



2005 Urban Water Management Plan



2005 Urban Water Management Plan

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Olivenhain Municipal Water District 2005 Urban Water Management Plan

Summary

The Olivenhain Municipal Water District (District) prepared this 2005 Urban Water Management Plan (Plan) to guide its conservation and water resource management programs and to comply with State law.

The Olivenhain Municipal Water District is a public agency organized under the laws of the State of California Municipal Water Code Sections 71,000 et seq and is comprised of a five member, publicly elected Board of Directors and appointed staff committed to its customers. Consistent with this commitment, the District has established the following policy relative to conservation and water management:

"The District strives to balance the needs of its customers, water resources management and conservation, a reliable water supply, local storage, and water quality issues in the most economically feasible manner."

The District has made significant progress towards many of the goals that were identified in the 1995 and 2000 Urban Water Management Plans. In 2002, the District constructed an immersed membrane water treatment filtration plant that has a current capacity of 34 MGD and in 2003 it completed construction of a 318 foot roller-compacted concrete dam of which the District owns 17th. These two projects allow the District to be aqueduct independent in a crisis.

Much of the progress towards achieving its goals since the 2000 Plan has been related to the development of alternative sources of water for non potable use, mainly the development of recycled water sources and uses. A map depicting the District's recycled water service quadrants is included on the following page as **Figure 1.** In 1980 the District acquired control of the 4S Ranch and Rancho Cielo Sanitation Districts from the County of San Diego. The primary purpose of these acquisitions was to achieve total water management and facilitate the development of a source of recycled water. To that end, the District has proceeded with the funding, design, and construction of an extensive recycled water system throughout its Southeast service area. The Southeast Quadrant includes 4S Ranch, Santa Fe Alley, Rancho Santa Fe, Fairbank Ranch, and the San Dieguito Alley.

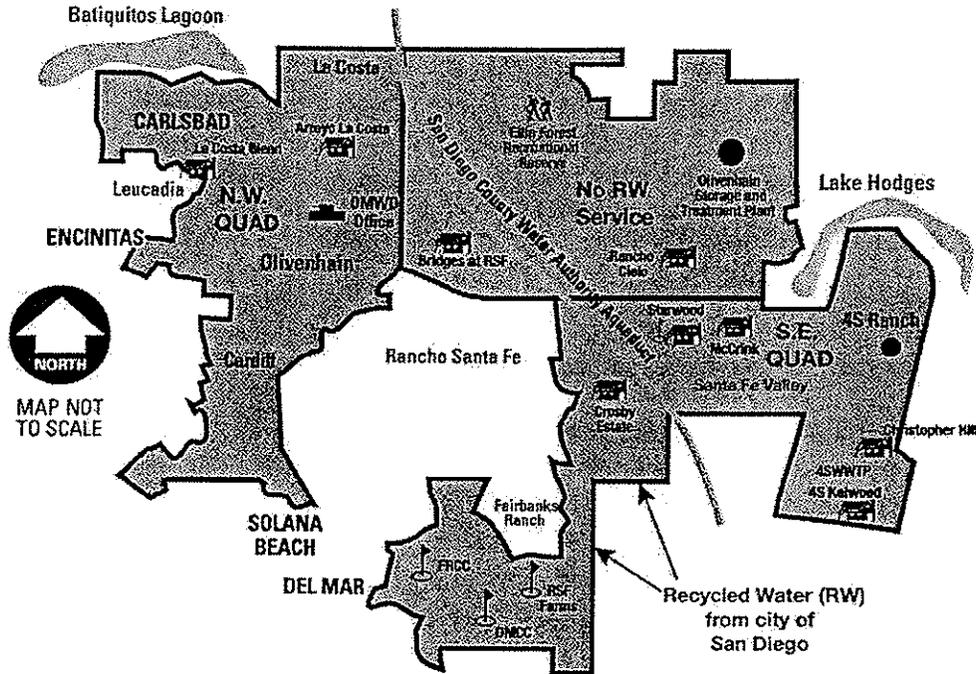
The 4S Ranch Water Reclamation Facility can ultimately treat 2 million gallons per day (MGD) with a 1 million gallon (MG) reservoir and various other support facilities such as pump stations and 3 MG blending tank. These facilities provide Title 22 tertiary treated effluent for irrigation of golf courses, parkways, schools, and other large public irrigation users. Multiple sources of funding were used for the project including grants from the US Bureau of Reclamation, Metropolitan Water District of Southern California, and the San Diego County Water Authority. The District received a grant in September of 2005 for the Northwest Recycled Water Project in the amount of \$500,000 from the U.S. Department of the Interior.

The District has also entered into agreements to purchase recycled water from the City of San Diego and the Rancho Santa Fe Community Services District in the Southeast Quadrant, and the Allecitos Water District in the Northwest Quadrant. In addition to the development of recycled water, the District is also investigating the potential for utilizing groundwater storage within the San Dieguito Groundwater Basin. This project, singly and/or in conjunction with the San Diego

County Water Authority (CWA), would be utilized for the storage of recycled or untreated water to help meet dry year demands and reduce seasonal peak on the CWA's aqueduct system.

This Urban Water Management Plan has been prepared to demonstrate the full extent of the District's commitment to water conservation, water resource management, and reducing the need to import potable water.

Figure 1 – District Recycled Water System



Chapter 1

Introduction and Background

The 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 Urban Water Management Planning Act (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 District'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 District 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.

