

SECTION 1 – INTRODUCTION

The mission of the San Diego County Water Authority (Authority) is to provide a safe and reliable supply of water to its member agencies serving the San Diego region. This 2000 Urban Water Management Plan (2000 Plan) includes the Authority's projected water resources mix necessary to provide water supply reliability for the region through the year 2020.

In 1997, the Authority adopted a Water Resources Plan, which projected future supplies through 2015. The 2000 Plan will serve a dual purpose in updating both the Authority's last Urban Water Management Plan prepared in 1995, and the 1997 Water Resources Plan to reflect current conditions.

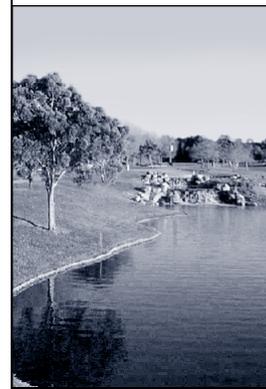
This section describes the Urban Water Management Planning Act and the coordination that occurred in preparation of the Authority's 2000 Plan. It also provides a general description of the Authority, its physical water delivery system and service area characteristics, including climate, and future population.

1.1 CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT

The California Water Code requires all urban water suppliers within the state to prepare urban water management plans (plans) and update them every five years. These plans satisfy the requirements of the Urban Water Management Planning Act (Act) of 1983 including amendments that have been made to the Act. Sections 10610 through 10656 of the Water Code detail the information that must be included in these plans, as well as who must file them. **Appendix A** contains the text of the Act.

Recent amendments to the Act now require that total projected water use be compared to water supply sources over the next 20 years in five-year increments. The Act also requests the information be shown for a single dry water year and multiple dry water years. Additional amendments to the Act now require that all plans include a detailed water recycling analysis that includes a description of the wastewater collection and treatment system within the agency's service area along with current and potential recycled water uses.

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, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet (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 Authority is required to update and adopt its plan for submittal to the California Department of Water Resources (DWR) by December 31, 2000.



1.2 AUTHORITY'S 2000 URBAN WATER MANAGEMENT PLAN

This report constitutes the 2000 update to the Authority's 1995 Urban Water Management Plan. It also serves as an update to the Authority's 1997 Water Resources Plan to reflect current conditions. Because the Authority is a water wholesaler, the Authority's 2000 Plan addresses regional issues concerning San Diego County water demands and supplies. Plans submitted by Authority member agencies, which are retail water agencies, are expected to provide information about these issues at the consumer level.

While preparing the 2000 Plan, the Authority coordinated its efforts with a number of agencies to ensure that data and issues are presented accurately. In coordination with DWR, the Authority conducted two workshops for its member agencies to discuss requirements of the Act and provide opportunities for coordination. In preparing the water recycling element of the Plan, the Authority worked directly with the wastewater agencies within its service area in order to accurately describe the wastewater treatment requirements and water recycling potential. The Authority also coordinated with the Metropolitan Water District of Southern California (Metropolitan) regarding projected imported water deliveries.

In accordance with the Act, the Authority Board of Directors held a public hearing on October 26, 2000 and adopted the Authority's 2000 Plan on November 26, 2000. A copy of the resolution is included in **Appendix B**. Prior to adoption, the 2000 Plan was mailed to a list of stakeholders that included the Authority's member agencies, members of the Water Authority Reclamation Advisory Committee and other entities, such as the Greater San Diego Chamber of Commerce, Sierra Club, County of San Diego and cities within Authority's service area. The 2000 Plan was also available for public review in the Authority's library and on the Authority's homepage.

DWR has prepared a checklist that lists items based on the Act, to be addressed in agencies' plans. The checklist allows agencies to identify where in their plan they have addressed each item. The Authority has completed the checklist, referencing the sections and page numbers included in the 2000 Plan. The completed checklist is included in **Appendix C**.



1.3 HISTORY AND DESCRIPTION OF AUTHORITY

1.3.1 History

The Authority was established by the California State Legislature in 1944 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. In order to meet the water demand for a growing population and economy, the Authority constructed four additional pipelines between the 1950s and early 1980s that are connected to Metropolitan’s distribution system and deliver water into San Diego County. The Authority is now the predominant source of water, supplying from 75 to 95 percent of the region’s needs, depending upon annual surface water runoff into local reservoirs.

