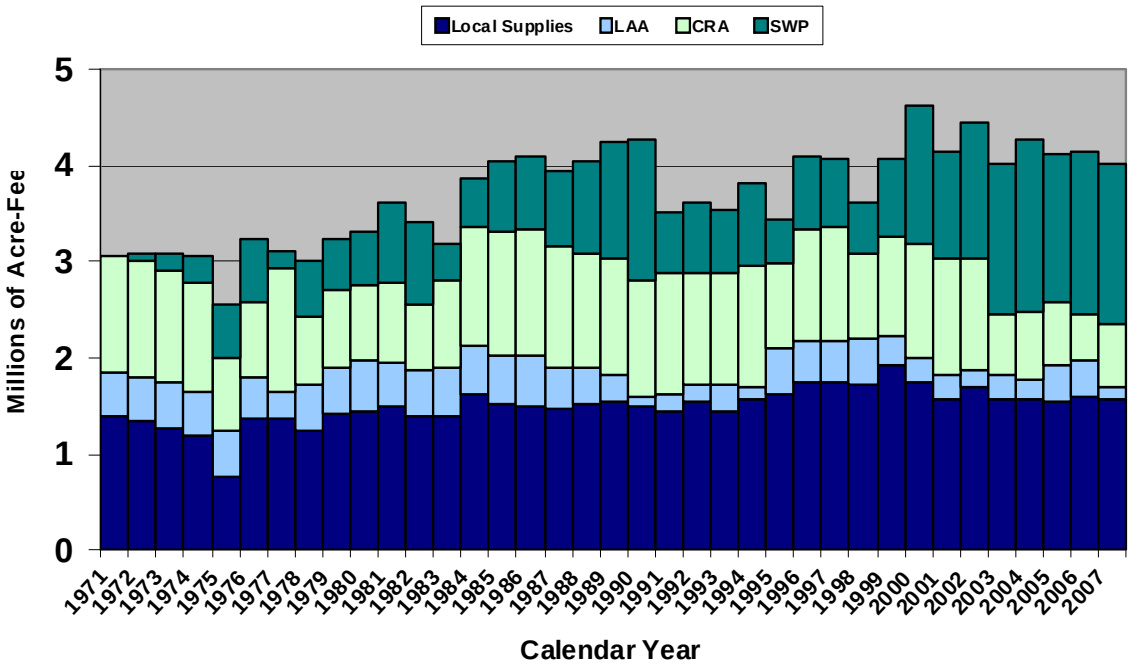
The water supply for Metropolitan's service area is provided in part by Metropolitan and in part by non-Metropolitan sources available to members. Approximately two-thirds of the water supply for Metropolitan's service area is imported water received by Metropolitan from its Colorado River Aqueduct and the State Water Project and by the City of Los Angeles (the "City") from the Los Angeles Aqueduct. While the City is one of the largest water customers of Metropolitan, it receives a substantial portion of its water from the Los Angeles Aqueduct and local groundwater supply. The balance of water within the region is produced locally, primarily from groundwater supplies and runoff.

Metropolitan's member agencies are not required to purchase or use any of the water available from Metropolitan. Some agencies depend on Metropolitan to supply 100 percent of their water needs, regardless of the weather. Other agencies, with local surface reservoirs or aqueducts that capture rain or snowfall, rely on Metropolitan more in dry years than in years with heavy rainfall, while others, with ample groundwater supplies, purchase Metropolitan water only to supplement local supplies or to recharge groundwater basins. Record rainfall in Southern California in 2005, after five consecutive years of below-average precipitation, reduced demands for Metropolitan water during this period and replenished local groundwater basins and reservoirs. After near average precipitation in 2006 and record low precipitation in 2007, Southern California experienced normal to above normal precipitation levels at the beginning of 2008, but had very dry conditions in March and April, making for below normal precipitation for 2008. To the extent that

weather conditions reduce demands for water, or water resources within Metropolitan's service area are plentiful, or to the extent that Metropolitan's members initiate or undertake conservation and other water management programs or obtain water from other sources, Metropolitan's water sales revenues could be reduced. Conversely, increased demands for imported water and decreased water supplies within Metropolitan's service area could increase Metropolitan's water sales revenues. For information on Metropolitan's revenues, see "METROPOLITAN REVENUES" and "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES" in this Appendix A.

The following graph shows a summary of the regional sources of water supply for the years 1971 to 2007. Local supplies available within Metropolitan's service area are augmented by water imported by the City through the Los Angeles Aqueduct and Metropolitan supplies provided through the Colorado River Aqueduct and State Water Project.

Source of Water Supply in the Metropolitan Service Area (1971-2007)



Source: Metropolitan.

The major sources of water for Metropolitan's member agencies in addition to supplies provided by Metropolitan are described below.

Los Angeles Aqueduct

The City, through its Department of Water and Power, operates its Los Angeles Aqueduct system to import water from the Owens Valley and the Mono Basin on the eastern slopes of the Sierra Nevada Mountains in eastern California. Prior to the Mono Lake Basin Water Right Decision

1631 (Decision 1631) issued in September 1994, which revised the Department of Water and Power's water rights license in the Mono Basin, the City had imported an average of 460,000 acre-feet of water annually from the combined Owens Valley/Mono Basin system, of which about 85,000 acre-feet came from the Mono Basin. Under Decision 1631, the City has exported less than 16,000 acre-feet annually from the Mono Basin in recent years.

Pursuant to the City's turnout agreement with the Department of Water Resources, Antelope Valley-East Kern Water Agency ("AVEK") and Metropolitan, the Department of Water and Power may construct facilities along the California Aqueduct within AVEK's service area. Upon completion, the turnout will enable AVEK to deliver water from the California Aqueduct to the Los Angeles Aqueduct. Conditions precedent to such delivery of water include obtaining agreements for the transfer of non-State Water Project water directly from farmers and water districts in Northern and Central California, available capacity in the California Aqueduct and compliance with State Water Project water quality requirements. The agreement limits use of the turnout to delivery of non-State Water Project water annually to the City in amounts not to exceed the supplies lost to the City as a result of its Eastern Sierra environmental obligations, including water for the Lower Owens River Project and Owens Lake Dust Mitigation Project, which used over 100,000 acre-feet of Los Angeles Aqueduct water in 2007. Construction of the turnout is anticipated to begin in spring 2009, at the earliest.

Historically, the Los Angeles Aqueduct and local groundwater supplies have been nearly sufficient to meet the City's water requirements during normal water supply years. As a result, as recently as the late 1980's only about 15 percent of the City's water needs (approximately 100,000 acre-feet) were supplied by Metropolitan. From fiscal year 2000-01 to fiscal year 2007-08, from 34 to 65 percent of the City's total water requirements were met by Metropolitan. For the five fiscal years ending June 30, 2008, the City's water deliveries from Metropolitan averaged approximately 309,000 acre-feet per year, which constituted approximately 47% of the City's total water supply. Deliveries from Metropolitan to the City during this period varied between approximately 209,000 acre-feet per year and approximately 422,000 acre-feet per year. See "METROPOLITAN REVENUES—Principal Customers" in this Appendix A. According to the Los Angeles Department of Water and Power's Year 2005 Urban Water Management Plan, the City is planning to purchase approximately 30 to 40 percent of its normal year supplies and 51 to 60 percent of its dry year supplies from Metropolitan over the next 25 years. This corresponds to an increase from normal to dry years of approximately 134,000 acre-feet in potential demand for supplies from Metropolitan.

The Los Angeles Department of Water and Power has indicated that it is currently analyzing additional impacts to the Los Angeles Aqueduct's water supply deliveries of various environmental projects aimed at improving air quality and fish and riparian habitat in the Owens Valley. The City's future reliance on Metropolitan supplies may increase with implementation of these projects.

Local Water Supplies

Local water resources include groundwater production, recycled water production and diversion of surface flows.

Groundwater. Demands for about 1.3 million acre-feet per year, about one-third of the annual water demands for over 18 million residents of Metropolitan's service area, are met from

groundwater production. Local groundwater supplies are supported by recycled water, which is blended with imported water and recharged into groundwater basins, and also used for creating seawater barriers that protect coastal aquifers from seawater intrusion.

Recovered Groundwater. Contamination of groundwater supplies is a growing threat to local groundwater production. Metropolitan has been supporting increased groundwater production and improved regional supply reliability by offering financial incentives to agencies for production and treatment of degraded groundwater since 1991. Metropolitan has executed 24 agreements to provide financial incentives to projects that recover contaminated groundwater with total contract yields of about 84,000 acre-feet per year. During fiscal year 2007-08 Metropolitan paid for approximately 48,000 acre-feet of recovered water under these agreements. Total groundwater recovery use under executed agreements is expected to grow to 69,000 acre-feet by 2015.

Surface Runoff. Local agencies divert about 100,000 acre-feet per year of water from flows in local streams. Local surface water supplies are heavily influenced by year to year weather conditions, varying from 190,000 acre-feet in fiscal year 1999 to 55,000 acre-feet in fiscal year 2004.

Conjunctive Use. Conjunctive use is accomplished when groundwater basins are used to store imported supplies during water abundant periods. The stored water is used during shortages and emergencies with a corresponding reduction in surface deliveries to the participating agencies. Regional benefits include enhancing Metropolitan's ability to capture excess surface flows during wet years from both the State Water Project and Colorado River. Groundwater storage is accomplished using spreading basins, injection wells, and in-lieu deliveries where imported water is substituted for groundwater, and the groundwater not pumped is considered stored water.

Metropolitan promotes conjunctive use at the local agency level under its Replenishment Water Program by discounting rates for imported water placed into groundwater or reservoir storage during wet months. The discounted rate and program rules encourage construction of additional groundwater production facilities allowing local agencies to be more self-sufficient during shortages. In calendar year 2006, Metropolitan delivered approximately 228,000 acre-feet of water as replenishment water. In calendar year 2007, Metropolitan delivered approximately 52,000 acre-feet of water as replenishment up to May 1, then discontinued storage deliveries for the balance of the year. See also "CAPITAL INVESTMENT PLAN–Other Major Projects of Metropolitan's Capital Investment Plan–*Groundwater Storage Programs*" in this Appendix A.

Recycled Water. Currently, 128 recycled water projects with an expected year 2025 yield of about 434,000 acre-feet of water per year are being constructed or operated by local agencies in Metropolitan's service area for landscape, municipal, agricultural, groundwater recharge, and commercial and industrial uses.

METROPOLITAN'S WATER DELIVERY SYSTEM

Method of Delivery

Metropolitan's water delivery system is made up of three basic components: the Colorado River Aqueduct, the California Aqueduct of the State Water Project and Metropolitan's internal water distribution system. Metropolitan's delivery system is integrated and designed to meet the differing needs of its member agencies. Metropolitan seeks redundancy in its delivery system to assure reliability in the event of an outage. Current system expansion and other improvements will be designed to increase the flexibility of the system. Since local sources of water are generally used to their maximum each year, growth in the demand for water is partially met by Metropolitan. Accordingly, the operation of Metropolitan's water system is being made more reliable through the construction of additional storage reservoirs, rehabilitation of key facilities as needed, additional pipelines, improved preventive maintenance programs and the upgrading of Metropolitan's operational control systems. See "CAPITAL INVESTMENT PLAN" in this Appendix A.

Colorado River Aqueduct. Work on the Colorado River Aqueduct commenced in 1933 and water deliveries started in 1941. Additional facilities were completed by 1961 to meet additional requirements of Metropolitan's member agencies. The Colorado River Aqueduct is 242 miles long, starting at the Lake Havasu intake and ending at the Lake Mathews terminal reservoir. Metropolitan owns all of the components of the Colorado River Aqueduct, which include five pump plants, 64 miles of canal, 92 miles of tunnels, 55 miles of concrete conduits and 144 underground siphons totaling 29 miles in length. The pumping plants lift the water approximately 1,617 feet over several mountain ranges to Metropolitan's service area. See "METROPOLITAN'S WATER SUPPLY—Colorado River Aqueduct" in this Appendix A.

State Water Project. The initial portions of the State Water Project serving Metropolitan were completed in 1973. State Water Project facilities are owned and operated by the Department of Water Resources. Twenty-nine agencies have entered into contracts with the Department of Water Resources to receive water from the State Water Project. See "METROPOLITAN'S WATER SUPPLY—State Water Project" in this Appendix A.

Internal Distribution System. Metropolitan's internal water distribution system includes components that were built beginning in the 1930's and through the present. Metropolitan owns all of these components, which include 14 dams and reservoirs, five regional treatment plants, approximately 770 miles of transmission pipelines, feeders and canals, and sixteen hydroelectric plants with an aggregate capacity of 122 megawatts.

Diamond Valley Lake. The most recent major addition to Metropolitan's water delivery system is Diamond Valley Lake, a man-made reservoir located southwest of the city of Hemet, California, within the Domenigoni and Diamond Valleys. Excavation at the project site began in May 1995. Diamond Valley Lake was completed in March 2000, at a total cost of $2 billion, and was in full operation in December 2001.

The Diamond Valley Lake covers approximately 4,410 acres and is estimated to hold approximately 810,000 acre-feet or 265 billion gallons of water. The Diamond Valley Lake was

constructed to serve approximately 90 percent of Metropolitan's service area by gravity flow. Associated hydraulic structures consist of an inlet-outlet tower, pumps and generating facilities, a pressure control facility, connecting tunnels and a forebay. Imported water is delivered to Diamond Valley Lake during surplus periods. The reservoir provides more reliable delivery of imported water from the State Water Project and the Colorado River Aqueduct during summer months, droughts and emergencies. In addition, the Diamond Valley Lake is capable of providing more than one-third of Southern California's water needs from storage for approximately six months after a major earthquake (assuming that there has been no impairment of Metropolitan's internal distribution network). See the table "Metropolitan's Water Storage Capacity and Water in Storage" under "METROPOLITAN'S WATER SUPPLY—Storage Capacity and Water in Storage" in this Appendix A for the amount of water in storage at Diamond Valley Lake.

Operations Control Center. Metropolitan's water conveyance and distribution system operations are coordinated from the Operations Control Center ("OCC") located in the Eagle Rock area of Los Angeles. The OCC plans, balances and schedules daily water and power operations to meet member agencies' demands, taking into consideration the operational limits of the entire system.

Water Treatment

Metropolitan filters and disinfects water at five water treatment plants: the F.E. Weymouth Treatment Plant, the Joseph Jensen Treatment Plant, the Henry J. Mills Treatment Plant, the Robert B. Diemer Treatment Plant and the Robert A. Skinner Treatment Plant. The plants treat an average of between 1.7 billion and 2.0 billion gallons of water per day, and have a maximum capacity of approximately 2.6 billion gallons per day. Approximately 70 percent of Metropolitan's water deliveries are treated water.

Federal and state regulatory agencies continually monitor and establish new water quality standards. New water quality standards could affect availability of water and impose significant compliance costs on Metropolitan. The Safe Drinking Water Act ("SDWA") was amended in 1986 and again in 1996. The SDWA establishes drinking water quality standards, monitoring, public notification and enforcement requirements for public water systems. To achieve these objectives, the U.S. Environmental Protection Agency ("USEPA"), as the lead regulatory authority, promulgates national drinking water regulations and develops the mechanism for individual states to assume primary enforcement responsibilities. The California Department of Public Health ("CDPH"), formerly known as the Department of Health Services, has lead authority over California water agencies. Metropolitan continually monitors new water quality laws and regulations and frequently comments on new legislative proposals and regulatory rules.

In October 2007 Metropolitan began adding fluoride to treated water in order to prevent tooth decay. Design and construction of the fluoridation facilities at Metropolitan's five treatment plants were financed primarily by a $5.5 million grant from the California Dental Association Foundation, in conjunction with the California Fluoridation 2010 Work Group.

Disinfection By-products. As part of the requirements of SDWA, USEPA is required to establish regulations to strengthen protection against microbial contaminants and reduce potential health risks from disinfection by-products. Disinfectants and disinfection by-products ("D/DBPs")

were addressed by the USEPA in two stages. In the Stage 1 Disinfectants and Disinfection Byproducts Rule ("Stage 1 DBPR"), the maximum contaminant level ("MCL") for one of the classes of D/DBPs, total trihalomethanes ("TTHM"), was lowered from 100 parts per billion ("ppb") to 80 ppb. MCLs were also set for haloacetic acids ("HAA") and bromate (an ozone D/DBP). In addition, the Stage 1 DBPR includes a treatment requirement to remove disinfection by-product precursors. Compliance with these requirements started in January 2002. Metropolitan already satisfied these requirements for its Colorado River Water, which has lower levels of microbial contaminants and disinfection by-products than State Water Project water. State Water Project water has a greater amount of disinfection by-product precursors and modifications to the treatment process have been made to meet the requirements of the Stage 1 DBPR. Longer-term D/DBP control has been achieved by switching to ozone as the primary disinfectant at the Mills and Jensen treatment plants, which only receive water from the State Water Project. The capital cost of implementing ozone treatment at these plants was approximately $235 million. Ozone facilities at the Mills plant began operating in October 2003. Ozone facilities became operational at the Jensen plant July 1, 2005. Metropolitan's Board has also approved installing ozone at the Skinner, Weymouth and Diemer treatment plants, which receive a blend of water from the State Water Project and the Colorado River. Ozone will enable these plants to reliably treat water containing higher blends of State Project water and still meet the new microbial and D/DBP standards. The estimated capital cost is $971 million, with ozone expected to be on-line in 2011 for the Skinner plant, 2012 for the Diemer plant and 2015 for the Weymouth plant.

The second stage of the D/DBP Rule ("Stage 2 DBPR") was finalized in January 2006. The Stage 2 DBPR requires water systems to meet the TTHM and HAA standards at individual monitoring locations in the distribution system as opposed to a distribution system-wide average under the Stage 1 DBPR. Metropolitan does not anticipate any further capital improvements in order to meet the Stage 2 DBPR requirements. See "CAPITAL INVESTMENT PLAN—Other Major Projects of Metropolitan's Capital Investment Plan—*Water Treatment Facilities*" in this Appendix A.

The Interim Enhanced Surface Water Treatment Rule and the Long Term 2 Enhanced Surface Water Treatment Rule ("LT2ESWTR") have been implemented to simultaneously provide protection against microbial pathogens while the D/DBP rules provide reduced risk from disinfection by-products. Metropolitan does not anticipate any further capital improvements in order to meet the LT2ESWTR requirements.

Perchlorate. Perchlorate, used in solid rocket propellants, munitions and fireworks, has contaminated some drinking water wells and surface water sources throughout California. Perchlorate also has been detected in Metropolitan's Colorado River water supplies. A chemical manufacturing facility near Lake Mead in Nevada is a primary source of the contamination. Remediation efforts began in 1998 and have been successful at meeting the cleanup objectives, significantly reducing the levels of perchlorate entering into the Colorado River. CDPH has established a primary drinking water standard (i.e., MCL) of 6 ppb for perchlorate. Current perchlorate levels in Metropolitan's Colorado River supplies are at or below 2 ppb.

Chromium 6. Currently there is a public health standard for "total" Chromium, which includes Chromium 6, of 50 ppb. Chromium 6, however, is the relatively more harmful form. The California Office of Environmental Health Hazard Assessment ("OEHHA") is currently evaluating

existing toxicological data and is expected to propose a public health goal ("PHG") for chromium 6. Following release of the PHG, the CDPH can proceed with final development of a MCL for Chromium 6. Metropolitan's source water has trace concentrations (less than 1 ppb) of Chromium 6. It is expected that the adoption of a Chromium 6 regulation will not materially affect the water supply to Metropolitan or result in significant compliance costs.

Arsenic. In January 2001, the USEPA adopted a new drinking water arsenic rule. The new rule lowers the federal MCL for arsenic from 50 ppb to 10 ppb effective January 23, 2006. CDPH was required to adopt an MCL for arsenic that is at least as stringent as the federal standard and as close as economically and technically feasible to California's arsenic public health goal. The arsenic public health goal, which was adopted by OEHHA in April 2004, is 4 parts per trillion. CDPH implemented the new federal MCL during the development of the State regulation. Arsenic levels in Metropolitan's treated water supplies have averaged below 2 ppb in recent years. The new arsenic MCL is not expected to result in significant compliance costs.

Seismic Considerations

General. Major portions of the California Aqueduct, the Colorado River Aqueduct and Metropolitan's internal distribution system are located near major earthquake faults, including the San Andreas Fault. No assurance can be made that a significant seismic event would not cause damage to project structures, which could thereby interrupt the supply of water. Such event could adversely affect Metropolitan's revenues, which, in turn, could negatively impact its ability to pay its obligations.

Metropolitan has an ongoing surveillance program that monitors the safety and structural performance of its 14 dams and reservoirs. Operating personnel perform regular inspections that include monitoring and analyzing seepage flows and pressures. Engineers responsible for dam safety review the inspection data and monitor the horizontal and vertical movements for each dam. Major on-site inspections are performed at least twice each year. Instruments to transmit seismic acceleration time histories for analysis any time a dam is subjected to strong motion during an earthquake are located at a number of selected sites.

In addition, Metropolitan has developed an emergency plan that calls for specific levels of response appropriate to an earthquake's magnitude and location. Included in this plan are various communication tools as well as a structured plan of management that varies with the severity of the event. Predesignated personnel follow detailed steps for field facility inspection and distribution system patrol. Approximately 40 employees are designated to respond immediately under certain identifiable seismic events. An emergency operations center is maintained at the OCC. The OCC, which is specifically designed to be earthquake resistant, contains communication equipment, including a radio transmitter, microwave capability and a response line linking Metropolitan with the Department of Water Resources and the State's Office of Emergency Services. In the event of earthquake damage, Metropolitan expects its fabrication shop in La Verne, California, to have the capacity to fabricate pipe and related fittings for repairs.

State Water Project Facilities. The California Aqueduct crosses all major faults either by canal at ground level or by pipeline at very shallow depths to ease repair in case of damage from movement along a fault. State Water Project facilities are designed to withstand major earthquakes

along a local fault or magnitude 8.1 earthquakes along the San Andreas Fault without major damage. Dams, for example, are designed to accommodate movement along their foundations and to resist earthquake forces on their embankments. Earthquake loads have been taken into consideration in the design of project structures such as pumping and power plants. The location of check structures on the canal allows for hydraulic isolation of the fault-crossing repair.

The water from Northern California passes through 1,600 miles of aging levees in the Bay-Delta. In the event of a failure of the Bay-Delta levees, the quality of the Bay-Delta's water could be severely compromised as salt water comes in from the San Francisco Bay to equalize water pressure. Metropolitan's supply of State Water Project water would be impacted if pumps that move Bay-Delta water southward to the Central Valley and Southern California are shut down to contain the salt water intrusion. Metropolitan estimates that stored water supplies, Colorado River Aqueduct supplies and local water resources that would be available in case of a levee breach or other interruption in State Water Project supplies would meet demands in Metropolitan's service area for approximately twelve months. (See "METROPOLITAN'S WATER SUPPLY—Storage Capacity and Water in Storage" in this Appendix A). Since the State and Federal governments control the Bay-Delta levees, repair of any levee failures would be the responsibility of the State and Federal governments.

Metropolitan, in cooperation with the State Water Contractors, developed recommendations to the Department of Water Resources for emergency preparedness measures to maintain continuity in export water supplies and water quality during emergency events. These measures include improvements to emergency construction materials stockpiles in the Bay-Delta, improved emergency contracting capabilities, strategic levee improvements and other structural measures of importance to Bay-Delta water export interests. The Department of Water Resources utilized $12 million in fiscal year 2007-08 for initial stockpiling of rock for emergency levee repairs and development of Bay-Delta land and marine loading facilities.

Perris Dam. The Department of Water Resources reported in July 2005 that seismic studies indicate that the Department's Perris Dam facility could sustain damage from moderate earthquakes along the San Jacinto or San Andreas faults due to potential weaknesses in the dam's foundation. The studies used technology not available when the dam was completed in 1974. Perris Dam forms Lake Perris, the terminal reservoir for the State Water Project in Riverside County, with maximum capacity of approximately 130,000 acre-feet of water. In late 2005, the Department of Water Resources lowered the water level in the reservoir by about 25 feet and reduced the amount of water stored in the reservoir to about 75,000 acre-feet as the Department of Water Resources evaluates alternatives for repair of the dam. The lower lake level elevation was intended to prevent over-topping of the dam crest in the event of a major earthquake and to prevent uncontrolled releases. In December 2006, the Department of Water Resources completed a study identifying various repair options, began additional geologic exploration along the base of Perris Dam and started preliminary design. The Department of Water Resources' preferred alternative is to repair the dam to restore the reservoir to its historical level. The Department of Water Resources estimates that such repairs will cost between $340 million and $460 million and take four to eight years to complete. Water stored in Lake Perris is used primarily by Metropolitan. Accordingly, Metropolitan likely would be a major contributor toward the cost of repair or replacement of Perris Dam under its State Water Contract. (See "METROPOLITAN EXPENDITURES–State Water Contract Obligations" in this Appendix A.)

Metropolitan Facilities. Metropolitan's water conveyance and distribution facilities are designed to either withstand a maximum probable seismic event or to minimize the potential repair time in the event of damage. The five pumping plants on the Colorado River Aqueduct have been buttressed to better withstand seismic events. Other components of the Colorado River Aqueduct are monitored for any necessary rehabilitation and repair. Metropolitan personnel and independent consultants periodically reevaluate the internal distribution system's vulnerability to earthquakes. Supplies are dispersed throughout Metropolitan's service area, and a six-month reserve supply of water normally held in local storage (including emergency storage in Diamond Valley Lake) provides reasonable assurance of continuing water supplies during such events.

Security Measures

Metropolitan conducts ground and air patrols of the Colorado River Aqueduct and monitoring and testing at all treatment plants and along the Colorado River Aqueduct. Similarly, the Department of Water Resources has in place security measures to protect critical facilities of the State Water Project, including both ground and air patrols of the State Water Project.

Although Metropolitan has constructed redundant systems and other safeguards to ensure its ability to continually deliver water to its customers, and the Department of Water Resources has made similar efforts, no assurance can be given that a terrorist attack, or other security breach, against water facilities would not impair Metropolitan's ability to deliver water to its customers. A terrorist attack, or other security breach, that materially impairs water deliveries throughout Metropolitan's system could impair Metropolitan's operations and revenues and impact its ability to pay its obligations.

CAPITAL INVESTMENT PLAN

General Description

Metropolitan's current Capital Investment Plan (the "Capital Investment Plan" or "CIP") involves expansion and rehabilitation of existing facilities and construction of new facilities to provide for resource development, meet future water demands and comply with water quality regulations. Metropolitan's CIP is regularly reviewed and updated. Implementation and construction of specific elements of the program are subject to Board approval, and the amount and timing of borrowings will depend upon, among other factors, status of construction activity and water demands within Metropolitan's service area. From time to time projects that have been undertaken are delayed, redesigned or deferred by Metropolitan for various reasons and no assurance can be given that a project in the CIP will be completed in accordance with its original schedule or that any project will be completed as currently planned.

Inland Feeder Project

The Inland Feeder project currently is Metropolitan's largest capital project. It consists of a pipeline and tunnel conveyance system, approximately 44 miles long and 12 feet in diameter, which will carry State Water Project water from Devil Canyon Power Plant in the San Bernardino Mountains to Diamond Valley Lake and the Colorado River Aqueduct, both in Riverside County. The project will provide greater flexibility in managing Metropolitan's major water supplies and will allow greater amounts of State Water Project water to be accepted during wet seasons for storage in

Diamond Valley Lake. The Inland Feeder project is planned to increase the conveyance capacity from the East Branch of the State Water Project by 1,000 cubic-feet per second ("cfs"), allowing the East Branch to operate up to its full capacity. The Board has approved a total project budget of $1.2 billion for the Inland Feeder project. Expenditures through June 30, 2008 were approximately $1.01 billion. For fiscal year 2009, $61.4 million is budgeted. The Inland Feeder project currently is expected to be in service in late 2010, and is anticipated to be completed within budget.

On July 23, 2007, the California Supreme Court rendered its decision in *Metropolitan Water District v. Campus Crusade for Christ, Inc.*, an eminent domain case brought by Metropolitan to acquire property for the Inland Feeder Project. At trial, Metropolitan won a favorable judgment awarding $478,278 as just compensation for taking of the property. Campus Crusade had sought compensation totaling $15.6 million. On appeal, the Court of Appeal reversed the judgment and ruled that Campus Crusade should have been allowed to present evidence of additional damages to the jury. The Supreme Court agreed that the trial judge should leave the decision on certain damages issues to the jury and remanded the case for a new trial. Any increase in compensation awarded to Campus Crusade in a new trial will increase the capital cost of the Inland Feeder Project.

A portion of the Inland Feeder is within the San Bernardino National Forest. In 1999 construction of the Arrowhead East and West Tunnels was terminated due to groundwater issues. In June 2001, the U.S. Forest Service approved the permit to extend the time to complete the tunnels until 2008. Construction of the tunnels was resumed in 2002. An extension of the permit until 2012 was recently obtained. Mining of the Arrowhead East Tunnel was completed in May 2008 and the Arrowhead West Tunnel mining was completed in August 2008. Lining of both tunnels is proceeding.

To take advantage of available State Water Project water, Metropolitan constructed a tie-in to San Bernardino Municipal Water District's pipeline. Utilizing completed portions of the Inland Feeder, 200 cfs of State Water Project water currently can be delivered through the tie-in.

Other Major Projects of Metropolitan's Capital Investment Plan

The following is a brief description of other major projects contained in Metropolitan's CIP:

Water Treatment Facilities

Oxidation Retrofit Facilities. The oxidation retrofit facilities plan includes the design and construction of oxidation retrofit facilities and appurtenances at all of Metropolitan's treatment plants. This project is intended to allow Metropolitan to meet drinking water standards for disinfection by-products and reduce taste and odor incidents. The first phase of the oxidation retrofit program, at Metropolitan's Henry J. Mills Treatment Plant in Riverside County, was completed in 2003. Oxidation retrofit at the Joseph Jensen Treatment Plant was completed July 1, 2005. The cost for these two projects was approximately $235 million. The oxidation retrofit programs at the Robert B. Diemer, F.E. Weymouth and Robert A. Skinner plants are estimated to cost $371 million, $361 million and $239 million, respectively. Expenditures at the Diemer plant through June 30, 2008 were $144 million, with $45 million budgeted in fiscal year 2009. Completion is expected in fiscal year 2012. Expenditures at the Weymouth plant through June 30, 2008 were $30 million, with $3 million budgeted in fiscal year 2009. Completion is expected in fiscal year 2015. Expenditures

at the Skinner plant through June 30, 2008 were $184 million, with $42 million budgeted for fiscal year 2009. Completion is expected in fiscal year 2011.

Skinner Water Treatment Plant Expansion and Improvements. In addition to the oxidation retrofit project, expansion at the Skinner plant, including the addition of the 110-million gallons per day ("mgd") Module No. 7, the 34-mgd Washwater Reclamation Plant No. 3, associated chemical tank farms and feed systems and numerous other projects, is under way. Construction of Washwater Reclamation Plant No. 3 was completed in December 2006. Construction of Module No. 7 was completed in April 2007 and the associated chemical tank farms and feed systems were completed in August 2007. All other projects at Skinner are expected to be completed by fiscal year 2011. The total cost for these projects is approximately $318 million, with $279 million spent through June 30, 2008. Budgeted capital expenditures at Skinner for fiscal year 2009 are $17 million.

Mills Water Treatment Plant Capacity Upgrade. The Mills Water Treatment Plant Capacity Upgrade includes the design and construction of two additional ozone contactors, new enhanced solids handling capability for Modules 1 through 4, upgrade of equipment and processes of Modules 1 and 2 and upgrade of the post-filter disinfection system. These upgrades will enable Metropolitan to maximize the use of the Henry J. Mills plant by increasing its capacity from 160 mgd to 326 mgd. The cost for this project is approximately $138 million, with $17 million spent through June 30, 2008. Capital expenditures for fiscal year 2009 are budgeted at $36 million. Completion of the new and upgraded facilities is anticipated by fiscal year 2012.

Water Distribution Projects

San Diego Pipeline No. 6. The San Diego Pipeline No. 6 project, a joint project between Metropolitan and SDCWA, includes the construction of a 30-mile, nine to ten foot diameter pipeline and tunnel conveyance system to meet supplemental water needs in Riverside and San Diego Counties. Total costs for Metropolitan's portion of the project are estimated to be $299 million. The 6.9-mile North Reach of the pipeline, providing service through a connection with Eastern Municipal Water District, was completed in January 2007 at a cost of $66.3 million. Metropolitan, in conjunction with SDCWA, is currently studying alternative alignments for the remainder of Pipeline No. 6. The planned on-line date is 2018.

Perris Valley Pipeline. Metropolitan is constructing the Perris Valley Pipeline to increase the capacity for future deliveries of treated water from Metropolitan's Henry J. Mills Treatment Plant. The 96-inch diameter pipeline will be approximately 6.5 miles long and will have service connections to Eastern and Western Municipal Water Districts. It is anticipated that Metropolitan's cost of the project will be approximately $150 million. Metropolitan's expenditures as of June 30, 2008, were $54 million, with $62 million budgeted to be spent in fiscal year 2009. Final completion of the project is anticipated by summer of 2010.

Central Pool Augmentation and Water Quality Project. This project includes a feasibility study, environmental documentation and land acquisition for a new treatment plant at Lake Mathews and an 18-mile tunnel and pipeline conveyance system to deliver water from Lake Mathews to western Riverside and Orange Counties. The studies and acquisition of lands critical to the project are expected to be completed by fiscal year 2019, at a cost of approximately $62 million. Total program cost, including a new treatment plant and conveyance system, is estimated to be

approximately $1.2 billion; however, recent planning studies show the need for this project has been deferred and construction is not expected to begin until after the 10-year planning window.

Infrastructure Reliability Projects

Weymouth Water Treatment Plant Improvements. The Weymouth Water Treatment Plant was built in 1938 and subsequently expanded several times over the following 35 years. It is Metropolitan's oldest water treatment facility. Metropolitan plans major upgrades and refurbishment/replacement projects to maintain its reliability and improve its efficiency. These include upgrading the incoming electrical service from a single 12-kV power line to a new underground 66-kV service line, upgrading and/or replacing the plant's power centers and distribution system and upgrading the emergency power back-up generators and grounding system. An overall master plan of treatment facilities improvements will also be developed, to be constructed after completion of the new ozone facilities. The preliminary cost estimate for all projected improvements at the Weymouth plant, not including the ozone facilities, is approximately $230 million, with $55 million spent through June 2008. Budgeted capital expenditures for improvements at the Weymouth plant for fiscal year 2009 are $28 million.

Colorado River Aqueduct Facilities. The Colorado River Aqueduct was originally completed in 1941. Through annual inspections and maintenance activities, the performance and reliability of the various components of the Colorado River Aqueduct are regularly evaluated. A major overhaul of the pump units at the five pumping plants was completed in 1988. Refurbishment or replacement of many of the electrical system components, including the transformers, circuit breakers and motor control centers, is currently being planned. Additionally, many of the mechanical components at the pumping plants as well as the Copper Basin and Gene Wash Reservoirs will be replaced over the next few years. The cost estimate for these refurbishment or replacement projects is currently $166 million. Costs through June 2008 were $85 million, with $17 million budgeted for fiscal year 2009.

Groundwater Storage Programs

Metropolitan has partnered with a number of agencies to develop various groundwater storage projects in its service area. These projects are designed to help meet the water delivery reliability goals of storing surplus imported supplies when available so that local agencies can withdraw stored groundwater during droughts or other periods of water supply shortage.

Groundwater Storage Using Proposition 13 Funds. Metropolitan was allocated $45 million in State bond proceeds to develop groundwater storage projects in Metropolitan's service area. A funding agreement for the City of Long Beach project to provide 13,000 acre-feet of groundwater storage was executed in July 2002 and construction was completed during calendar year 2006. In September 2007, Metropolitan called for extraction of 4,300 acre-feet of stored water from this project with Long Beach, and Long Beach shifted 4,300 acre-feet of imported water demand to the storage program in October, November and December of 2007. A funding agreement for a second storage program with the City of Long Beach to provide 3,600 acre-feet of storage was executed in July 2005.