1.3.2 Service Area

The 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 908,959 acres (1,420.3 square miles), the Authority’s service area encompasses the western third of San Diego County. **Figure 1-1** shows the Authority’s service area, its member agencies, and aqueducts.

1.3.3 Member Agencies

The Authority is comprised of 23 member agencies that purchase water for use at the retail level. The county of San Diego is an ex-officio member. The Authority is governed by a 34-member Board of Directors. The member agencies - six cities, four water districts, eight municipal water districts, three irrigation districts, a public utility district, and a federal military base - have diverse and varying water needs.

A list of Authority member agencies is shown in **Table 1-1**. The locations of the member agency service areas are shown in **Figure 1-1**. In terms of land area, the largest member agency is the city of San Diego, with 210,626 acres. The smallest agency 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. Other agencies, including Valley Center, Rainbow, and Yuima municipal water districts, deliver water that is used mostly for agricultural production.

**TABLE 1-1
AUTHORITY MEMBER AGENCIES**

Carlsbad MWD	Otay WD	San Dieguito WD
Del Mar (City)	Padre Dam MWD	Santa Fe ID
Escondido (City)	Pendleton Marine Corps Base	South Bay ID
Fallbrook PUD	Poway (City)	Vallecitos WD
Helix WD	Rainbow MWD	Valley Center MWD
National City (City)	Ramona MWD	Vista ID
Oceanside (City)	Rincon Del Diablo MWD	Yuima MWD
Olivenhain MWD	San Diego (City)	

1.4 AUTHORITY'S PHYSICAL WATER DELIVERY SYSTEM

The Authority purchases water from Metropolitan and delivers it 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. Delivery points from Metropolitan are located about six miles south of the Riverside/San Diego county line. The most water the Authority ever delivered in a year was 613,000 AF in 1990.

The First Aqueduct includes Pipelines 1 and 2, which are located in a common right-of-way, share five common tunnels, and are operated as a unit. These pipelines have a combined capacity of 180 cubic feet per second (cfs). Pipelines 3, 4, and 5 form the Second Aqueduct. These pipelines are operated independently and are located in separate rights-of-way from the First Aqueduct. Pipeline 3 has a capacity of 280 cfs, Pipeline 4 is 425 cfs, and Pipeline 5 is 480 cfs. **Figure 1-1** shows the locations of the Authority's aqueducts within San Diego County.