A funding agreement for the Three Valleys Municipal Water District project with the City of La Verne to provide 3,000 acre-feet of storage was executed in October 2002, and a second funding agreement with Three Valleys Municipal Water District for a storage program in the Upper

Claremont Heights Basin to provide 3,000 acre-feet of storage was executed in September 2005. A funding agreement for the Foothill Municipal Water District Project to provide 9,000 acre-feet of storage was executed in February 2003.

A funding agreement for projects anticipated to provide 100,000 acre-feet of storage in Chino Basin and 66,000 acre-feet of storage in the Orange County Basin were executed in June 2003. A funding agreement for the City of Compton to provide 2,289 acre-feet of storage was executed in February 2005. A funding agreement with Western Municipal Water District and Elsinore Valley Municipal Water District was executed in December 2006 for storage of 12,000 acre-feet.

The nine projects in this program, when completed, are expected to provide over 210,000 acre-feet of groundwater storage. The aggregate amount of water stored pursuant to the Long Beach, Chino Basin, Orange County Basin, Three Valleys Municipal Water District/City of La Verne, Foothill Municipal Water District, Compton and Western Municipal Water District/Elsinore Valley Municipal Water District agreements is shown as part of the member agency water storage programs in the table "Metropolitan's Water Storage Capacity and Water in Storage" under "METROPOLITAN'S WATER SUPPLY—Storage Capacity and Water in Storage" in this Appendix A.

North Las Posas Basin Groundwater Storage Program. This groundwater storage program includes construction of facilities to store water in the North Las Posas Groundwater Basin in Ventura County. The storage capacity is 210,000 acre-feet, with an extraction capacity of 47,000 acre-feet per year. The amount of water stored pursuant to the North Las Posas Basin groundwater storage program is shown as part of the member agency water storage programs in the table "Metropolitan's Water Storage Capacity and Water in Storage" under "METROPOLITAN'S WATER SUPPLY—Storage Capacity and Water in Storage" in this Appendix A. Construction of the Phase 1 and Phase 2 well fields and the pipeline to integrate these well fields into the Calleguas Municipal Water District's distribution system is complete and construction of the Phase 1 Moorpark Pump Station is expected to be completed by February 2009. In September 2007 Metropolitan requested extraction from the storage account through 2008, and Calleguas Municipal Water District is meeting a portion of its imported water demands with groundwater from the storage account.

Capital Investment Plan Financing

The CIP will require significant funding from debt financing as well as from pay-as-you-go funding. The Board has adopted an internal funding objective to fund all capital program expenditures required for replacements and refurbishments of Metropolitan facilities from current revenues. However, in order to reduce drawdowns of reserve balances during fiscal year 2007-08 and to mitigate financial risks that could occur in upcoming years, pay-as-you-go funding totaled $45 million in fiscal year 2007-08, rather than the $85 million originally budgeted for the fiscal year. Pay-as-you-go funding is anticipated to increase to $95 million per year in fiscal years 2008-09 through 2010-11. To make up for the reduction in pay-as-you-go funding in 2007-08, Metropolitan plans to increase pay-as-you-go funding to $125 million per year in fiscal years 2011-12 and 2012-13.

To limit the accumulation of cash and investments in the Replacement and Refurbishment Fund, the maximum balance in this fund at the end of each fiscal year will be $95 million. Amounts above the $95 million limit will be transferred to the Revenue Remainder Fund and may be used for any lawful purpose. The remainder of capital program expenditures will be funded through the issuance from time to time of water revenue bonds, which are payable from Net Operating Revenues. Metropolitan expects to issue additional water revenue bonds to fund the CIP in the future. See "METROPOLITAN EXPENDITURES—Revenue Bond Indebtedness" in this Appendix A.

Projection of Capital Investment Plan Expenditures

The table below sets forth projected CIP expenditures by project type for the fiscal years ending June 30, 2009 through 2013. The requirements of the CIP from fiscal year 2008-09 through fiscal year 2012-13 are estimated to be approximately $1.72 billion in escalated dollars. This estimate is updated annually as a result of the periodic review and revision of the CIP. See "CAPITAL INVESTMENT PLAN—General Description" and "HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES."

CAPITAL INVESTMENT PLAN
PROJECTION OF EXPENDITURES[1]
(Fiscal Years Ended June 30 - Dollars in Thousands)

	2009	2010	2011	2012	2013	Total
Treatment	$ 208,861	$ 186,237	$ 224,737	$187,259	$97,590	$904,684
Rehabilitation and Replacement	68,943	67,709	79,457	88,703	101,522	406,334
Inland Feeder	61,387	43,986	20,595	450	450	126,868
Distribution	87,656	27,825	2,510	2,078	8,302	128,371
Administrative & General	15,817	20,866	18,830	5,693	1,429	62,635
Supply[2]	10,851	2,450	7,500	7,500	1,500	29,801
Conveyance & Aqueduct	7,468	15,247	1,308	2,420	-0-	26,443
Other	7,877	8,657	9,009	4,860	-0-	30,403
Total	$468,860	$372,977	$363,946	$298,963	$210,793	$1,715,539

Source: Metropolitan.

(1) Based on Fiscal Year 2008-09 budget. Totals are rounded.

(2) Includes conjunctive use programs and other capital projects to develop additional reliable supplies.

The above projections do not include amounts for contingencies, but include escalation at 2.77 percent per year for projects for which formal construction contracts have not been awarded. Additional capital costs may arise in the future as a result of, among other things, federal and State water quality regulations, project changes and mitigation measures necessary to satisfy environmental and regulatory requirements, and for additional facilities to, among other things, replenish groundwater basins and operate groundwater basins conjunctively with surface supplies. See "METROPOLITAN'S WATER DELIVERY SYSTEM—Water Treatment" above.

GOVERNANCE AND MANAGEMENT

Board of Directors

Metropolitan is governed by a 37-member Board of Directors. Each member public agency is entitled to have at least one representative on the Board, plus an additional representative for each full five percent of the total assessed valuation of property in Metropolitan's service area that is within the member public agency. Changes in relative assessed valuation do not terminate any director's term. Accordingly, the Board may, from time to time, have more than 37 directors.

The Board includes business, professional and civic leaders. Directors serve on the Board without compensation from Metropolitan. Voting is based on assessed valuation, with each member agency being entitled to cast one vote for each $10 million or major fractional part of $10 million of assessed valuation of property within the member agency, as shown by the assessment records of the county in which the member agency is located. The Board administers its policies through the Metropolitan Water District Administrative Code (the "Administrative Code"), which was adopted by the Board in 1977. The Administrative Code is periodically amended to reflect new policies or changes in existing policies that occur from time to time.

Management

Metropolitan's day-to-day management is under the direction of its General Manager, who serves at the pleasure of the Board, as do Metropolitan's General Counsel, General Auditor and Ethics Officer. Following is a biographical summary of Metropolitan's principal executive officers.

Jeffrey Kightlinger, General Manager – Mr. Kightlinger was appointed General Manager in February 2006, leaving the position of General Counsel, which he had held since February 2002. Before becoming General Counsel, Mr. Kightlinger was a Deputy General Counsel and then Assistant General Counsel, representing Metropolitan primarily on Colorado River matters, environmental issues, water rights and a number of Metropolitan's water transfer and storage programs. Prior to joining Metropolitan in 1995, Mr. Kightlinger worked in private practice representing numerous public agencies including municipalities, redevelopment agencies and special districts. Mr. Kightlinger earned his bachelor's degree in history from the University of California, Berkeley, and his law degree from the University of Santa Clara.

Karen Tachiki, General Counsel – Ms. Tachiki assumed the position of General Counsel in February 2007. She previously served as Metropolitan's lead attorney on Colorado River matters and was Metropolitan's Assistant General Counsel from November 1988 to July 2000. From July

2000 to January 2003 Ms. Tachiki was principal resources manager for McGuire Environmental Consultants, Inc. She served as chief counsel of the Southern California Association of Governments (SCAG) from January 2003 until rejoining Metropolitan. She also served as SCAG's director of government and public affairs from April 2006 to February 2007. She is former chair of the Colorado River Water Users Association's resolutions committee and has served as a member of the resolutions committee of the National Water Resources Association and the legal affairs committee of the Association of California Water Agencies. Ms. Tachiki earned a bachelor's degree in political science and law degree from the University of California at Los Angeles.

Gerald C. Riss, General Auditor – Mr. Riss was appointed as Metropolitan's General Auditor in July 2002 and is responsible for the independent evaluation of the policies, procedures and systems of control throughout Metropolitan. Mr. Riss is a certified fraud examiner, certified financial services auditor and certified risk professional with more than 25 years of experience in accounting, audit and risk management. Prior to joining Metropolitan, Mr. Riss was Vice President and Assistant Division Head of Risk Management Administration at United California Bank/Bank of the West. He also served as Senior Vice President, director of Risk Management and General Auditor of Tokai Bank of California from 1988 until its reorganization as United California Bank in 2001. He earned a bachelor's degree in accounting and master's degree in business administration from Wayne State University in Detroit, Michigan.

Deni Elliott, Ethics Officer – Ms. Elliott was appointed as Ethics Officer on June 8, 2004. She served as Metropolitan's interim Ethics Officer beginning in September 2003. Ms. Elliott holds the Poynter Jamison Chair in Media Ethics and Press Policy at the University of South Florida, St. Petersburg, where she is a tenured full professor in the Department of Journalism. She has taught ethics for more than 24 years, including at the University of Montana, Dartmouth College, Utah State University and Wayne State University. Ms. Elliott also was founding director of the Dartmouth College Ethics Institute and the Practical Ethics Center at the University of Montana, as well as founding director of the nation's first graduate degree program in teaching ethics. She was awarded an interdisciplinary doctoral degree from Harvard University in the philosophy of education, and earned a master's degree in philosophy from Wayne State University and bachelor's degree in communications from the University of Maryland.

Brian G. Thomas, Assistant General Manager/Chief Financial Officer – Mr. Thomas was appointed as Chief Financial Officer in May 2000. Mr. Thomas previously worked for Metropolitan from 1993 to February 1999, beginning as Assistant Director of Finance before being selected as Assistant Chief of Planning and Resources. From February 1999 to April 2000, Mr. Thomas worked as Assistant General Manager of Finance and Administration for the City of Anaheim's Public Utilities Department, where he was responsible for financial management, budgeting, administration and overseeing the utility's power resources program. Mr. Thomas holds a doctorate and masters degree in economics from the University of California, Riverside and bachelor degrees in biology and economics from California State Polytechnic University, Pomona.

Debra Man, Assistant General Manager/Chief Operating Officer – Ms. Man was appointed to this position on December 15, 2003. Ms. Man has worked at Metropolitan since 1986, beginning as an engineer and advancing to Chief of the Planning and Resources Division. As Chief of Planning and Resources she was responsible for major initiatives adopted by Metropolitan's Board, such as the Integrated Water Resources Plan, rate structure, and facility plans for expansion of

Metropolitan's distribution system. In 1999 she was appointed as Vice President of Water Transfers and Exchanges, responsible for securing water supplies through agreements and partnerships with other water and agricultural interests in San Joaquin Valley and Southern California and demonstrating Metropolitan's water supply reliability in compliance with current laws. Ms. Man is a registered professional civil engineer in California and Hawaii. She has a master's degree in civil/environmental engineering from Stanford University and a bachelor's degree in civil engineering from the University of Hawaii.

Roger Patterson, Assistant General Manager/Strategic Initiatives – Mr. Patterson was appointed Assistant General Manager in March 2006. He is responsible for overseeing water supply and planning issues, including the Colorado River and State Water Project. He previously served as a consultant to Metropolitan on Colorado River issues. Mr. Patterson was the director of the Nebraska Department of Natural Resources from 1999 to 2005 where he was responsible for water administration, water planning, flood-plain delineation, dam safety and the state databank. Prior to his work in Nebraska, Mr. Patterson spent 25 years with the Bureau of Reclamation, retiring from the Bureau as the Regional Director for the Mid-Pacific Region. He is a registered professional engineer in Nebraska and Colorado, and earned bachelor's and master's degrees in engineering from the University of Nebraska.

Gilbert F. Ivey, Assistant General Manager and Chief Administrative Officer – Mr. Ivey is the Chief Administrative Officer and is responsible for human resources, real property management, strategic land development and Metropolitan's small business program. Mr. Ivey also administers the Office of the Board of Directors. Mr. Ivey has been with Metropolitan for 35 years, starting as a summer trainee in the Engineering Division. He has held various positions in Finance, Right-of-Way and Land, Operation, Human Resources and Executive Offices. He earned a bachelor's degree in business administration from California State University, Dominquez Hills and holds various professional designations and certifications in management from Pepperdine University and the University of Southern California.

Linda Waade, Deputy General Manager – Ms. Waade is responsible for Metropolitan's communications, outreach, education and legislative matters. Prior to joining Metropolitan in August 2006, she coordinated government and community affairs for the Los Angeles office of CH2M Hill, Inc., where she provided counsel on policy development and outreach strategies for environmental and public works projects. She also maintained her own consulting firm, Waade Partners Consulting. Ms. Waade was deputy chief of staff and policy director for then Los Angeles City Councilmember Antonio R. Villaraigosa from July 2003 to January 2004. She served as transportation policy advisor for Los Angeles Mayor Tom Bradley from 1991-93, as chief of staff for U.S. Congressman Mel Levine in his Los Angeles district office from 1988-89 and as the congressman's special assistant for environmental affairs from 1987-88, and was executive director of the Coalition for Clean Air, a statewide advocacy organization dedicated to air quality issues, from 1994-98. Ms. Waade earned a bachelor's degree in political science from California State University at Los Angeles. She is a past recipient of the "Environmental Leadership Award" from the California League of Conservation Voters.

Employee Relations

The total number of regular full-time Metropolitan employees on October 30, 2008 was 1,917, of whom 1,372 were represented by AFSCME Local 1902, 107 by the Supervisors Association, 291 by the Management and Professional Employees Association and 115 by the Association of Confidential Employees. The remaining 32 employees are unrepresented. The four bargaining units represent 98 percent of Metropolitan's employees. The Memorandum of Understanding ("MOU") with AFSCME Local 1902 covers the period July 1, 2005 to June 30, 2009. The MOU with the Supervisors Association covers the period January 1, 2006 to December 31, 2009. The MOU with the Management and Professional Employees Association covers the period July 1, 2005 through June 30, 2009. The MOU with the Association of Confidential Employees covers the period July 1, 2003 through June 30, 2009.

In July 1998, a case entitled *Dewayne Cargill et al. v. Metropolitan Water District of Southern California et al.* was filed against Metropolitan. This case is a class action lawsuit brought by various categories of temporary workers against Metropolitan and certain temporary agencies, claiming that Metropolitan misclassified them as temporary workers to avoid providing them the same rights and benefits given to regular employees, and seeking the full benefits of public employment, including membership in the California Public Employees' Retirement System ("PERS") on a retroactive basis. (See "METROPOLITAN EXPENDITURES—Defined Benefit Pension Plan" in this APPENDIX A.)

The parties initially litigated the legal standard of eligibility for PERS benefits. PERS intervened in support of plaintiffs' position that the common law standard of employment governs. On February 26, 2004, in a case of first impression, the California Supreme Court ruled that Metropolitan is required to enroll in PERS all temporary workers who would be considered Metropolitan employees under California common law. The Supreme Court did not decide whether plaintiffs are in fact common law employees of Metropolitan, whether plaintiffs (if they are determined to be Metropolitan employees for PERS purposes) are entitled to enrollment in PERS as of the dates they were first employed, whether plaintiffs are Metropolitan's employees for any purpose other than PERS enrollment, or whether they are entitled to any benefits as employees under other provisions of law.

The legal issue heard by the California Supreme Court was limited to the standard of eligibility for PERS benefits and did not address plaintiffs' claims for rights and benefits under Metropolitan's Administrative Code. The parties have reached a court-approved settlement of the Administrative Code claim. Pursuant to the settlement, Metropolitan paid $35 million to a settlement fund. Half of this amount was allocated to operations and maintenance expenses and half to capital costs.

The remaining portion of the case concerns implementing the Supreme Court's ruling establishing common law eligibility for PERS benefits. That effort involves enrolling eligible temporary workers, resolving eligibility disputes and addressing the potential penalties associated with late PERS enrollment. The parties agreed to address eligibility disputes by submitting test cases before administrative judges covering different categories of temporary worker services. Metropolitan received an adverse determination from PERS on the penalty issue. While Metropolitan continues to maintain that PERS should not apply any penalty provision, the parties

have entered into a settlement agreement that fully resolves plaintiffs' PERS claim (other than plaintiffs' demand for attorney fees). The settlement provides for a claims process which Metropolitan estimates will result in approximately 2,000 claims for PERS benefits. The estimated potential liability is in the range of $15 to $40 million.

Risk Management

Metropolitan is exposed to various risks of loss related to the design, construction, treatment and delivery of water. With assistance of third party claims administrators, Metropolitan is self-insured for liability, property and workers' compensation. Metropolitan self-insures the first $25 million per liability occurrence, with commercial liability coverage of $75 million in excess of the self-insured retention. The $25 million self-insured retention is maintained as a separate restricted reserve. Metropolitan is also self-insured for loss or damage to its property, with the $25 million self-insured retention also being accessible for emergency repairs and Metropolitan property losses. In addition, Metropolitan obtains other excess and specialty insurance coverages such as directors' and officers' liability, fiduciary liability and aircraft hull and liability coverage.

Metropolitan self-insures the first $5 million for workers' compensation with excess coverage of $25 million. Metropolitan separately funds remaining workers' compensation claims and general liability claims arising from the Diamond Valley Lake and early portions of the Inland Feeder construction projects, which were insured through Owner Controlled Insurance Programs ("OCIPs"). The OCIPs for those projects have been concluded. The costs to settle and close the remaining claims for the Diamond Valley Lake and Inland Feeder construction projects are estimated to be $1 million and $300,000, respectively.

The self-insurance retentions and reserve levels currently maintained by Metropolitan may be modified by Metropolitan's Board at its sole discretion.

METROPOLITAN REVENUES

General

Until water deliveries began in 1941, Metropolitan's activities were, by necessity, supported entirely through the collection of *ad valorem* property taxes. Since the mid-1980s, water sales revenues have provided approximately 75 to 80 percent of total revenues and *ad valorem* property taxes have accounted for about 10 percent of revenues, while the remaining revenues have been derived principally from the sale of hydroelectric power, interest on investments and additional revenue sources (water standby charges and availability of service charges) beginning in 1993. *Ad valorem* taxes do not constitute a part of Operating Revenues and are not available to make payments with respect to the water revenue bonds issued by Metropolitan. *Ad valorem* taxes are applied solely to the payment of principal and interest on Metropolitan's outstanding general obligation bonds and a portion of State Water Contract payments.

The basic rate for untreated water for domestic and municipal uses increased from $8 per acre-foot in fiscal year 1941-42 to the rate of $412 per acre-foot for Tier 1 water, effective January 1, 2009. The *ad valorem* tax rate for Metropolitan purposes has gradually been reduced from a peak equivalent rate of 0.1250 percent of full assessed valuation in fiscal year 1945-46 to 0.0043 percent of full assessed valuation for fiscal year 2008-09. See "—Rate Structure" below. The rates charged

by Metropolitan represent the wholesale cost of Metropolitan water to its member agencies, and not the cost of water to the ultimate consumer. Metropolitan does not exercise control over the rates charged by its member agencies or their subagencies to their customers.

Summary of Receipts by Source

The following table sets forth Metropolitan's sources of receipts for the five fiscal years ended June 30, 2008. The table provides cash basis information, which is unaudited. Audited financial statements for the two fiscal years ended June 30, 2008 and June 30, 2007, respectively, are provided in Appendix B - "THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2008 AND JUNE 30, 2007."

SUMMARY OF RECEIPTS BY SOURCE[1]
Fiscal Years Ended June 30
(Dollars in Millions)

	2004	2005	2006	2007	2008
Water Sales[2]	$ 843.2	$ 819.3	$ 826.7	$ 891.5	$ 967.8
Net Tax Collections[3]	95.9	98.3	97.8	101.1	100.4
Additional Revenue Sources[4]	99.9	112.9	111.4	113.1	114.0
Interest on Investments	25.2	29.4	37.7	41.2	60.3
Hydroelectric Power Sales[5]	21.5	21.3	29.9	44.9	41.1
Other Collections and Trust Funds[6]	(33.0)	4.1	12.7	8.8	8.1
Total Receipts	$1,052.7	$1,085.3	$1,116.2	$1,200.6	$1,291.7

Source: Metropolitan.

(1) Does not include any proceeds from the sale of bonded indebtedness.

(2) Gross receipts in each year are for sales in the twelve months ended April 30 of such year.

(3) *Ad valorem* taxes levied by Metropolitan are applied solely to the payment of outstanding general obligation bonds of Metropolitan and a portion of State Water Contract payments.

(4) Includes receipts derived from water standby charges, readiness-to-serve, and connection maintenance or capacity charges. See"—Rate Structure" and "—Additional Revenue Components" below.

(5) Receipts from Colorado River Aqueduct (CRA) power sales are included in FY 2006, FY 2007 and FY 2008. CRA power receipts in prior years were reflected as a reduction in CRA power costs. See the table headed "SUMMARY OF EXPENDITURE" under "METROPOLITAN EXPENDITURES" in this Appendix A.

(6) Activity in 2004 reflects member agency refund payments.

Revenue Allocation Policy and Tax Revenues

The Board determines the water revenue requirement for each fiscal year after first projecting the *ad valorem* tax levy for that year. The tax levy for any year is subject to limits imposed by the Act and Board policy. Currently the tax levy is set to not exceed the amount needed to pay debt service on Metropolitan's general obligation bonds and a portion of Metropolitan's share of the debt service on the general obligation bonds issued by the State to finance the State Water Project. Any

deficiency between tax levy receipts and Metropolitan's share of debt service obligations on general obligation bonded debt issued by the State is expected to be paid from Operating Revenues, as defined in the Master Resolution. See "HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES." The State Water Contract requires that in the event that Metropolitan fails or is unable to raise sufficient funds by other means, Metropolitan must levy upon all property within its boundaries not exempt from taxation a tax or assessment sufficient to provide for all payments under the State Water Contract.

Water Sales Revenues

Authority. Water rates are established by the Board and are not subject to regulation by the Public Utilities Commission of California or by any other local, State or federal agency. In accordance with the Act, water rates must be uniform for like classes of service. Metropolitan has three classes of water service: (1) full service; (2) replenishment (formerly seasonal storage); and (3) interim agricultural. See "—Classes of Water Service."

No member agency of Metropolitan is currently obligated to purchase water from Metropolitan. Member agencies are entitled to enter into voluntary 10-year water supply purchase orders for water purchases. See "—Member Agency Purchase Orders" below.

Payment Procedure. Water is delivered to the member agencies on demand and is metered at the point of delivery. Member agencies are billed monthly and a late charge of one percent of the delinquent payment is assessed for delinquent payments not exceeding five business days. A late charge of two percent of the amount of the delinquent payment is charged for a payment that is delinquent for more than five business days for each month or portion of a month that the payment remains delinquent. Metropolitan has the authority to suspend service to any agency delinquent for more than 30 days. Delinquencies have been rare; in such instances late charges have been collected. No service has been suspended because of delinquencies.

Water Sales. The following table sets forth the acre-feet of water sold and water sales receipts for the five fiscal years ended June 30, 2008. The table provides cash basis information. Water sales revenues of Metropolitan for the two fiscal years ended June 30, 2008 and June 30, 2007, respectively, on an accrual basis, are shown in Appendix B - "THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2008 AND JUNE 30, 2007" attached to this Official Statement.

SUMMARY OF WATER SOLD AND WATER SALES RECEIPTS
Fiscal Years Ended June 30

Year	Acre Feet Sold	Gross Receipts[1] (in millions)	Average Receipts Per Acre Foot[2]	Average Rate Per 1000 Gallons
2004	2,288,741	$843.2	$368	$1.13
2005	2,214,399	819.3	370	1.14
2006	2,152,818	826.7	384	1.18
2007	2,247,214	891.5	397	1.22
2008	2,305,364	967.8	420	1.29

Source: Metropolitan.

(1) Gross receipts in each year are for sales in the twelve months ended April 30 of such year, with rates and charges invoiced in May and payable by the last business day of June of each year. Includes revenues from water wheeling. See "METROPOLITAN REVENUES—Wheeling Charges".

(2) Amount is based upon acre-feet delivered by gross receipts. See table entitled "SUMMARY OF WATER RATES" in this Appendix A.

Rate Structure

The following rates and charges are elements of Metropolitan's rate structure for full service water deliveries:

Tier 1 and Tier 2 Water Supply Rates. The Tier 1 and Tier 2 Water Supply Rates are designed to recover Metropolitan's water supply costs. The Tier 2 Supply Rate is designed to reflect Metropolitan's costs of acquiring new supplies. Member agencies are charged the Tier 1 or Tier 2 Water Supply Rate for water purchases, as described under "–Member Agency Purchase Orders" below.

System Access Rate. The System Access Rate is intended to recover a portion of the costs associated with the conveyance and distribution system, including capital, operating and maintenance costs. All users (including member agencies and third-party wheeling entities (see "—Wheeling Charges" below) of the Metropolitan system pay the System Access Rate.

Water Stewardship Rate. The Water Stewardship Rate is charged on a dollar per acre-foot basis to collect revenues to support Metropolitan's financial commitment to conservation, water recycling, groundwater recovery and other water management programs approved by the Board. The Water Stewardship Rate is charged for every acre-foot of water conveyed by Metropolitan.

System Power Rate. The System Power Rate is charged on a dollar per acre-foot basis to recover the cost of power necessary to pump water from the State Water Project and Colorado River through the conveyance and distribution system for Metropolitan's member agencies. The System Power Rate is charged for all Metropolitan supplies. Entities wheeling non-Metropolitan water supplies will pay the actual cost of power to convey water on the State Water Project, the Colorado River Aqueduct or the Metropolitan distribution system, whichever is applicable.

Treatment Surcharge. Metropolitan charges a treatment surcharge on a dollar per acre-foot basis for treated deliveries. The treatment surcharge is set to recover the cost of providing treated water service, including capital and operating cost.

Water Supply Surcharge. Effective January 1, 2009, Metropolitan adopted the Water Supply Surcharge of $25 per acre-foot, applicable to Full Service Tier 1 untreated and treated water rates and to the Interim Agricultural Water Program untreated and treated water rates. This Water Supply Surcharge is intended to recover the costs of additional water transfers purchased to augment supplies from the State Water Project. These costs are anticipated to be about $50 million in fiscal year 2008-09.

The amount of each of these rates since January 1, 2005, is shown in the table entitled "SUMMARY OF WATER RATES" under "—Water Rates by Water Category" below.

Member Agency Purchase Orders

The current rate structure provides for a member agency's agreement to purchase water from Metropolitan by means of a voluntary purchase order. Under each purchase order, a member agency agrees to purchase, over the ten-year term of the contract, an amount of water equal to at least 60 percent of its highest firm demand for Metropolitan water in any fiscal year from 1989-90 through 2001-02 multiplied by ten. Member agencies are allowed to vary their purchases from year to year, but a member agency will be obligated to pay for the full amount committed under the purchase order, even if it does not take its full purchase order commitment by the end of the ten-year period. In consideration of its purchase order, a member agency that executed a purchase order is entitled to purchase a greater amount of water at the lower Tier 1 Water Supply Rate, as described in the following paragraph. Metropolitan anticipates that all member agency commitments will be fulfilled.

Each member agency that executed a purchase order will be allowed to purchase up to 90 percent of its base amount at the Tier 1 Water Supply Rate in any fiscal year during the term of the purchase order, and its base amount will be the greater of (1) its highest firm demand for Metropolitan water in any fiscal year from 1989-90 through 2001-02 or (2) its ten-year rolling average of firm demand for Metropolitan water. Amounts purchased by such agencies over the applicable base amount will be priced at the Tier 2 Water Supply Rate. Member agencies that did not enter into purchase orders will be permitted in any fiscal year to purchase 60 percent of their base amount (equal to the member agency's highest fiscal year demand between 1989-90 and 2001-02) at the Tier 1 Water Supply Rate. Twenty-four of Metropolitan's 26 member agencies executed purchase orders for an aggregate of 12.5 million acre-feet of water over the ten years ending December 31, 2012. Metropolitan's water sales for the five fiscal years from 2003-04 through 2007-08 ranged from 2.15 million acre-feet to 2.31 million acre-feet per year.

Classes of Water Service

Full Service Water. Full service water service, formerly known as non-interruptible water service, includes water sold for domestic and municipal uses. Full service treated water rates are the sum of the applicable supply rate, system access rate, water stewardship rate, system power rate and treatment surcharge. Full service untreated water rates are the sum of the applicable supply rate, system access rate, water stewardship rate and system power rate. Approximately 88 percent of

Metropolitan's total water sales were sold as full service in fiscal year 2008. Full service water sales are expected to remain the major component of Metropolitan water sales in the future.

Interim Agricultural Water Program. This program provides a discounted rate for agricultural water users that, pursuant to the Act, are permitted to receive only surplus water not needed for domestic or municipal purposes. The maximum amount of agricultural water that Metropolitan may deliver on an annual basis under this program is 155,190 acre-feet. The terms of the program provide that, should a water shortage occur, Metropolitan may reduce deliveries of agricultural water under the program by 30 percent before imposing conservation measures on Full Service deliveries.

Metropolitan imposed the 30 percent reduction in agricultural water deliveries beginning January 1, 2008, to make this water (approximately 45,000 acre-feet) available to meet other demands. See "METROPOLITAN'S WATER SUPPLY—Five-Year Supply Plan" in this Appendix A. On October 14, 2008, the Board approved annual reductions of the Interim Agricultural Water Program discount beginning January 1, 2010, and discontinuance of the program when the discount reaches zero on January 1, 2013. Customers participating in the program may irrevocably opt out of the program at the beginning of each calendar year during the phase-out period and purchase water at Metropolitan's full service rates.

Replenishment. Replenishment water is sold at a discounted rate to member agencies that store water and subsequently use the water to offset demands on Metropolitan in times of shortage. Metropolitan ceased deliveries under the Replenishment Program on May 1, 2007. Deliveries under the Replenishment Program are not expected to occur until water supply conditions improve. See "METROPOLITAN'S WATER SUPPLY—Five-Year Supply Plan" in this Appendix A.

Water Rates by Water Category

The following table sets forth Metropolitan's water rates by category beginning January 1, 2005. See also "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES—Water Sales Receipts" in this Appendix A. In addition to the base rates for untreated water sold in the different classes of service, the columns labeled "Treated" include the surcharge that Metropolitan charges for water treated at its water treatment plants. See "—Rate Structure" and "—Classes of Water Service" above for a description of current rates.

SUMMARY OF WATER RATES

(Dollars per Acre-Foot)

	SUPPLY RATE		SYSTEM ACCESS RATE	WATER STEWARDSHIP RATE	SYSTEM POWER RATE	TREATMENT SURCHARGE
	Tier 1	Tier 2				
January 1, 2005	$73	$154	$152	$25	$ 81	$112
January 1, 2006	$73	$169	$152	$25	$ 81	$122
January 1, 2007	$73	$169	$143	$25	$ 90	$147
January 1, 2008	$73	$171	$143	$25	$110	$157
January 1, 2009*	$134†	$250	$143	$25	$110	$167

	FULL SERVICE TREATED(1)		FULL SERVICE UNTREATED(2)		INTERIM AGRICULTURAL PROGRAM		REPLENISHMENT RATE	
	Tier 1	Tier 2	Tier 1	Tier 2	Treated	Untreated	Treated	Untreated
January 1, 2005	$443	$524	$331	$412	$329	$241	$325	$238
January 1, 2006	$453	$549	$331	$427	$339	$241	$335	$238
January 1, 2007	$478	$574	$331	$427	$364	$241	$360	$238
January 1, 2008	$508	$606	$351	$449	$394	$261	$390	$258
January 1, 2009*	$579	$695	$412	$528	$465†	$322†	$436	$294

Source: Metropolitan.

* Rates to be effective January 1, 2009 were adopted by Metropolitan's Board on March 11, 2008.

† Includes $25 per acre-foot Water Supply Surcharge.

(1) Full service treated water rates are the sum of the applicable supply rate, system access rate, water stewardship rate, system power rate and treatment surcharge.

(3) Full service untreated water rates are the sum of the applicable supply rate, system access rate, water stewardship rate and system power rate.

Additional Revenue Components

Additional charges for the availability of Metropolitan's water are:

Readiness-to-Serve Charge. This charge is designed to recover a portion of the principal and interest payments on water revenue bonds issued to fund capital improvements necessary to meet continuing reliability and water quality needs. The Readiness-to-Serve Charge ("RTS") is allocated to each member agency in proportion to the rolling ten-year share of deliveries through

Metropolitan's system. The RTS generated approximately $80 million in the fiscal year ended June 30, 2007 and approximately $82 million in fiscal year 2007-2008.

Water Standby Charges. The Board is authorized to impose water standby or availability of service charges. In May 1993, the Board imposed a water standby charge for fiscal year 1993-94 ranging from $6.94 to $15 for each acre or parcel less than an acre within Metropolitan's service area, subject to specified exempt categories. Water standby charges have been imposed at the same rate in each year since 1993-94. Standby charges are assessments under the terms of Proposition 218, a State constitutional ballot initiative approved by the voters on November 5, 1996. See "—Proposition 218" below.

Member agencies have the option to utilize Metropolitan's existing standby charge authority as a means to collect all or a portion of their RTS charge. Standby charge collections are credited against the member agencies' RTS charges. See "—*Readiness-to-Serve Charge*" above. Twenty-two member agencies collect their RTS charges through standby charges. For fiscal years 1997-98 through 2007-08, RTS charges collected by means of such standby charges accounted for approximately $42 million in revenues each year to Metropolitan.

Capacity Charge. The Capacity Charge is a fixed charge levied on the maximum summer day demand placed on Metropolitan's system between May 1 and December 30 for the three-calendar-year period ended December 31, 2006. The Capacity Charge is intended to recover the cost of providing peak capacity within the distribution system. Effective January 1, 2009, the Capacity Charge is $6,800 per cfs of maximum daily flow.

Reserve Policy

Metropolitan's reserve policy currently provides for a minimum unrestricted reserve balance at June 30 of each year that is based on probability studies of the wet periods that affect Metropolitan's water sales. The policy establishes a minimum targeted unrestricted reserve level based on an 18-month revenue shortfall estimate and a maximum level based on an additional two years revenue shortfall estimate. As of June 30, 2008, the minimum reserve requirement was $209 million. The maximum reserve limit at June 30, 2008 was $479 million. Funds representing the minimum reserve level are held in the Water Revenue Remainder Fund, and any funds in excess of the minimum reserve level (up to the maximum reserve level) are held in the Water Rate Stabilization Fund. Fund balances in the Water Rate Stabilization Fund and the Water Revenue Remainder Fund at June 30, 2008 totaled $286 million. (See "THE MASTER RESOLUTION—Water Revenue Fund—*Revenue Remainder Fund"* in APPENDIX C—SUMMARY OF CERTAIN PROVISIONS OF THE RESOLUTIONS.) Unrestricted reserves in excess of the maximum reserve level may be used for any lawful purpose of Metropolitan, as directed by the Board. Consistent with State legislation, Metropolitan will ensure that any funds in excess of maximum reserve levels that are distributed to member agencies will be distributed in proportion to water sales revenues received from each member agency. Since actual reserve balances were less than the maximum reserve limit at June 30, 2008, no action was taken by the Board. In addition, Metropolitan maintains various restricted reserves, including reserves for risk retention, operations and maintenance expenses, State Water Contract payments, and other obligations and purposes.

Wheeling and Exchange Charges

The process for the delivery of water not owned or controlled by Metropolitan is referred to as "wheeling." Under the current rate structure, wheeling parties pay the System Access Rate and Water Stewardship Rate, Treatment Surcharge (if applicable) and power costs for wheeling transactions. Wheeling and exchange revenues totaled $20.2 million during fiscal year 2007-08, $13.1 million during fiscal year 2006-07, and $12.9 million during fiscal year 2005-06.