1.4.1 Capital Improvement Program

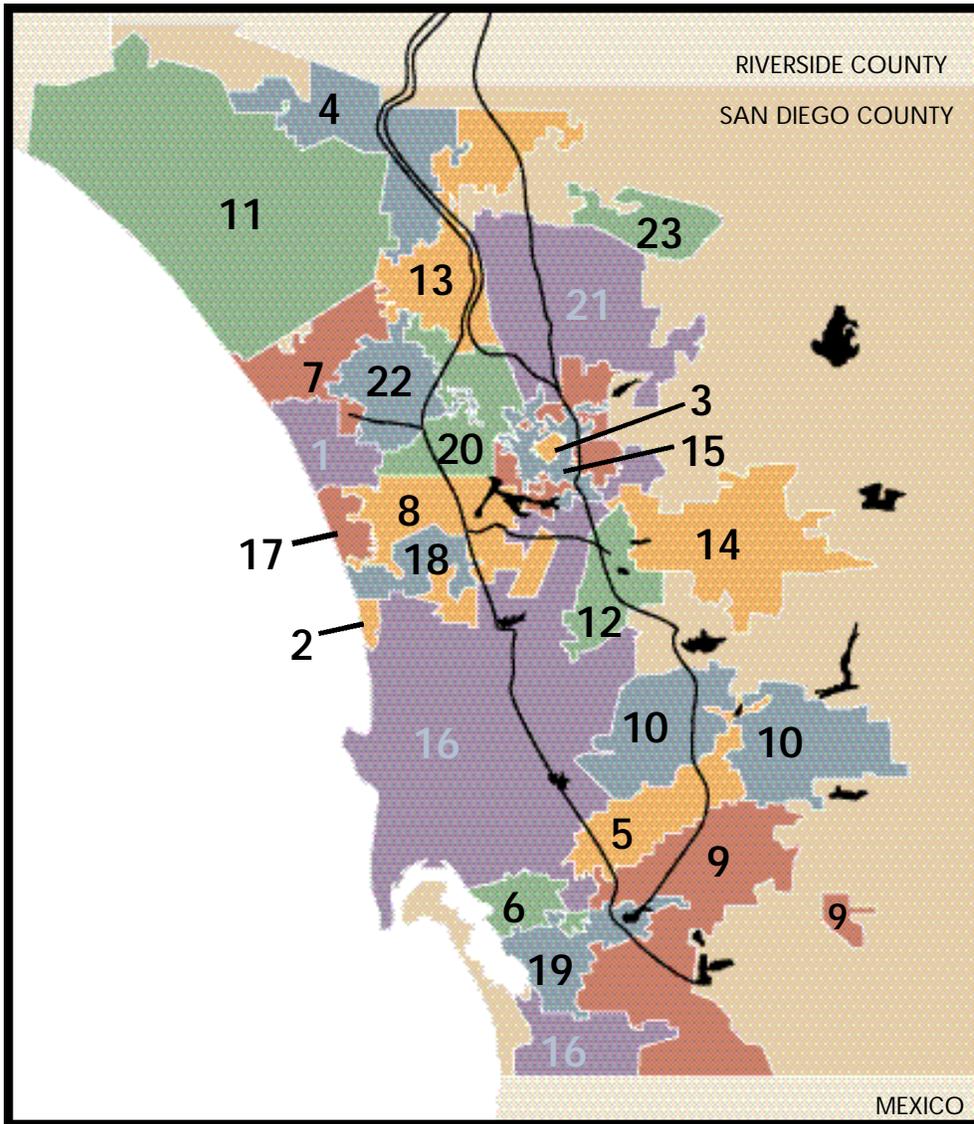
In 1989, the Authority initiated its Capital Improvement Program (CIP) to plan and implement projects necessary to meet the region's water needs to 2010. The goals of the program are to: (1) increase pipeline capacity to meet present and future demands, particularly during times of peak usage; (2) eliminate "bottlenecks" in the existing pipeline system; (3) increase reliability where water delivery is dependent on a single pipeline as a source; and (4) increase operational flexibility to make pipeline maintenance easier.

Table 1-2 lists the fiscal year (FY) 2001 CIP project categories and FY2001 project costs. In addition, a sixth pipeline may be necessary in the future that would extend from Lake Skinner to the Authority Diversion Structure north of the City of San Marcos. This pipeline was originally scheduled for completion in 1998, but has been delayed as Metropolitan and the Authority reassess capital facilities needs based upon resolution of pending issues and the nature and extent of their future relationship.

Emergency Storage Project

Included in the CIP is the Emergency Storage Project (ESP), which is a system of reservoirs, pipelines and other facilities that will work together to store and move water around the county during emergencies. Currently, imported water from Metropolitan is used to meet 75 to 95 percent of the region's water demand. The pipelines that transport this water cross several major fault lines. An earthquake or other disaster could interrupt San Diego County's imported water supply for up to six months. The ESP will connect existing reservoirs, assuring that water flows throughout the system in the event of a disaster. The project will also provide an

**FIGURE 1-1
AUTHORITY SERVICE AREA
WITH DISTRICT BOUNDARIES**



- | | |
|--|-----------------------------------|
| 1 CARLSBAD M.W.D. | 12 CITY OF POWAY |
| 2 CITY OF DEL MAR | 13 RAINBOW M.W.D |
| 3 CITY OF ESCONDIDO | 14 RAMONA M.W.D |
| 4 FALLBROOK P.U.D. | 15 RINCON DEL DIABLO M.W.D |
| 5 HELIX WATER DISTRICT | 16 CITY OF SAN DIEGO |
| 6 CITY OF NATIONAL CITY* | 17 SAN DIEGUITO WATER DISTRICT |
| 7 CITY OF OCEANSIDE | 18 SANTA FE IRRIGATION DISTRICT |
| 8 OLIVENHAIN M.W.D | 19 SOUTH BAY IRRIGATION DISTRICT* |
| 9 OTAY WATER DISTRICT | 20 VALLECITOS WATER DISTRICT |
| 10 PADRE DAM M.W.D | 21 VALLEY CENTER M.W.D |
| 11 CAMP PENDLETON MARINE
CORPS BASE | 22 VISTA IRRIGATION DISTRICT |
| | 23 YUIMA M.W.D. |