Hydroelectric Power Recovery Revenues

Metropolitan has constructed 16 small hydroelectric plants on its distribution system. The plants are located in Los Angeles, Orange, Riverside and San Diego Counties at existing pressure control structures and other locations. The combined generating capacity of these plants is approximately 122 megawatts. The total capital cost of these 16 facilities is approximately $176.1 million. Since 2000, annual energy generation sales revenues have ranged between $16 million and $27 million. For fiscal year 2006-07, these plants produced 513,267 megawatt-hours for total revenues of $25.6 million. For fiscal year 2007-08, these plants produced 404,930 megawatt-hours for total revenues of $24.7 million.

Power from five of the plants is sold to the Department of Water Resources under an existing contract at a price based on a contractual unit rate methodology to supply power to the State Water Project. This price is renegotiated every six years. For 2007 through 2012, the unit rate is determined by fixed and variable components. One variable component represents an incremental fuel price based on a five-year rolling average gas price.

Power from nine of the plants was sold to the Southern California Edison Company, a subsidiary of Edison International ("Edison") through October 31, 2008. Three new contracts effective November 1, 2008, split power sales from the nine plants among Edison, Los Angeles Department of Water and Power and the Southern California Public Power Authority. All three contracts are for the sale of renewable power and are based on a fixed energy rate for the term of the contracts. The minimum contract term is five years and maximum term is fifteen years.

Energy generation from a fifteenth plant, the Etiwanda Power Plant, is sold to the Pacific Gas and Electric Company ("PG&E") under a contract that was amended in November 2004 to accommodate terminating transmission and scheduling arrangements. The contract energy price is based on a formula that includes a monthly gas rate, a capital related cost and a performance factor. The contract is subject to renegotiation upon the occurrence of specified events and can be terminated by either party under various conditions and circumstances, beginning in 2014.

The sixteenth plant, the Diamond Valley Lake Hydroelectric Power Plant, began generating on May 23, 2001 and its current maximum dependable output is 21 megawatts. Actual generation is determined by water delivery requirements and is sold at market rates to various buyers.

Principal Customers

All of Metropolitan's regular customers are member agencies. Total water sales to the member agencies accrued for the fiscal year ended June 30, 2008 were 2.2 million acre-feet,

generating $958.3 million in water sales revenues for such period. Metropolitan's ten largest water customers in the year ended June 30, 2008 are shown in the following table.

TEN LARGEST WATER CUSTOMERS
Year Ended June 30, 2008
Accrual Basis (Dollars In Millions)

Agency	Water Sales Revenues	Percent of Total	Water Sales in Acre-Feet	Percent of Total
San Diego County Water Authority	$232,793,192	24.29%	553,481	25.43%
City of Los Angeles	172,434,774	17.99%	420,266	19.31%
MWD of Orange County	109,342,122	11.41%	229,763	10.56%
West Basin MWD	66,645,883	6.95%	135,456	6.22%
Calleguas MWD	64,587,620	6.74%	131,364	6.04%
Eastern MWD	52,492,593	5.48%	108,166	4.97%
Western MWD of Riverside	48,818,239	5.09%	106,398	4.89%
Three Valleys MWD	31,831,150	3.32%	72,829	3.35%
Central Basin MWD	28,773,387	3.00%	59,054	2.71%
Inland Empire Utilities Agency	24,001,998	2.50%	68,391	3.14%
Total	$831,720,958	86.79%	1,885,166	86.62%
Total Revenue	$958,315,996	**Total Acre-Feet**	2,176,372	

Preferential Rights

Section 135 of the Act provides a preferential entitlement for the purchase of water by each of Metropolitan's member agencies. This preferential right is based upon a ratio of all payments on tax assessments and otherwise, except purchases of water, made to Metropolitan by each member agency compared to total payments made by all member agencies on tax assessments and otherwise since Metropolitan was formed, except purchases of water. Historically, these rights have not been used in allocating Metropolitan's water. The California Court of Appeal has upheld Metropolitan's methodology for calculation of the respective member agencies' preferential rights under Section 135 of the Act.

Proposition 218

Proposition 218, a State ballot initiative known as the "Right to Vote on Taxes Act," was approved by the voters on November 5, 1996 adding Articles XIIIC and XIIID to the California Constitution. Article XIIID provides substantive and procedural requirements on the imposition, extension or increase of any "fee" or "charge" levied by a local government upon a parcel of real property or upon a person as an incident of property ownership. The procedures required under Article XIIID, section 6, include a public hearing held not less than 45 days after mailed notice to property owners of the proposed fee or charge; if protests are filed by a majority of the owners the proposed fee or charge may not be imposed. New charges for services other than for sewer, water, and refuse collection services require voter approval. Property-related fees and charges are limited

to the amount required to provide the property-related service, may not exceed the proportional cost of providing the service attributable to the parcel being charged and may not be used for any other purpose. The California Supreme Court held that a fee for ongoing water service through an existing connection is imposed as an incident of property ownership in *Bighorn-Desert View Water Agency v. Verjil* in 2006. As a wholesaler, Metropolitan serves water to its member agencies, not to persons or properties as an incident of property ownership. Thus, Metropolitan's rates and charges are not property-related fees subject to Article XIIID. Water rates charged by Metropolitan to its member agencies and many fees and charges imposed by member agencies are not property-related fees and charges and therefore are exempt from the requirements of Article XIIID.

Article XIIID also imposes certain procedures with respect to assessments. Under Article XIIID, "standby charges" are considered "assessments" and must follow the procedures required for "assessments." Metropolitan has imposed water standby charges since 1992. Any change to Metropolitan's current standby charges could require notice to property owners and approval by a majority of such owners returning mail-in ballots approving or rejecting any imposition or increase of such standby charge. Twenty-two member agencies have elected to collect all or a portion of their readiness-to-serve charges through standby charges. (See "METROPOLITAN REVENUES—Additional Revenue Components—*Readiness-to-Serve Charge*" and "—*Water Standby Charges*.") Even if Article XIIID is construed to limit the ability of Metropolitan and its member agencies to impose or collect standby charges, the member agencies will continue to be obligated to pay the readiness-to-serve charges.

Article XIIIC extends the people's initiative power to reduce or repeal previously authorized local taxes, assessments fees and charges. This extension of the initiative power to fees and charges was confirmed by the California Supreme Court in its decision in *Bighorn-Desert View Water Agency v. Verjil*. This extension of the initiative power is not limited by the terms of Article XIIIC to fees imposed after November 6, 1996 or to property-related fees and charges and absent other authority could result in retroactive reduction in any existing taxes, assessments or fees and charges.

Proposition 218 was adopted as a measure that qualified for the ballot pursuant to the State's initiative process. From time to time, other initiative measures could be adopted or legislative measures could be approved by the Legislature, which may place limitations on the ability of Metropolitan or its member agencies to increase revenues or to increase appropriations. Such measures may further affect Metropolitan's ability to collect taxes, assessments or fees and charges, which could have an effect on Metropolitan's revenues.

Investment of Moneys in Funds and Accounts

All moneys in any of the funds and accounts established pursuant to Metropolitan's water revenue or general obligation revenue bond resolutions are invested by the Treasurer in accordance with Metropolitan's Statement of Investment Policy. All Metropolitan funds available for investment are currently invested in United States Treasury and agency securities, commercial paper, negotiable certificates of deposit, bankers acceptances, corporate notes, municipal bonds and asset-backed securities. The Statement of Investment Policy provides that in managing Metropolitan's investments, the primary objective shall be to safeguard the principal of the invested funds. The secondary objective shall be to meet all liquidity requirements and the third objective shall be to achieve a return on the invested funds. Although the Statement of Investment Policy permits

investments in some asset-backed securities, the portfolio does not include any of the special investment vehicles related to sub-prime mortgages.

As of November 30, 2008, the total market value of all Metropolitan funds was $863 million. In fiscal year 2007-08, Metropolitan's earnings on investments, including adjustments for gains and losses and premiums and discounts, on a cash basis (unaudited) were $60.3 million, including construction account and trust fund earnings. (See Footnote 3 to Metropolitan's audited financial statements in Appendix B for additional information on the investment portfolio.)

Metropolitan currently holds corporate notes or bonds issued by Lehman Brothers Holdings, Inc. ("Lehman"), International Lease Finance Corporation and American General Finance that have recently experienced credit rating downgrades or bankruptcy. The book value of the downgraded corporate bonds total approximately $7.1 million. The market price for these bonds continues to be under pressure, and Metropolitan is closely monitoring market developments. The decrease in the market value for these bonds has not materially impacted the financial operations of Metropolitan. Metropolitan filed its claim for the payment of the corporate notes issued by Lehman with the United States Bankruptcy Court for the Southern District of New York on October 27, 2008. The amount of the claim, representing principal and interest on the notes, is $5,380,267.

Metropolitan's regulations require that (1) the Treasurer provide an annual Statement of Investment Policy for approval by Metropolitan's Board, (2) the Treasurer provide a monthly investment report to the Board and the General Manager showing by fund the description, maturity date, yield, par, cost and current market value of each security, and (3) the General Counsel review as to eligibility the securities invested in by the Treasurer for that month and report his or her determinations to the Board.

Subject to the provisions of Metropolitan's water revenue or general obligation bond resolutions, obligations purchased by the investment of bond proceeds in the various funds and accounts established pursuant to a bond resolution are deemed at all times to be a part of such funds and accounts and any income realized from investment of amounts on deposit in any fund or account therein will be credited to such fund or account. The Treasurer is required to sell or present for redemption any investments whenever it may be necessary to do so in order to provide moneys to meet required payments or transfers from such funds and accounts. For the purpose of determining at any given time the balance in any such funds, any such investments constituting a part of such funds and accounts will be valued at the then estimated or appraised market value of such investments.

All investments, including those authorized by law from time to time for investments by public agencies, contain certain risks. Such risks include, but are not limited to, a lower rate of return than expected and loss or delayed receipt of principal. The occurrence of these events with respect to amounts held under Metropolitan's water revenue or general obligation revenue bond resolutions, or other amounts held by Metropolitan, could have a material adverse effect on Metropolitan's finances. These risks may be mitigated, but are not eliminated, by limitations imposed on the portfolio management process by Metropolitan's Statement of Investment Policy.

The Statement of Investment Policy requires that investments have a minimum credit rating of A1/P1/F1 for short-term securities and A for longer-term securities at the time of purchase. The

Board amended the Statement of Investment Policy on October 14, 2008, to provide that, if immediate liquidation of a security is not in the best interests of Metropolitan, the Treasurer or investment manager, in consultation with an ad hoc committee made up of the Chairman of the Board, the Chairman of the Business and Finance Committee and the General Manager, and with the concurrence of the General Counsel, may dispose of the security in an orderly and prudent manner considering the circumstances, under terms and conditions approved by a majority of the members of such ad hoc committee. The Treasurer is required to include a description of any securities that have been downgraded below investment grade and the status of their disposition in the Treasurer's monthly report.

The Statement of Investment Policy limits the amount of securities that can be purchased by category, as well as by issuer, and prohibits investments that can result in zero interest income. Metropolitan's securities are settled on a delivery versus cash basis and are held by an independent third-party custodian. See Metropolitan's audited financial statements attached to the Official Statement as Appendix B for a description of Metropolitan's investments at June 30, 2008.

Metropolitan currently retains two outside investment firms to manage the long-term portion of Metropolitan's portfolio. The outside managers are required to adhere to Metropolitan's Statement of Investment Policy. Currently, such managers are managing approximately $250 million in investments on behalf of Metropolitan. Metropolitan's Statement of Investment Policy may be changed at any time by the Board (subject to State law provisions relating to authorized investments). There can be no assurance that the State law and/or the Statement of Investment Policy will not be amended in the future to allow for investments that are currently not permitted under State law or the Statement of Investment Policy, or that the objectives of Metropolitan with respect to investments or its investment holdings at any point in time will not change.

METROPOLITAN EXPENDITURES

The following table sets forth a summary of Metropolitan's expenditures, by major function, for the five years ended June 30, 2008. The table provides cash basis information, which is unaudited. Expenses of Metropolitan for the two fiscal years ended June 30, 2008 and June 30, 2007, on an accrual basis, are shown in Appendix B - "THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2008 AND JUNE 30, 2007."

SUMMARY OF EXPENDITURES
Fiscal Years Ended June 30
(Dollars in Millions)

	2004	2005	2006	2007	2008
Operation and Maintenance Costs[1]	$ 297.7	$ 314.4	$ 379.0	$ 367.2	$ 416.9
Total State Water Project and Water Transfers[2]	429.6	433.3	508.2	408.5	564.9
Total Debt Service	207.1	212.5	229.6	249.9	268.5
Construction Disbursements from Revenues[3]	119.5	95.5	90.4	129.7	45.4
Other[4]	4.4	5.3	7.3	6.1	6.4
Total Disbursements – Net of Reimbursements	$1,058.3	$1,061.0	$1,214.5	$1,161.4	$1,302.1

Source: Metropolitan.

(1) Includes inventories, undistributed payroll, local resource, conservation programs and Colorado River Aqueduct (CRA) power, net of CRA power sales receipts from 2004-2005. CRA power sales receipts are not funded as an offset to CRA power in 2006-2008. See the table headed "Summary of Receipts by Source" under "METROPOLITAN REVENUES" in this Appendix A.

(2) Includes both operating and capital expense portions. The decrease in 2007 reflects lower State Water Project power costs and increases in State Water Project power credits.

(3) At the discretion of the Board, in any given year, Metropolitan may increase or decrease funding available for construction disbursements to be paid from revenues. In fiscal year 2008, disbursements decreased to $45.4 million primarily due to the Board's intent to maintain adequate reserve levels in the rate stabilization funds to mitigate future increases in water rates and charges.

(4) Includes operating equipment and arbitrage rebate.

Revenue Bond Indebtedness

Metropolitan has issued the following water revenue bonds, which as of January 1, 2009, were outstanding in the amounts set forth below:

Name of Issue	Original Amount Issued	Principal Outstanding
Water Revenue Bonds, Issue of 1991	$ 300,000,000	$ -0-
Water Revenue Bonds, Issue of 1992	550,000,000	17,635,000
Water Revenue Refunding Bonds, 1993 Series A	168,759,889	105,185,000
Water Revenue Refunding Bonds, 1993 Series B	89,595,000	-0-
Water Revenue Bonds, 1995 Series A	175,000,000	-0-
Water Revenue Refunding Bonds, 1996 Series A	108,375,000	-0-
Water Revenue Refunding Bonds, 1996 Series B	258,875,000	-0-
Water Revenue Bonds, 1996 Series C	377,500,000	-0-
Water Revenue Bonds, 1997 Authorization, Series A	650,000,000	-0-
Water Revenue Bonds, 1997 Authorization, Series B[1]	50,000,000	50,000,000
Water Revenue Bonds, 1997 Authorization, Series C[1]	50,000,000	50,000,000
Water Revenue Refunding Bonds, 1998 Series A	148,705,000	-0-
Water Revenue Bonds, 1999 Authorization, Series A	100,000,000	2,205,000
Water Revenue Bonds, 1999 Authorization, Series B[1]	50,000,000	50,000,000
Water Revenue Bonds, 1999 Authorization, Series C[1]	50,000,000	50,000,000
Water Revenue Bonds, 2000 Series B1-B4[1]	355,200,000	355,200,000
Water Revenue Refunding Bonds, 2001 Series A	195,670,000	146,100,000
Water Revenue Refunding Bonds, 2001 Series B1	112,400,000	-0-
Water Revenue Refunding Bonds, 2001 Series B2	112,400,000	-0-
Water Revenue Bonds, 2001 Series C-1 and C-2[1]	200,000,000	200,000,000
Water Revenue Refunding Bonds, 2002 Series A[1] [2]	96,640,000	89,045,000
Water Revenue Refunding Bonds, 2002 Series B[1] [2]	35,600,000	34,800,000
Water Revenue Refunding Bonds, 2003 Series A	36,215,000	28,360,000
Water Revenue Bonds, 2003 Authorization, Series B-1 and B-2	200,000,000	200,000,000
Water Revenue Refunding Bonds, 2003 Series C-1, C-2 and C-3[1] [2]	338,230,000	332,955,000
Water Revenue Refunding Bonds, 2004 Series A-1 and A-2[1] [2]	162,455,000	158,930,000
Water Revenue Refunding Bonds, 2004 Series B	274,415,000	255,095,000
Water Revenue Bonds, 2003 Authorization, Series B-3 and B-4	300,000,000	273,815,000
Water Revenue Refunding Bonds, 2004 Series C[1] [2]	136,090,000	133,450,000
Water Revenue Bonds, 2005 Authorization, Series A	100,000,000	100,000,000
Water Revenue Bonds, 2005 Authorization, Series B-1 and B-2[1]	100,000,000	100,000,000
Water Revenue Refunding Bonds, 2006 Series A-1 and A-2 [1] [2]	74,140,000	74,025,000
Water Revenue Bonds, 2005 Authorization, Series C	200,000,000	194,115,000
Water Revenue Bonds, 2005 Authorization, Series D-1 and D-2[3]	100,000,000	-0-
Water Revenue Refunding Bonds, 2006 Series B	45,875,000	45,875,000
Water Revenue Bonds, 2006 Authorization, Series A	400,000,000	400,000,000
Water Revenue Bonds, 2006 Authorization, Series B[3]	100,000,000	-0-
Water Revenue Refunding Bonds, 2007 Series A-1 and A-2 [3]	218,425,000	-0-
Water Revenue Refunding Bonds, 2007 Series B [3]	81,900,000	-0-
Water Revenue Refunding Bonds, 2008 Series A-1[1]	250,940,000	250,940,000
Water Revenue Refunding Bonds, 2008 Series A-2[1]	250,635,000	250,035,000
Water Revenue Refunding Bonds, 2008 Series B	133,430,000	133,430,000
Water Revenue Refunding Bonds, 2008 Series C	79,045,000	79,045,000
Total	$7,816,514,889	$4,160,240,000

Source: Metropolitan.

(1) Variable rate obligation.

(2) Metropolitan maintains interest rate swap agreements that correspond to these variable rate obligations. See "—Variable Rate and Swap Obligations" below.

(3) Auction rate securities. No auction rate securities were integrated with any interest rate swap agreements and none remain outstanding.

Limitations on Additional Revenue Bonds

Resolution 8329, adopted by Metropolitan's Board on July 9, 1991, as amended and supplemented (collectively with all such supplemental resolutions, the "Revenue Bond Resolutions") provide for the issuance of Metropolitan's water revenue bonds. The Revenue Bond Resolutions establish limitations on the issuance of additional obligations payable from Net Operating Revenues. Under the Revenue Bond Resolutions, no additional bonds, notes or other evidences of indebtedness payable out of Operating Revenues may be issued having any priority in payment of principal, redemption premium, if any, or interest over any water revenue bonds or Parity Obligations. No additional Parity Bonds or Parity Obligations may be issued or incurred unless the conditions of the Revenue Bond Resolutions have been satisfied.

The laws governing Metropolitan's ability to issue water revenue bonds currently provide two additional limitations on indebtedness that may be incurred by Metropolitan. The Act provides for a limit on general obligation bonds, water revenue bonds and other evidences of indebtedness at 15 percent of the assessed value of all taxable property within Metropolitan's service area. As of January 1, 2009, outstanding general obligation bonds, water revenue bonds and other evidences of indebtedness in the amount of $4.52 billion represented approximately 0.21 percent of the fiscal year 2008-2009 taxable assessed valuation of $2,120.9 billion. The second limitation under the Act specifies that no revenue bonds may be issued, except for the purpose of refunding, unless the amount of net assets of Metropolitan as shown on its balance sheet as of the end of the last fiscal year prior to the issuance of such bonds, equals at least 100 percent of the aggregate amount of revenue bonds outstanding following the issuance of such bonds. The net assets of Metropolitan at June 30, 2008 were approximately $5.9 billion. The aggregate amount of revenue bonds outstanding as of January 1, 2009 was $4.16 billion. The limitation does not apply to other forms of financing available to Metropolitan. Audited financial statements including the net assets of Metropolitan as of June 30, 2008 and June 30, 2007, respectively, are shown in Appendix B – "THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2008 AND JUNE 30, 2007." Metropolitan provides no assurance that the Act's limitations on indebtedness will not be revised or removed by future legislation. Limitations under the Revenue Bond Resolutions respecting the issuance of additional obligations payable from Net Operating Revenues on a parity with water revenue bonds of Metropolitan will remain in effect so long as any water revenue bonds authorized pursuant to the Revenue Bond Resolutions are outstanding, provided however, that the Revenue Bond Resolutions are subject to amendment and supplement in accordance with their terms.

Variable Rate and Swap Obligations

As of January 1, 2009, Metropolitan had outstanding $2.18 billion of variable rate demand obligations. The interest rates for Metropolitan's variable rate demand obligations are reset on a daily or weekly basis. Metropolitan's variable rate demand obligations are supported by Standby Bond Purchase Agreements between Metropolitan and various liquidity providers. The following table sets forth a listing of the liquidity providers, the expiration date of each facility and the principal amount of outstanding bonds covered under each facility.

Liquidity Provider	Bond Issue	Principal Outstanding	Facility Expiration
Dexia Credit Local	2003 Series C-1	$110,985,000	June 2009
	2003 Series C-2	110,985,000	June 2009
	2003 Series C-3	110,985,000	June 2009
	2004 Series C	133,450,000	June 2010
	Total	$466,405,000	
Landesbank Baden-Wurttemberg (LBBW)	2002 Series A	$ 89,045,000	December 2015 (1)
	2008 Series A-2	250,035,000	March 2011
	Total	$339,080,000	
Bank of America, N.A.	1999 Series B	$ 50,000,000	May 2012
	2008 Series A-1	250,940,000	March 2011
	Total	$300,940,000	
Lloyds TSB Bank	2001 Series C-1	$100,000,000	December 2011
	2001 Series C-2	100,000,000	December 2011
	2002 Series B	34,800,000	December 2009
	Total	$234,800,000	
JP Morgan Chase Bank	1999 Series C	$ 50,000,000	May 2012
	2004 Series A-1	79,465,000	July 2010
	2004 Series A-2	79,465,000	July 2010
	Total	$208,930,000	
BNP Paribas	2000 Series B-3	$ 88,800,000	August 2011
	2000 Series B-4	88,800,000	August 2011
	Total	$177,600,000	
Banco Bilbao Vizcaya Argenteria, S.A. (BBVA)	2000 Series B-2	$ 88,800,000	July 2013
	2006 Series A-1	37,010,000	May 2013
	2006 Series A-2	37,015,000	May 2013
	Total	$162,825,000	
Landesbank Hessen-Thuringen Girozentrale (Helaba)	1997 Series B	$ 50,000,000	December 2015 (2)
	1997 Series C	50,000,000	December 2015 (2)
	Total	$100,000,000	
Citibank, N.A.	2005 Series B-1	$ 50,000,000	July 2010
	2005 Series B-2	50,000,000	July 2010
	Total	$100,000,000	
WestLB AG	2000 Series B-1	$ 88,800,000	December 2015 (3)

Source: Metropolitan.

(1) Facility may be terminated at the option of the liquidity provider on August 2009, February 2012, and August 2014.
(2) Facility may be terminated at the option of the liquidity provider on September 2009 and March 2012.
(3) Facility may be terminated at the option of the liquidity provider on July 2009, July 2011, and July 2013.

None of Metropolitan's outstanding variable rate demand obligations are insured. In July 2008, Metropolitan refunded the outstanding Water Revenue Refunding Bonds, 1996 Series A (the "1996 Series A Bonds"), which were insured by Ambac Assurance Corporation, through the issuance of $79,045,000 Water Revenue Refunding Bonds, 2008 Series C. Proceeds of these refunding bonds also funded the termination payment for the interest rate swap with AIG Products Corp. that corresponded to interest on the 1996 Series A Bonds. The swap was terminated as of July 10, 2008.

Included in Metropolitan's $2.18 billion of variable rate demand obligations are $1.16 billion of variable rate demand obligations which, by virtue of interest rate swap agreements, are treated by Metropolitan as fixed rate debt. The variable rate demand obligations treated by Metropolitan as fixed rate debt consist of $1.04 billion of variable rate demand obligations with corresponding interest rate swap agreements, which are identified on the table under the heading, "—Revenue Bond Indebtedness", and $117.1 million of obligations whose rates are fixed pursuant to the terms and conditions of the 2005 Fixed Payor Swaps (listed on the table headed "Fixed Payor Swaps" below), which are not identified with specific variable rate demand obligations. The remaining $1.02 billion variable rate demand obligations represent approximately 24 percent of total outstanding water revenue bonds. In March 2008, primarily due to the credit downgrades of certain municipal bond insurers and the impact of the liquidity crisis on auction rate securities, Metropolitan refunded $500.3 million of auction rate securities with variable rate demand obligations. Subsequent to such refunding, Metropolitan has no auction rate securities outstanding. Metropolitan had no auction rate securities integrated with interest rate swap agreements.

In September 2004 the Board revised the variable rate exposure policy to require that variable rate debt be managed to limit net interest cost increases within a fiscal year as a result of interest rate changes to no more than $5 million. In addition, the maximum amount of variable interest rate exposure (excluding variable rate bonds associated with interest rate swap agreements) was limited to 40 percent of total outstanding water revenue bond debt. Variable rate debt capacity will be reevaluated as interest rates change and managed within these parameters.

By resolution adopted on September 11, 2001, Metropolitan's Board authorized the execution of interest rate swap transactions and related agreements in accordance with a master swap policy. Metropolitan may execute interest rate swaps if the transaction can be expected to reduce exposure to changes in interest rates on a particular financial transaction or in the management of interest rate risk derived from Metropolitan's overall asset/liability balance, result in a lower net cost of borrowing or achieve a higher net rate of return on investments made in connection with or incidental to the issuance, incurring or carrying of Metropolitan's obligations or investments, or manage variable interest rate exposure consistent with prudent debt practices and Board-approved guidelines. The Chief Financial Officer reports to the Business and Finance Committee of Metropolitan's Board each month on outstanding swap transactions, including notional amounts outstanding, counterparty exposures and termination values based on then-existing market conditions.

Metropolitan has entered into three types of interest rate swaps. Under the first type, Metropolitan receives payments that are calculated by reference to a floating interest rate and makes payments that are calculated by reference to a fixed interest rate. These swaps are referred to in the table below as "Fixed Payor Swaps." Under the second type, referred to as "Fixed Receiver Swaps,"

Metropolitan receives payments that are calculated by reference to a fixed interest rate and makes payments that are calculated by reference to a floating interest rate. Metropolitan's Fixed Receiver Swaps in the aggregate amount of $200 million matured on March 11, 2007. These transactions are no longer in effect and all rights and obligations of each party have been satisfied. Under the third type, referred to in the table below as "Basis Swaps," Metropolitan receives payments calculated by reference to a percentage of the taxable index, LIBOR. In return, Metropolitan makes payments that are calculated based on either a tax-exempt short-term interest rate index, SIFMA, or the taxable short-term index, one-month LIBOR.

Net payments under the terms of the interest rate swap agreements are payable on a parity with the Parity Obligations. Termination payments under the interest rate swap agreements related to the Water Revenue Refunding Bonds, 2001 Series B, the Water Revenue Refunding Bonds, 2002 Series A and the Water Revenue Refunding Bonds, 2002 Series B would be payable on a parity with the Parity Obligations. All other termination payments related to interest rate swap agreements would be subordinate to the Parity Obligations.

The following swap transactions were outstanding as of January 1, 2009:

FIXED PAYOR SWAPS:

Designation	Notional Amount Outstanding	Swap Counterparty	Fixed Payor Rate	MWD Receives	Maturity Date
2001 B	$110,400,000	Bear Stearns Financial Products Inc.[1]	4.219%	SIFMA-35 bps	7/1/2020
2001 B	110,400,000	UBS AG	4.219	SIFMA-35 bps	7/1/2020
2002 A	90,127,400	Morgan Stanley Capital Services, Inc.	3.300	57.74% of one-month LIBOR	7/1/2025
2002 B	33,717,600	Bear Stearns Financial Products Inc.[1]	3.300	57.74% of one-month LIBOR	7/1/2025
2003 C	166,477,500	UBS AG	3.257	61.20% of one-month LIBOR	7/1/2030
2003 C	166,477,500	JPMorgan Chase Bank	3.257	61.20% of one-month LIBOR	7/1/2030
2004 A	158,930,000	Morgan Stanley Capital Services, Inc.	2.917	61.20% of one-month LIB OR	7/1/2023
2004 C	73,397,500	Morgan Stanley Capital Services, Inc.	2.980	61.55% of one-month LIBOR	10/1/2029
2004 C	60,052,500	Citigroup Financial Products, Inc.	2.980	61.55% of one-month LIBOR	10/1/2029
2005[2]	58,547,500	JPMorgan Chase Bank	3.360	70% of 3-month LIBOR	7/1/2030
2005[2]	58,547,500	Citigroup Financial Products, Inc.	3.360	70% of 3-month LIBOR	7/1/2030
2006	31,120,000	UBS AG	3.210	63% of 3-month LIBOR	7/1/2021
2006	31,120,000	JPMorgan Chase Bank	3.210	63% of 3-month LIBOR	7/1/2021
2006	6,027,500	UBS AG	2.911	63% of 3-month LIBOR	7/1/2012
2006	6,027,500	JPMorgan Chase Bank	2.911	63% of 3-month LIBOR	7/1/2012
Total	$1,161,370,000				

Source: Metropolitan.

(1) Guaranteed by JPMorgan Chase & Co., effective March 16, 2008.

(2) Interest rate swap agreement is not identified with specific variable rate demand obligations.

BASIS SWAPS:

Swap	Notional Amount Outstanding	Swap Counterparty	Met Receives	Met Pays	Maturity Date
2004	$125,000,000	Bear Stearns Financial Products Inc. [1]	70% of one-month LIBOR + 31.5 bp	SIFMA	7/1/2014
2004	125,000,000	JP Morgan Chase Bank	70% of one-month LIBOR + 31.5 bp	SIFMA	7/1/2014
Total	$250,000,000				

[1] Guaranteed by JPMorgan Chase & Co., effective March 16, 2008.

These interest rate swap agreements entail risk to Metropolitan. The counterparty may fail or be unable to perform, interest rates may vary from assumptions and Metropolitan may be required to make significant payments in the event of an early termination of an interest rate swap. Metropolitan believes that if such an event were to occur, it would not have a material adverse impact on its financial position. Metropolitan manages counterparty risk by diversifying its swap counterparties, limiting exposure to any one counterparty, requiring collateralization or other credit enhancement to secure swap payment obligations, and by requiring minimum credit rating levels. Initially swap counterparties must be rated at least "Aa3" or "AA-", or equivalent by any two of the nationally recognized credit rating agencies; or use a "AAA" subsidiary as rated by at least one nationally recognized credit rating agency. Each counterparty is initially required to have minimum capitalization of at least $150 million. See Note 5(f) in Appendix B - "THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA INDEPENDENT AUDITOR'S REPORT AND FINANCIAL STATEMENTS FOR FISCAL YEARS ENDED JUNE 30, 2008 AND JUNE 30, 2007."

Other Revenue Obligations

Metropolitan received a $20 million State Revolving Fund Loan, dated as of February 1, 2000, from the California State Water Resources Control Board, for Phase 1 of the Lake Mathews Watershed Project. The outstanding principal amount as of January 1, 2009 is $13.2 million. The loan will be repaid over 20 years, with annual payments of $1.32 million through November 2020, on a parity with Metropolitan's water revenue bonds.

Subordinate Revenue Obligations

Metropolitan currently is authorized to issue subordinate debt of up to $400,000,000 of Commercial Paper Notes payable from Net Operating Revenues on a basis subordinate to the Parity Bonds and the Parity Obligations. Although no Commercial Paper Notes are currently outstanding, the authorization remains in full force and effect and Metropolitan may issue Commercial Paper Notes from time to time. In addition, Metropolitan obtained a $20 million California Safe Drinking Water Revolving Fund Loan in 2003 at an interest rate of 2.39 percent per annum to reimburse construction costs for oxidation retrofit facilities at the Henry J. Mills Treatment Plant in Riverside County. The loan will be repaid over 20 years, with semiannual payments of $632,000 through January 1, 2024. The loan payment obligation is subordinate to the Bonds and Parity Obligations. The principal balance outstanding as of January 1, 2009 is $16.3 million.

General Obligation Bonds

As of January 1, 2009, $327,215,000 aggregate principal amount of general obligation bonds payable from ad valorem property taxes were outstanding. **Metropolitan's revenue bonds are not payable from the levy of *ad valorem* property taxes.** *Ad valorem* taxes levied by Metropolitan must be applied solely to the payment of general obligation bonds and other voter-approved indebtedness.

Metropolitan had outstanding the following general obligation bonds as of January 1, 2009:

General Obligation Bonds	Amount Issued[1]	Principal Outstanding
Waterworks General Obligation Refunding Bonds, 1993 Series A1	$138,085,000	$ 12,175,000
Waterworks General Obligation Refunding Bonds, 1993 Series A2	87,315,000	8,030,000
Waterworks General Obligation Bonds, Election 1966, Series H	50,000,000	40,370,000
Waterworks General Obligation Refunding Bonds, 1998 Series A	62,120,000	11,980.000
Waterworks General Obligation Refunding Bonds, 2001 Series A	49,390,000	9,145,000
Waterworks General Obligation Refunding Bonds, 2001 Series B	123,560,000	29,570,000
Waterworks General Obligation Refunding Bonds, 2002 Series A	55,185,000	36,115,000
Waterworks General Obligation Refunding Bonds, 2003 Series A	123,865,000	47,150,000
Waterworks General Obligation Refunding Bonds, 2004 Series A	68,345,000	68,345,000
Waterworks General Obligation Refunding Bonds, 2005 Series A	64,705,000	64,335,000
Total	$822,570,000	$327,215,000

Source: Metropolitan.

[1] Voters authorized Metropolitan to issue $850,000,000 of Waterworks General Obligation Bonds, Election 1966, in multiple series, in a special election held on June 7, 1966. This authorization has been fully utilized. This table lists outstanding Waterworks General Obligation Bonds, Election 1966, and bonds that refunded such general obligation bonds.

State Water Contract Obligations

General. On November 4, 1960, Metropolitan entered into its State Water Contract with the Department of Water Resources, under which Metropolitan receives an entitlement to water service from the State Water Project. Subsequently, other public agencies also entered into water supply contracts with the Department of Water Resources, all of which were patterned after Metropolitan's State Water Contract. Metropolitan's State Water Contract accounts for nearly one-half of the total entitlement for State Water Project water contracted for by all contractors.

The State Water Contract will remain in effect until 2035 or until all the Department of Water Resources bonds issued to finance construction of project facilities are repaid, whichever is longer. At the expiration of the State Water Contract, Metropolitan has the option to continue service under substantially the same terms and conditions. Metropolitan presently intends to exercise this option to continue service to at least 2052. As of January 1, 2009, the latest maturity of outstanding Department of Water Resources bonds issued for such purpose was December 1, 2029.

Under the State Water Contract, Metropolitan is obligated to pay allocable portions of the cost of construction of the system and ongoing operating and maintenance costs through at least

2035, regardless of quantities of water available from the project. Other payments are based on deliveries requested and actual deliveries received, costs of power required for actual deliveries of water, and offsets for credits received. Metropolitan's payment obligation for the State Water Project for the fiscal year ending June 30, 2008 was $464.3 million, which amount reflects prior year's credits of $58.6 million. For the fiscal year ending June 30, 2008, Metropolitan's payment obligations under the State Water Contract were approximately 34 percent of Metropolitan's total annual expenditures. See Note 9(a) to Metropolitan's audited financial statements in Appendix B for an estimate of Metropolitan's payment obligations under the State Water Contract. Also see "POWER SOURCES AND COSTS" in this Appendix A for a description of current and future costs for electric power required to operate State Water Project pumping systems and a description of litigation involving the federal relicensing of the Hyatt-Thermalito hydroelectric generating facilities at Lake Oroville.