*The Sweetwater Authority is a service organization for the City of National City and the South Bay Irrigation District.

additional 90,100 AF of stored water. Combined with member agencies' local water supplies estimated to be available for emergency use, additional storage capacity is projected to meet the county' emergency needs through at least 2030.

**TABLE 1-2
CIP COST SUMMARY BY CATEGORY
(IN \$ MILLIONS)**

PROJECT CATEGORY	FY 00/01 PROJECT COST
Pipeline Projects	\$259.5
System-wide Improvements	\$51.3
Emergency Storage Projects	\$774.5
Water Supply Projects	\$25.8
Flow Control & Pumping Facilities	\$11.0
Reimbursable Projects-Total Cost	\$17.3
Total Costs of Active & Future Projects	\$1,139.4
Less All Reimbursable Costs ¹	\$41.0
Net SDCWA Costs	\$1,180.4

¹There are project costs within the CIP that are considered reimbursable.

The facilities that make up the ESP will be located throughout San Diego County. They will be constructed in phases and include a new 308-foot-high dam (Olivenhain Dam) and 24,000 AF reservoir near Lake Hodges, new pipelines to connect the new reservoir to the Authority's Second Aqueduct and to Lake Hodges, raising San Vicente Dam by 54 feet to provide room to store another 52,100 AF of water, a new pipeline to connect San Vicente Reservoir to the Authority's Second Aqueduct, and additional pump stations and other facilities to move water within the system to meet emergency water needs.

The Authority is currently working on the design for construction of Olivenhain Dam and its associated pipelines. Construction has begun on the main access road for the dam, as did clearing and grading in other areas of the dam site. The estimated cost of the ESP is \$774.5 million. All phases are expected to be complete by 2010.

1.5 SERVICE AREA CHARACTERISTICS

While the Authority's service area contains many land uses, its most prominent aspect is an urban and suburban character. Large amounts of rural lands were converted for urban uses in the past few decades, as the region's population grew by up to 80,000 people a year. 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, such as flowers, vegetables, nursery plants, turf grass, avocados, and citrus. The latest survey conducted by DWR indicates that the Authority's service area includes 73,769 acres of agricultural production. San Diego County agriculture is a \$1.2 billion per year industry, eighth in farm production value in the state and fourth in value in the county after manufacturing, tourism and military defense. Changing market forces,

including the increasing cost of water, may cause some economically marginal lands to be taken out of production in the future.