On April 25, 2005, a group of fourteen State Water Project contractors filed suit against the Department of Water Resources challenging the manner in which it allocates certain energy costs and revenues related to operation of the State Water Project. Among other things, these contractors allege that the Department of Water Resources has been and is administering certain provisions of State Water Contract incorrectly, depriving them of "all benefits" derived from the sale or other disposal of electrical energy generated at the Hyatt-Thermalito power facility. The plaintiffs have not alleged specific amounts for damages. Metropolitan and twelve other State Water Project contractors have intervened in the litigation.

Metropolitan believes that Hyatt-Thermalito energy costs and revenues have been and are being allocated by the Department of Water Resources in a manner that is both legal and equitable. However, if plaintiffs are successful, tens of millions of dollars in annual costs could be shifted from State Water Project contractors located north of the Tehachapi Mountains to State Water Project contractors located south of the Tehachapi Mountains and on the Central Coast, including Metropolitan.

In November 2006, the trial court divided the litigation into two phases, liability and damages. In March 2007, the court further divided the liability phase into a contract interpretation phase and an affirmative defenses phase, and ordered the parties to focus their attentions on the former. Since that time, the parties have been heavily engaged in various discovery–related activities, which culminated in the submission of cross-motions for summary judgment in December 2007. These motions related solely to whether the approach of the Department of Water Resources for allocating Hyatt-Thermalito energy costs and revenues is consistent with the language of the State Water Contract. On May 8, 2008, the court denied all of the parties' motions. A bench trial limited to contract interpretation issues began November 5, 2008, and concluded on December 12, 2008. The parties will submit post-trial briefs on a schedule extending through May 2009. The court's decision in the contract interpretation phase is expected in the summer or fall of 2009.

The State Water Contract requires that in the event that Metropolitan fails or is unable to raise sufficient funds by other means, Metropolitan must levy upon all property within its boundaries not exempt from taxation a tax or assessment sufficient to provide for all payments under the State Water Contract. Currently a portion of the capital costs under the State Water Contract are paid from ad valorem taxes levied by Metropolitan. In the opinion of Metropolitan's General Counsel, a tax increase to provide for additional payments under the State Water Contract would be within the

exemption permitted under Article XIIIA of the State Constitution as a tax to pay pre-1978 voter approved indebtedness.

Metropolitan capitalizes its share of system construction costs as participation rights in State Water Project facilities as such costs are billed by the Department of Water Resources. Unamortized participation rights essentially represent a prepayment for future water deliveries through the State Water Project system. Metropolitan's share of system operating and maintenance costs are annually expensed.

Metropolitan has entered into amendments to the State Water Contract that represent additional long-term obligations, as described below.

Devil Canyon-Castaic Contract. On June 23, 1972, Metropolitan and five other southern California public agencies entered into a contract (the "Devil Canyon-Castaic Contract") with the Department of Water Resources for the financing and construction of the Devil Canyon and Castaic power recovery facilities, located on the aqueduct system of the State Water Project. Under this contract, the Department of Water Resources agreed to build the Devil Canyon and Castaic facilities, using the proceeds of revenue bonds issued by the Department of Water Resources under the State Central Valley Project Act. The Department of Water Resources also agreed to use and apply the power made available by the construction and operation of such facilities to deliver water to Metropolitan and the other contracting agencies. Metropolitan, in turn, agreed to pay to the Department of Water Resources 88.1 percent of the debt service on the revenue bonds issued by the Department of Water Resources. For calendar year 2008, this represents a payment of $7.0 million. In addition, Metropolitan agreed to pay 78.5 percent of the operation and maintenance expenses of the Devil Canyon facilities and 96 percent of the operation and maintenance expenses of the Castaic facilities. Metropolitan's obligations under the Devil Canyon-Castaic Contract continue until the bonds are fully retired in 2022 even if the Department of Water Resources is unable to operate the facilities or deliver power from these facilities.

Off-Aqueduct Power Facilities. In addition to system "on-aqueduct" power facilities costs, the Department of Water Resources has, either on its own or by joint venture, financed certain off-aqueduct power facilities. The power generated is utilized by the system for water transportation and other State Water Project purposes. Power generated in excess of system needs is marketed to various utilities and the California power exchange market. Metropolitan is entitled to a proportionate share of the revenues resulting from sales of excess power. By virtue of a 1982 amendment to the State Water Contract and the other water supply contracts, Metropolitan and the other water contractors are responsible for paying the capital and operating costs of the off-aqueduct power facilities regardless of the amount of power generated. Other costs of Metropolitan in relation to the State Water Project and the State Water Contract may increase as a result of restructuring of California's electric utility industry and new Federal Energy Regulatory Commission regulations.

East Branch Enlargement Amendment. In 1986, Metropolitan's State Water Contract and the water supply contracts of certain other State Water Project contractors were amended for the purpose, among others, of financing the enlargement of the East Branch of the California Aqueduct. Under the amendment, enlargement of the East Branch can be initiated either at Metropolitan's request or by the Department of Water Resources finding that enlargement is needed to meet demands. Metropolitan, the other State Water Contractors on the East Branch, and the Department

of Water Resources are currently in discussions on the timetable and plan for future East Branch enlargement actions.

The amendment establishes a separate subcategory of the Transportation Charge under the State Water Contract for the East Branch Enlargement and provides for the payment of costs associated with financing and operating the East Branch Enlargement. Under the amendment, the annual financing costs for such facilities financed by bonds issued by the Department of Water Resources are allocated among the participating contractors based upon the delivery capacity increase allocable to each participating contractor. Such costs include, but are not limited to, debt service, including coverage requirements, deposits to reserves, and certain operation and maintenance expenses, less any credits, interest earnings or other moneys received by the Department of Water Resources in connection with this facility.

If any participating contractor defaults on payment of its allocable charges under the amendment, among other things, the non-defaulting participating contractors may assume responsibility for such charges and receive delivery capability that would otherwise be available to the defaulting participating contractor in proportion to the non-defaulting contractor's participation in the East Branch Enlargement. If participating contractors fail to cure the default, Metropolitan will, in exchange for the delivery capability that would otherwise be available to the defaulting participating contractor, assume responsibility for the capital charges of the defaulting participating contractor.

Water System Revenue Bond Amendment. In 1987, the State Water Contract and other water supply contracts were amended for the purpose of financing State Water Project facilities through revenue bonds. This amendment establishes a separate subcategory of the Delta Water Charge and the Transportation Charge for projects financed with the Department of Water Resources water system revenue bonds. This subcategory of charge provides the revenues required to pay the annual financing costs of the bonds and consists of two elements. The first element is an annual charge for repayment of capital costs of certain revenue bond financed water system facilities under the existing water supply contract procedures. The second element is a water system revenue bond surcharge to pay the difference between the total annual charges under the first element and the annual financing costs, including coverage and reserves, of the Department of Water Resources' water system revenue bonds.

If any contractor defaults on payment of its allocable charges under this amendment, the Department of Water Resources is required to allocate a portion of the default to each of the nondefaulting contractors, subject to certain limitations, including a provision that no nondefaulting contractor may be charged more than 125 percent of the amount of its annual payment in the absence of any such default. Under certain circumstances, the nondefaulting contractors would be entitled to receive an allocation of the water supply of the defaulting contractor.

The following table sets forth Metropolitan's projected costs of State Water Project water, based upon the State Department of Water Resources' Annual Billing to Metropolitan for 2009.

PROJECTED COSTS OF METROPOLITAN FOR STATE WATER PROJECT WATER[1]
(Dollars in Millions)

Year Ending June 30	Existing Capital Costs	Minimum OMP&R[2]	Power Costs[3]	Refunds & Credits	Total
2009	$152.2	$181.7	$193.7	$(43.3)	$484.3
2010	177.7	163.6	239.5	(53.7)	527.1
2011	192.1	171.1	252.9	(56.0)	560.1
2012	192.6	148.4	190.6[4]	(56.0)	542.1
2013	199.9	151.3	241.7	(56.0)	537.0

Source: Metropolitan.

(1) Projections are based upon the Department of Water Resources' Annual Billing to Metropolitan for 2009 and attachments, dated July 1, 2008, and Metropolitan water purchase estimates. All costs are adjusted from calendar year to fiscal year periods ending June 30. The total charges shown above differ from those shown in Note 8 of Metropolitan's audited financial statements (for the fiscal years ended June 30, 2008 and June 30, 2007) in Appendix B due to the inclusion above of allowances for inflation and anticipated construction of additional State facilities. The projections above also include State Water Project refunds and credits. See "POWER SOURCES AND COSTS—State Water Project."

(2) Minimum Operations, Maintenance, Power and Replacement ("OMP&R") represents costs which are fixed and do not vary with the amount of water delivered.

(3) Based on costs of power for actual deliveries of water, includes capital charges. Assumptions for water deliveries through the California Aqueduct (not including San Bernardino and Desert Water/Coachella Valley ("DWCV") transfers & exchanges) are as follows: 1.06 million acre-feet for 2009, 1.17 million acre-feet for 2010, 1.26 acre-feet for 2011, 1.29 million acre-feet for 2012 and 1.28 million acre-feet for 2013. Availability of State Water Project supplies vary and deliveries may include transfers and storage. All deliveries are within maximum contract amount and are based upon availability, as determined by hydrology, water quality and wildlife conditions. See "METROPOLITAN'S WATER SUPPLY—State Water Project—*Environmental Considerations*" in this Appendix A.

(4) Reduced power costs reflect projected increases in Colorado River supplies. As more Colorado River supplies are made available, more of the SWP supplies are diverted to the DWCV and San Bernardino transfers. (See "METROPOLITAN'S WATER SUPPLY—Water Transfer and Exchange Programs" in this Appendix A.) Since Metropolitan does not pay for the SWP power incurred on these transfers, Metropolitan's variable SWP power cost is reduced.

Other Long-Term Commitments

Metropolitan also has various ongoing fixed annual obligations under its contract with the United States for power from the Hoover Power Plant. Under the terms of the Hoover Power Plant contract, Metropolitan purchases energy to pump water through the Colorado River Aqueduct. In fiscal year 2007-08 Metropolitan paid approximately $16.6 million under this contract. Payments made under the Hoover Power Plant contract are treated as Operation and Maintenance Expenditures. See "POWER SOURCES AND COSTS—Colorado River Aqueduct" in this Appendix A.

Defined Benefit Pension Plan

Metropolitan is a member of the California Public Employees' Retirement System ("PERS"), a multiple-employer pension system that provides a contributory defined-benefit pension for substantially all Metropolitan employees. PERS provides retirement and disability benefits, annual cost-of-living adjustments and death benefits to plan members and beneficiaries. PERS acts as a common investment and administrative agent for participating public entities within the State. PERS

is a contributory plan deriving funds from employee contributions as well as from employer contributions and earnings from investments. A menu of benefit provisions is established by State statutes within the Public Employees' Retirement Law. Metropolitan selects optional benefit provisions from the benefit menu by contract with PERS.

Metropolitan makes biweekly contributions to PERS based on actuarially determined employer contribution rates. The actuarial methods and assumptions used are those adopted by the PERS Board of Administration. Employees are required to contribute seven percent of their earnings (excluding overtime pay) to PERS. Pursuant to current memoranda of understanding, Metropolitan contributes the requisite seven percent contribution for all employees represented by the Management and Professional Employees Association, the Association of Confidential Employees, Supervisors and Professional Personnel Association and AFSCME Local 1902. Metropolitan also contributes the entire seven percent on behalf of the unrepresented employees. In addition, Metropolitan is required to contribute the actuarially determined remaining amounts necessary to fund the benefits for its members.

The contribution requirements of the plan members are established by State statute and the employer contribution rate is established and may be amended by PERS. For fiscal year 2007-08 Metropolitan contributed 11.405 percent of annual covered payroll. In addition, since July 1, 2001, Metropolitan has paid the 7 percent employees' share of the PERS contribution. The fiscal 2007-08 annual pension cost was $34.3 million, of which $13.1 million was for Metropolitan's pick-up of the employees' 7 percent share. For fiscal year 2008-09, Metropolitan is required to contribute 11.432 percent of annual covered payroll, in addition to member contributions paid by Metropolitan. For fiscal year 2009-10, Metropolitan is required to contribute 11.708 percent of annual covered payroll, in addition to member contributions paid by Metropolitan. The fiscal year 2009-10 contribution requirement is based on the June 30, 2007 valuation report.

As of June 30, 2007, the date of the most recent actuarial valuation report available from PERS, the actuarial value of assets in Metropolitan's pension plan was approximately $1.153 billion, and the plan had an unfunded liability of approximately $95 million. Funded status (based on the market value of assets) was 107.0%. This compares to the plan's unfunded liability of $78 million as of the June 30, 2006 actuarial valuation (98.7% funded), unfunded liability of $76 million as of the June 30, 2005 actuarial valuation (95.4% funded), unfunded liability of $56 million as of the June 30, 2004 actuarial valuation (92.6% funded) and unfunded liability of $21 million as of the June 30, 2003 actuarial valuation (97.7% funded). The pension plan had excess assets of $95 million as of the June 30, 2002 actuarial valuation. The actuarial value of PERS assets for fiscal years 2002 and 2003 was determined using techniques that smooth the effect of short-term volatility in the market value of investments over a three-year period (smoothed market value). The actuarial value of PERS assets beginning in fiscal year 2004 was based on a policy to smooth the market value of investments over a fifteen-year period, in place of three years, to reduce the volatility of employers' future contributions and stabilize pension costs. The increase in unfunded liability is due to the draw-down of excess assets relating to the employer pick-up of the employees' 7 percent share and prior asset losses in PERS investments, and the recognition of gains and losses on an actuarial basis over the "smoothing" period. The market value of PERS assets declined approximately twenty percent from July 1, 2008 to mid-October 2008 due to global financial market conditions. This change in market values, which will be smoothed over a fifteen-year period, is anticipated to result in higher employer payments beginning in fiscal year 2011-12. For more information on the plan,

see the financial statements of Metropolitan contained in Appendix B attached to the Official Statement.

Metropolitan provides post-employment medical insurance to retirees. Metropolitan currently pays the post-employment medical insurance premiums to PERS. Metropolitan funds such benefits on a pay-as-you-go basis. Payments were $10.2 million for fiscal year 2007-08, $9.2 million for fiscal year 2006-07, $8.0 million for fiscal year 2005-06, $7.8 million for fiscal year 2004-05 and $7.5 million for fiscal year 2003-04. Under Governmental Accounting Standards Board Statement No. 45, Accounting and Financial Reporting by Employers of Post-employment Benefits Other Than Pensions ("OPEB"), Metropolitan was required to account for and report the outstanding obligations and commitments related to such post-employment employment benefits on an accrual basis for the fiscal year ending June 30, 2008. Metropolitan began accounting for and reporting its OPEB obligations beginning with its financial statements for the fiscal year ended June 30, 2006.

For fiscal year 2007-08, Metropolitan's annual actuarially required OPEB cost was $30.0 million. Contributions of $10.2 million equaled the pay-as-you go amount and represented 30 percent of the annual OPEB cost. The required contribution was based on a June 30, 2007 actuarial valuation using the entry-age normal actuarial cost method with contributions determined as a level percent of pay. The actuarial assumptions included (a) a 5.0 percent investment rate of return, (b) an inflation component of 4 percent and (c) certain assumptions regarding health care cost trends. (See Footnote 8(c) to Metropolitan's audited financial statements in Appendix B for additional information on OPEB cost and net OPEB obligation.) As of June 30, 2007, the date of the actuarial report, the unfunded OPEB liability was estimated to be $393 million. This amount is being amortized over 30 years as a level percent of pay. Metropolitan intends to continue funding on a pay-as-you-go-basis while it reviews various funding options.

In July 1998, in a case entitled *Dewayne Cargill et al. v. Metropolitan Water District of Southern California et al.* a class action was brought by various categories of temporary workers against Metropolitan and certain temporary agencies, claiming that Metropolitan misclassified them as temporary workers to avoid providing them the same rights and benefits given to regular employees and seek the full benefits of public employment, including membership in PERS on a retroactive basis. See "GOVERNANCE AND MANAGEMENT—Employee Relations" above for further information on the case.

HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES

The following table provides a summary of revenues and expenditures of Metropolitan prepared to conform to the Revenue Bond Resolutions provisions regarding rates and additional Parity Bonds (as defined in the Master Resolution). See "METROPOLITAN EXPENDITURES—Limitations on Additional Revenue Bonds." The table is presented on a cash basis, and does not reflect the accrual basis used to prepare Metropolitan's annual audited financial statements. The projections are based on assumptions concerning future events and circumstances that may impact revenues and expenditures and represent management's best estimates of results at this time. See footnotes to the table below entitled "HISTORICAL AND PROJECTED REVENUES AND EXPENSES" and "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES" for relevant assumptions, including projected water sales and

average annual increase in the effective water rate, and "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES" for a discussion of potential impacts. Some assumptions inevitably will not materialize and unanticipated events and circumstances may occur. Therefore, the actual results achieved during the projection period will vary from the projections and the variations may be material.

In addition to the Parity Bonds currently outstanding and the Bonds described in this Official Statement, Metropolitan anticipates issuing approximately $1.35 billion aggregate principal amount of Parity Bonds through fiscal year 2013 to finance the CIP. The debt service coverage ratio is projected to decline as a result of the issuance of additional Parity Bonds to finance Metropolitan's CIP and increased operating costs. However, in September 2004 Metropolitan adopted a goal to maintain a minimum fixed charge coverage ratio, measuring total coverage of all fixed obligations (which includes all revenue bond debt service obligations, State Water Contract capital payments paid from current year operations and subordinate obligations) after payment of operating expenditures, of 1.2 times. This goal is subject to change by future action of Metropolitan's Board.

Estimated revenues and expenditures are based on preliminary assumptions and estimates used in developing the estimated budget and revenue requirements for fiscal year 2009-10. The projections were prepared by Metropolitan and have not been reviewed by independent certified public accountants or any entity other than Metropolitan. Dollar amounts are rounded.

HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES
(Dollars in Millions)
(Cash Basis)

	Actual				Projected				
	2005	2006	2007	2008	2009	2010	2011	2012	2013
Receipts from Water Sales[a]	$ 819	$ 827	$ 892	$968	$1,017	$1,142	$1,352	$1,442	$1,549
Additional Revenue Sources[b]	113	111	113	114	120	134	149	161	171
Total Operating Revenues	932	938	1,005	1,082	1,137	1,276	1,501	1,603	1,720
O&M, CRA Power and Water Transfer Costs[c]	(374)	(416)	(392)	(470)	(542)	(619)	(643)	(708)	(759)
SWC OMP&R Costs[a]	(185)	(237)	(200)	(265)	(260)	(287)	(309)	(315)	(322)
SWC Off-Aqueduct O&M Costs	(44)	(40)	(56)	(56)	(46)	(47)	(48)	(44)	(34)
Total Operation and Maintenance	(603)	(693)	(648)	(792)	(848)	(953)	(1,000)	(1,067)	(1,115)
Net Operating Revenues	$ 329	$ 245	$ 357	$ 290	$ 289	$ 323	$ 501	$ 536	$ 605
Miscellaneous Revenue[e]	10	24	6	7	5	5	5	5	5
Sales of Hydroelectric Power[f]	30	30	45	41	25	28	29	27	27
Interest on Investments[g]	27	26	33	46	33	34	36	39	43
Adjusted Net Operating Revenues[n]	396	325	441	385	352	390	571	607	680
Bonds and Additional Bonds Debt Service[i]	(157)	(176)	(200)	(219)	(235)	(269)	(304)	(316)	(334)
Subordinate Revenue Obligations[j]	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Funds Available from Operations	$ 238	$148	$ 240	$ 165	$ 116	$ 120	$ 266	$ 290	$345
Bonds and Additional Bonds Debt Service Coverage[k]	2.52	1.85	2.21	1.76	1.50	1.45	1.88	1.92	2.04
Debt Service Coverage on all Obligations[l]	2.51	1.84	2.19	1.75	1.49	1.44	1.87	1.91	2.03
Funds Available from Operations	$ 238	$ 148	$ 240	$ 165	$116	$ 120	$ 266	$ 290	$345
Other Receipts (Expenditures)	(29)	(16)	(26)	(19)	(8)	(6)	(6)	(7)	(7)
Pay-As-You Go Construction	(81)	(82)	(95)	(34)	(95)	(95)	(95)	(125)	(125)
Water Transfer Capital Costs	(11)	(65)	(13)	(48)	(9)	-0-	-0-	-0-	-0-
SWC Capital Costs Paid from Current Year Operations	(65)	(49)	(26)	(55)	(69)	(97)	(113)	(71)	(114)
SWC Off-Aqueduct Capital Costs	(30)	(30)	(34)	(35)	(37)	(33)	(32)	(31)	(23)
Remaining Funds Available from Operations	22	(94)	46	(28)	(102)	(111)	20	56	76
Tax Receipts	98	98	101	101	97	91	82	82	85
General Obligation Bonds Debt Service	(49)	(49)	(49)	(49)	(49)	(48)	(39)	(40)	(41)
SWC Capital Costs Paid from Taxes	(49)	(49)	(52)	(52)	(48)	(43)	(43)	(42)	(44)
Net Funds Available from Current Year	$ 22	$ (94)	$46	$ (28)	$ (102)	$(111)	$20	$ 56	$76
Defeasance Escrow Costs	$ (52)	$ (25)	--	--	--	--	--	--	
Pay-As-You Go Construction-Prior Year Reserves	--	--	$(14)	--	--	--	--	--	

Source: Metropolitan.

(a) During the four fiscal years, June 30, 2005 through June 30, 2008, annual water sales (in acre-feet) were 2.21 million, 2.15 million, 2.25 million and 2.31 million, respectively. See table entitled "SUMMARY OF WATER SOLD AND WATER SALES RECEIPTS" above. The water receipts projections are based upon estimated annual water sales (in acre-feet) of 2.20 million for 2008-09, 2.12 million for 2009-10, 2.12 million for 2010-11, 2.04 million for 2011-12 and 2.01 million for 2012-2013. See "MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES" below.

(b) Includes receipts from water standby, readiness-to-serve and capacity reservation charges. The term Operating Revenues excludes ad valorem taxes. See "METROPOLITAN REVENUES — Additional Revenue Components."

(c) Water Transfer Costs are included in Operation and Maintenance Expenditures for purposes of calculating the debt service coverage on all Obligations. Increase in 2009 reflects increased purchases of water transfer supplies.

(*footnotes continued on next page*)

(footnotes continued from previous page)

(d) Includes operation, maintenance, power and replacement costs payable under the State Water Contract.

(e) Includes lease and rental net proceeds and net proceeds from sale of surplus property.

(f) Includes Colorado River Aqueduct power sales.

(g) Does not include interest applicable to Bond Construction Funds, the Excess Earnings Funds, other trust funds and the Deferred Compensation Trust Fund.

(h) Adjusted Net Operating Revenues is a sum of all available revenues that the revenue bond resolutions specify may be considered by Metropolitan in setting rates and issuing additional Revenue Bonds and Parity Obligations.

(i) Net of investment income with respect to reserve funds. Assumes the issuance of Additional Parity Bonds, including the current offering, as follows: $200 million in 2008-09, $550 million in 2009-10, $200 million in 2010-11, $240 million in 2011-12 and $160 million in 2012-2013.

(j) Represents California Safe Drinking Water Revolving Fund Loan debt service commencing in 2004-05. See "METROPOLITAN EXPENDITURES—Subordinate Revenue Obligations" above.

(k) Represents adjusted Net Operating Revenues divided by the outstanding Revenue Bonds, and additional Revenue Bonds Debt Service.

(l) Adjusted Net Operating Revenues, divided by outstanding Revenue Bond Debt Service, Additional Revenue Bonds Debt Service and non-revenue bond commercial paper and California Safe Drinking Water Revolving Fund Loan debt service, using exact, rather than rounded dollar amounts. Assumes that no Commercial Paper Notes are issued. See "Subordinate Revenue Obligations" above.

MANAGEMENT'S DISCUSSION OF HISTORICAL AND PROJECTED REVENUES AND EXPENDITURES

Water Sales Receipts

Metropolitan relies on receipts from water sales for about 75 to 80 percent of its total revenues. From March 1997 through January 1, 2004, the levels of full service water rates and charges remained unchanged. However, the rates effective January 1, 2004 included a $10 per acre-foot increase for treated water and the rates effective January 1, 2005 included a $5 per acre-foot increase in the untreated full service rate and an additional $10 per acre-foot increase for treated water. The rates effective January 1, 2006 included a $15 per acre-foot increase in the Tier 2 Supply Rate and another $10 per acre-foot increase for treated water. The rates effective January 1, 2007 and January 1, 2008 included additional increases. See "METROPOLITAN REVENUES—Rate Structure" and "—Classes of Water Service" in this Appendix A. Effective January 1, 2009, base water rates and charges increased by 9.8 percent plus a $25 per acre-foot water supply surcharge. The combined impact is an increase of approximately 14.3 percent. The water supply surcharge is intended to recover the costs of additional water transfer purchases to augment State Water Project supplies. See "METROPOLITAN'S WATER SUPPLY—State Water Project" and "—Water Transfer and Exchange Programs" in this Appendix A. Water rates and charges are expected to increase between 20 and 25 percent effective January 1, 2010. Increases in rates and charges reflect increasing operations and maintenance costs, including higher treatment costs, financing requirements of the approximately $1.7 billion five-year CIP (covering the years 2009 to 2013), increasing State Water Project costs, rising demand management costs and water supply purchases. It is assumed that water sales will range between 2.01 million acre-feet and 2.20 million acre-feet from fiscal year 2008-09 through fiscal year 2012-2013. Metropolitan's water sales were approximately 2.31 acre-feet during fiscal year 2007-08. If Metropolitan implements its water supply allocation plan (see "METROPOLITAN'S WATER SUPPLY—Five-Year Supply Plan" in this Appendix A), lower deliveries and water sales would result in higher rate increases in 2010 and beyond.

Metropolitan has funded a Water Rate Stabilization Fund and a Water Treatment Surcharge Stabilization Fund with a portion of the water revenues collected. The Board's stated policy is to use moneys in these funds to mitigate the need to increase water rates. Water Rate Stabilization funds decreased by approximately $46.3 million in fiscal year 2007-08, and projections indicate use of

stabilization funds in 2008-09 and 2009-2010. The Water Revenue Remainder Fund balance increased by $42.7 million in fiscal year 2007-08. The Long-Range Finance Plan adopted by the Board on March 9, 1999 provides for a minimum/maximum reserve policy based on Metropolitan's water sales during wet periods. Funds representing the minimum reserve level are held in the Water Revenue Remainder Fund, and any funds in excess of the minimum reserve level (up to the maximum reserve level) are held in the Water Rate Stabilization Fund. The maximum reserve level on June 30, 2008 was calculated to be $479 million and fund balances in the Water Rate Stabilization Fund and the Water Revenue Remainder Fund at that date totaled $287 million. The minimum reserve requirement as of June 30, 2008, was $209 million. See "METROPOLITAN REVENUES—Reserve Policy" in this Appendix A.

Operation and Maintenance Expenditures

Operation and Maintenance Expenditures in 2007-08 were $687 million, which represented approximately 56 percent of total costs. These expenditures include the costs of labor, electrical power, materials and supplies of both Metropolitan and its contractual share of the State Water Project. The cost of power for pumping water through the aqueducts is a major component of this category of expenditures.

Other costs included in operation and maintenance are those associated with Metropolitan's increasing participation in water conservation, reclamation and groundwater cleanup. In fiscal year 2008, Metropolitan spent nearly $49 million in support of these efforts.

A major component of the increase in fiscal year 2008 operations and maintenance expenditures is due to projected higher purchases for water transfers. Water transfers to be funded from the water supply surcharge are expected to total $52 million. Other water transfers and storage supplies could total as much as $163 million in 2008-09.

Metropolitan's Board adopted a budget benchmark in September 2004 to limit the annual increase in departmental operations and maintenance budgets to no more than the five-year rolling average change in the Los Angeles/Orange/Riverside Counties consumer price index.

POWER SOURCES AND COSTS

General

Current and future costs for electric power required for operating the pumping systems of the Colorado River Aqueduct and the State Water Project are a substantial part of Metropolitan's overall expenses. Expenditures for electric power for the Colorado River Aqueduct (not including credits from power sales and related revenues) were approximately $26 million for the fiscal year ended June 30, 2000, $89.3 million for the fiscal year ended June 30, 2001, $98.2 million for fiscal year ended June 30, 2002, $49 million for the fiscal year ending June 30, 2003, $24.7 million for the fiscal year ending June 30, 2004, $20 million for the fiscal year ending June 30, 2005 and $27 million for the fiscal year ending June 30, 2006. Expenditures for the fiscal years ending June 30, 2008 and June 30, 2007 were approximately $19 million and $21 million, respectively.

Expenditures for electric power and transmission service for the State Water Project were $80.2 million (not including credits for prior period adjustments) for the fiscal year ended June 30,

2000, but increased to $105.2 million for the fiscal year ended June 30, 2001 and $187 million for the fiscal year ended June 30, 2002. As the market prices for energy declined from the crisis levels in 2000 and 2001, State Water Project power costs decreased to $136.3 million for the fiscal year ended June 30, 2003. Expenditures for the fiscal years ended June 30, 2004, June 30, 2005 and June 30, 2006 were approximately $182.3 million, $176.8 million and $201.4 million, respectively, showing the effect of more State Water Project deliveries. Expenditures for the fiscal year ended June 30, 2007 were approximately $136.1 million and expenditures for the fiscal year ended June 30, 2008 were $204.7 million.

Given the continuing uncertainty surrounding the electricity markets in California and in the electric industry in general, Metropolitan is unable to give any assurance with respect to the magnitude of its power costs.

Colorado River Aqueduct

Generally 60 to 75 percent of the power requirements for pumping at full capacity (1.2 million acre-feet of Colorado River water) in Metropolitan's Colorado River Aqueduct are secured through long-term contracts with the United States for energy generated from facilities located on the Colorado River (Hoover Power Plant and Parker Power Plant), and Edison. These contracts provide Metropolitan with reliable and economical power resources to pump Colorado River water to Metropolitan's service area until 2017, when only the Parker Power Plant contract will remain in effect. However, prior to 2017, the Western Area Power Administration will engage in a public process to determine the remarketing of Hoover Power after 2017. Based on other recent Western remarketing processes, long-term preference power contractors typically receive new long-term contracts with a slightly reduced share of power.

Approximately 25 to 40 percent of pumping power requirements for full utilization of the Colorado River Aqueduct is obtained through energy purchase agreements with municipal and investor-owned utilities or from power marketers. Deliveries of water through the Colorado River Aqueduct for the fiscal year ending June 30, 2007 were approximately 660,000 acre-feet, including Metropolitan's basic apportionment of Colorado River water and supplies from water transfer and groundwater storage programs. As the amount of Colorado River water available to Metropolitan decreases, Metropolitan's need to purchase supplemental energy decreases.

The Metropolitan-Edison 1987 Service and Interchange Agreement includes provisions for the sharing of energy savings realized by the integrated operation of Edison's and Metropolitan's electric systems. Under this agreement, with a previously normal maximum pumping operation of eight pumps, Edison provides Metropolitan additional energy (benefit energy) sufficient to pump approximately 100,000 acre-feet annually. As the amount of pumping is reduced, the amount of benefit energy provided by Edison increases.

Under maximum pumping conditions, Metropolitan can require up to one billion kilowatt-hours per year in excess of the base resources available to Metropolitan from the Hoover Power Plant, the Parker Power Plant, and Edison benefit energy. Metropolitan is a member of the Western Systems Power Pool ("WSPP"), and utilizes its industry standard form contract to make power purchases at market cost. Metropolitan acquires the majority of its supplemental power from WSPP members. With expected allocations of Colorado River water and the additional supplies from other

Colorado River sources, Metropolitan does not anticipate the need to purchase significant amounts of energy above its base power resources before 2009. In 2009, Metropolitan expects to pump between 900,000 acre-feet and 1.1 million acre-feet of Colorado River water and additional supplies from other Colorado River sources, which will require between 260 million kilowatt-hours and 660 million kilowatt-hours of energy purchases above its base power resources. If in the future, the pumping requirements continue at the anticipated 2009 levels, Metropolitan would continue to purchase between 260 million kilowatt-hours and 660 million kilowatt-hours of supplemental energy.

State Water Project

The State Water Project's power requirements are met from a diverse mix of resources, including State-owned hydroelectric generating facilities, long-term contract energy from a coal-fired generating facility, and contracts with Metropolitan and several other utilities in California and the Southwest. Metropolitan pays approximately 70 percent of State Water Project power costs.

The Department of Water Resources is seeking renewal of the license issued by the Federal Energy Regulatory Commission ("FERC") for the State Water Project's Hyatt-Thermalito hydroelectric generating facilities at Lake Oroville. A Settlement Agreement containing recommended conditions for the new license was submitted to FERC in March 2006. That agreement was signed by over 50 stakeholders, including Metropolitan and other State Water Project contractors. With only a few minor modifications, FERC staff recommended that the Settlement Agreement be adopted as the conditions for the new license. DWR issued a Final EIR for the relicensing project on July 22, 2008. On August 21, 2008, Butte County and Plumas County filed separate lawsuits challenging the adequacy of the Final EIR. Metropolitan is currently assessing how best to participate in the defense of this action. FERC has issued one-year renewals of the existing license since its initial expiration date on January 31, 2007, and is expected to issue successive one-year renewals until a new license is obtained.

The Department of Water Resources receives transmission service from investor-owned utilities under existing contracts and from the California Independent System Operator ("Cal ISO"), a nonprofit public benefit corporation formed in 1996 pursuant to legislation that restructured and deregulated the electric utility industry in California. The transmission service provider may seek increased transmission rates, subject to the approval of FERC. The Department of Water Resources has the right to contest any such proposed increase. The development of California's transmission grid has lagged significantly behind the growth in load and generation resources within the state. The Department of Water Resources may be subject to increases in the cost of transmission service as new grid facilities are constructed.

Power Market Redesign

In an effort to achieve more competitive wholesale markets and to comply with FERC orders, the Cal ISO filed its tariffs for market redesign changes in February 2006. Metropolitan is unable to predict the impact and timing of any proposed market design change on the costs for and availability of electricity. Nonetheless, Metropolitan is obligated under the Act to impose rates and charges, together with revenue from any water standby or availability charges, sufficient to pay Metropolitan operating expenses (including power costs) and debt service on its outstanding bonds.

Energy Management Program

Metropolitan initiated its Energy Management Program in fall 2006 to help Metropolitan design and operate its facilities in the most energy-efficient and cost-effective manner. This program includes setting design standards for energy-efficient facilities; taking advantage of available rebates for energy efficiency and energy-saving projects; operating Metropolitan's facilities in the most energy-efficient manner; and continuing to investigate alternative energy sources, such as solar and wind power. Metropolitan has completed energy efficiency assessments at all five of its water treatment plants and is evaluating recommendations for proposed changes. Metropolitan is proceeding with construction of a one-megawatt solar generation facility at the Skinner plant. Metropolitan also is considering wind and solar power feasibility studies at its pumping plants along the Colorado River Aqueduct. Metropolitan has begun integrating fuel-efficient hybrid vehicles into its fleet and assessing the use of alternative fuels (biodiesel) for its off-road vehicles and construction equipment. Finally, Metropolitan is assessing the feasibility of expanding its hydroelectric generation capabilities.

In February 2007, the Board authorized Metropolitan's membership in the California Climate Action Registry, a nonprofit voluntary registry for greenhouse gas emissions that was established by the California Legislature in 2001. Metropolitan has completed and certified its baseline greenhouse gas inventory, or carbon footprint, for calendar years 2005, 2006 and 2007, against which any future greenhouse gas emission reduction requirements may be applied, and anticipates setting appropriate and feasible targets for the reduction of carbon dioxide emissions in 2009. Metropolitan staff also is working to identify potential projects, activities, or initiatives that could be used to achieve Metropolitan's reduction goals as well as tracking the regulatory and legislative greenhouse gas developments that may impact Metropolitan.