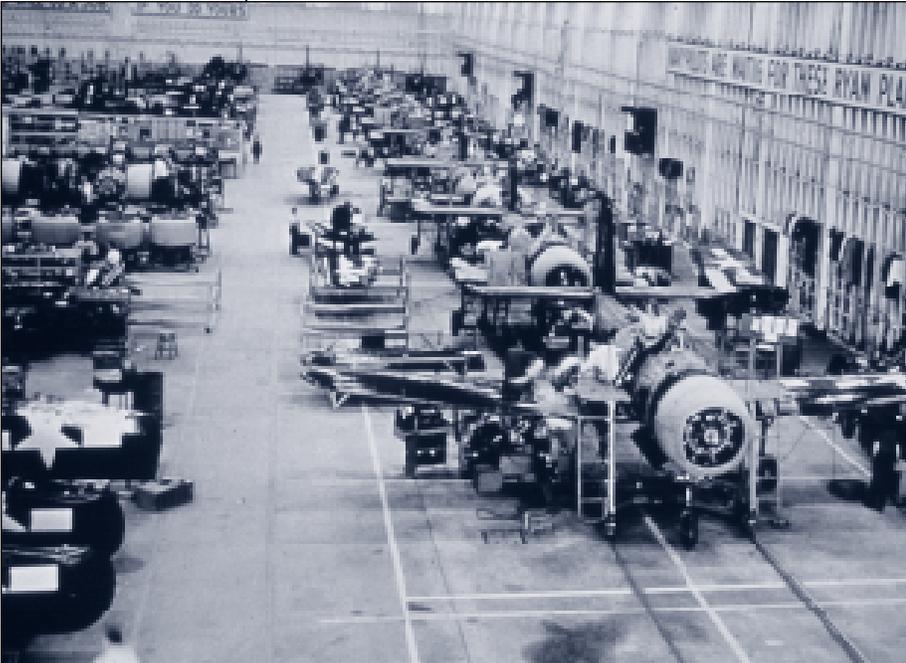
1.5.1 Regional Economy and Demographics

From the formation of the Authority in 1944 until 1990, the local economy was driven by defense-related manufacturing, especially in the aerospace sector.

Economic growth in the 1980s was fueled by federal spending, as local defense-

related expenditures more than doubled from \$4.6 billion in 1983 to \$9.6 billion in 1987.

When this level of federal spending was sharply cut back in the early 1990s, it resulted in layoffs and a recession that lasted until 1995.



San Diego County is now experiencing a strong economic expansion, which increases the region's demand for water. The economy has diversified to include growth in areas such as telecommunications, electronics, computers, software, and biotechnology. San

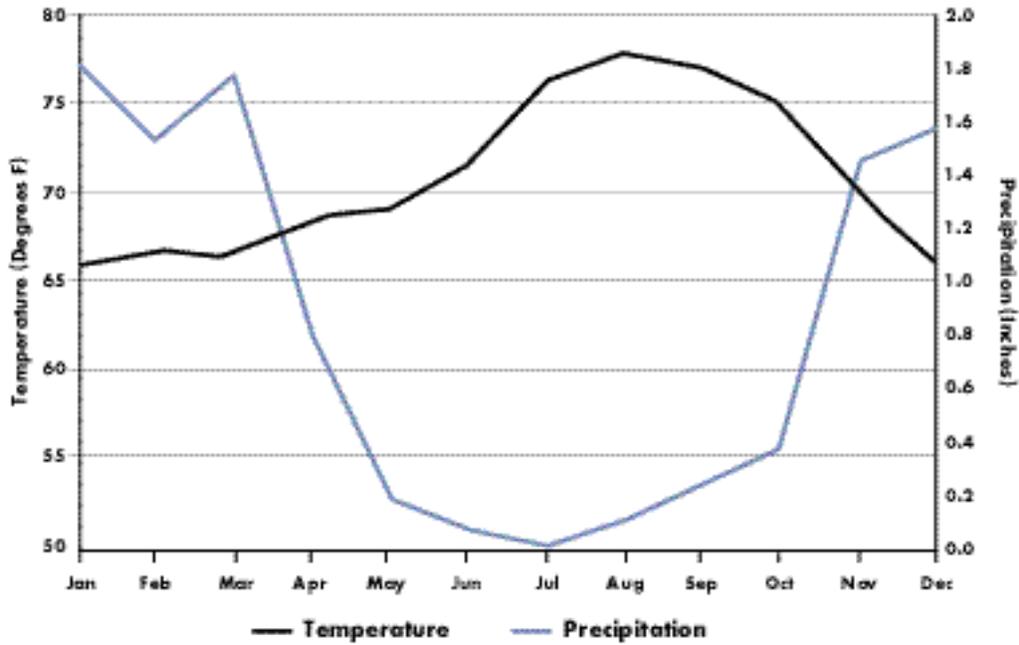
Diego's gross regional product

is forecast to reach \$100.4 billion in 2000. This will be an increase of 6.4 percent over 1999s estimated \$94.4 billion. The number of people actively working, averaged 1,297,000 during 1999 which is expected to rise by 1.7 percent in 2000 to 1,318,900. Compared to the pace of expansion recorded in the 1980s, the current growth is much more moderate, and perhaps more healthy and sustainable.

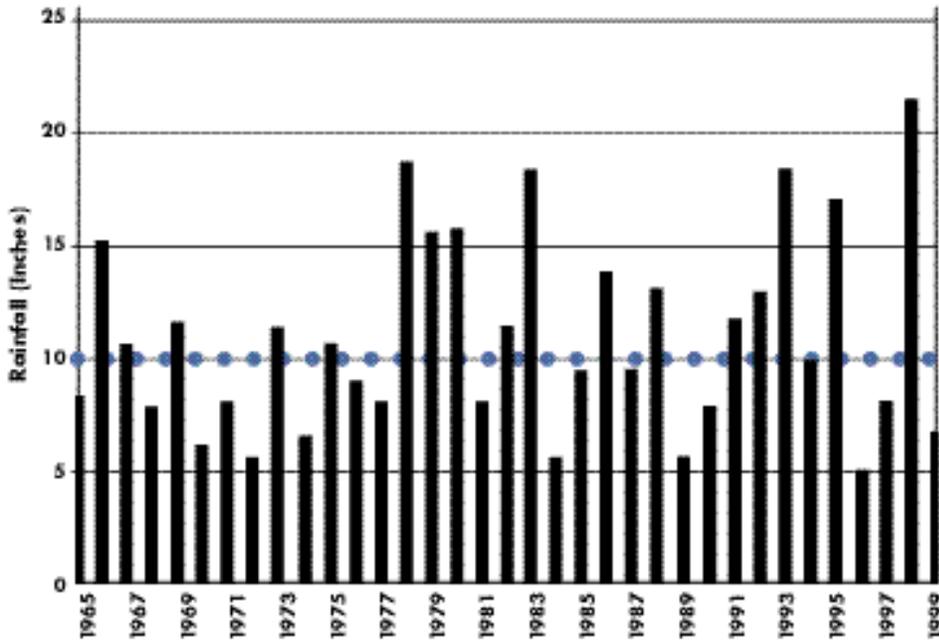
1.5.2 Climate

Climatic conditions within the service area are characteristically Mediterranean along the coast, with mild temperatures year round. Inland areas are both hotter in summer and colder in winter, with summer temperatures often exceeding 90 degrees and winter temperatures occasionally dipping to below freezing. More than 80 percent of the region's rainfall occurs in the period between December through March (**Figure 1-2**). Average annual rainfall is approximately 9.9 inches per year on the coast (**Figure 1-3**) and in excess of 40 inches per year in the inland mountains.

**FIGURE 1-2
SAN DIEGO CLIMATE 30-YEAR AVERAGE**



**FIGURE 1-3
ANNUAL RAINFALL
(LINDBERG FIELD STATION)**



Variations in weather affect short-term water requirements, causing demand spikes during hot, dry periods and reductions in use during wet weather. It is generally accepted in water demand forecasting that hot, dry weather may generate urban water demands that are about 7 percent greater than normal

and agricultural demands that are about 9 percent greater than normal. Conversely, these percentages can also be used to estimate below-normal demands resulting from wet weather.

1.5.3 Population

San Diego County's population has increased every year since the Authority was formed in 1944, due to several periods of rapid population growth associated with military and/or economic activity. When the Authority was formed, the population in San Diego County totaled 260,000 people. In 1999, total population within the service area reached 2.7 million people. The City of San Diego has the largest population of any member agency, with approximately 1.2 million. The agency with the least population is the Yuima Municipal Water District at approximately 2,000 people. Average population density is 4.32 people per acre, with National City having the highest density (9.42/acre) and Yuima Municipal Water District the lowest (0.46/acre).

The San Diego Association of Governments (SANDAG) projects an increase of over 900,000 people between 2000 and 2020, for a total county population in excess of 3.8 million. This gain represents an average annual increase of about 50,000 people, for an annual growth rate of roughly 1.5 percent. These regional growth projections are based on SANDAG's 2020 Cities/County Forecast. Projected population estimates within the Authority's service area are also based on the 2020 Cities/County Forecast and are shown in **Table 1-3**.

**TABLE 1-3
POPULATION FORECAST WITHIN
AUTHORITY SERVICE AREA
(2000-2020)**

YEAR	POPULATION
2000	2,845,000
2005	3,113,000
2010	3,319,000
2015	3,494,000
2020	3,673,000
Average Annual Growth	41,000

Based on SANDAG 2020 Cities/County Forecast

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.