Water Code Sections 1090 through 1094 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 San Diego County Water Authority (CWA) 2005 Urban Water Management Plan contains documentation on the existing and planned water supplies being developed by CWA. This documentation may be used by CWA's member agencies in preparing the water supply assessments and written verifications required under state law.**

Coordination with Appropriate Agencies

This is the 2005 Urban Water Management Plan (Plan) for the Olivenhain Municipal Water District (District). The Plan has been prepared in compliance with the California Urban Water

Management Planning Act (Act), a California statute. The District coordinated its efforts with the San Diego County Water Authority (CWA), the Department of Water Resources (DWR), the Metropolitan Water District of Southern California (MWD) and the California Urban Water Conservation Council (CUWCC) to ensure data and issues are presented accurately. Pursuant to Water Code 10621 (b) all cities and counties within the District's service area were notified of the Plan and able to provide comments. **Table 1** lists the agencies and their participation levels.

Table 1 Coordination with Appropriate Agencies						
Check at least one box on each row	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Draft Plan offered in 3 forms	Was sent a notice of intention to adopt
City of Encinitas					X	X
San Dieguito Water District					X -used web	X
City of Escondido					X	X
Santa Fe Irrigation District					X	X
City of Carlsbad					X	X
City of San Diego					X	X
County of San Diego					X	X
City of Solana Beach					X	X
Vallecitos Water District					X	X
City of San Marcos					X	X
Encina Wastewater Department				X		
Cardiff Sanitation District				X		
Leucadia Wastewater District				X		
Fairbanks Ranch CSD				X		
Rancho Santa Fe CSD				X		
Whispering Palms CSD				X		
SDCWA (Wholesaler)	X			X		
DWR		X		X		
State Clearing House		X			X	X
Business Industry Association					X	X

Purpose and Outline

The purpose of the Plan is to adequately demonstrate the District's reliability over the next 25 years in conjunction with regional plans being developed by CWA and MWD. The Plan also ensures that details on the District's reliability of imported water supplies are provided to the San Diego region. The District participated in the development of CWA's regional plan as well.

The Plan evaluates the District's water conservation and water reclamation programs, and recommends a course of water conservation action for the future considering the District's water demand and water sources. In addition, the Plan examines the effects on the District of various levels of emergency water shortage, and identifies measures the District has implemented to deal with these shortages. Water conservation and efficient use of California's water resources is becoming increasingly important, and the District is dedicated to the continuing development and implementation of water conservation measures appropriate for its service area. The District is committed to monitoring and adjusting its operations to meet goals of the Plan and prudent water management standards. **This Plan is beneficial in identifying goals and developing management standards.**

In 2004, the District completed a Comprehensive Water Master Plan (Master Plan) which was adopted by its Board of Directors. In January 2005 the District completed a Program Environmental Impact Report (EIR). **The Master Plan and EIR are water management tools that the District uses to plan future facilities, budget accordingly and maximize resources and reduce the need to import water.** By planning for the future, the District can maximize the use of its resources. The District also conducted a 2020 Vision Workshop with the Board of Directors in 2005 that outlined a path as to what the District would look like in twenty years. Finally, a significant effort the District undertook in 2005 was the implementation of the Cooperative Interagency Resources Coalition website which is a coalition that develops relationships in order to share services/products/resources with other San Diego County water agencies.

With regard to water quality, the District meets and exceeds all state and federal water quality standards for drinking water. The District's Olivenhain Water Treatment Plant utilizes membrane technology that provides more certain removal of waterborne health threats while also benefiting the environment through less chemical usage. By 2007, all District customers are expected to receive water treated by the Olivenhain Water Treatment Plant. The District publishes an annual water quality report, the Consumer Confidence Report, and the report is mailed to all its constituents, posted on its web page and displayed in its lobby. **Water quality is a major factor in any District endeavor; however, the District does not anticipate any shortage or impacts to availability of supply due to water quality issues.** CWA, the District's wholesaler does not expect any shortages due to water quality and the reader is referenced to Section 7 of the CWA 2005 Urban Water Management Plan attached as **Appendix B** for more information on the quality of water provided to the District and measures that can be taken if water quality issues arise. The District has plans to pre-treat any water quality impacts from receiving water from Lake Hodges Reservoir so as to avoid any supply reliability problems.

In accordance with the Act, the District Board of Directors held a public hearing on November 16, 2005 at 8:30 A.M. and adopted the District's 2005 Plan at the December 7, 2005 Board Meeting. A copy of the Resolution is included in **Appendix C**. Prior to adoption, the 2005 Plan was available for review by the public and other agencies at the District office. Notification was sent out to all agencies, cities in the Districts service area, the County of San Diego as well as the Business Industry Association and the State Clearing House and the Plan was available on the District's website, on CD, and in hard copy form. Within 30 days of the adoption of the Plan, copies of the adopted Plan will be sent to DWR, the California State Library, and all cities within the District's service area and the County of San Diego.

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 the plan they have addressed each item. The District has completed the checklist, and it is included in **Appendix I**.

The following sections of this chapter present background information relative to the Plan including a description of the District and a discussion of economic and other criteria for

evaluating the feasibility of conservation measures. The chapters following the Introduction and Background are:

- **Water Use and Supply:** includes sections on historical and current water use, projected water use, and historical and projected water supply;
- **Drought and Emergency Measures:** covers the District's preparedness to manage water use and supply during periods of water shortage;
- **Financial Considerations:** discusses the District's preparedness to manage its finances during periods when water sales to customers are reduced by drought conservation measures;
- **Existing Water Conservation Measures:** covers the conservation measures being implemented or planned;
- **Alternative Water Supply Measures:** evaluates alternative water supply measures for implementation;

The District

The Olivenhain Municipal Water District (District) was originally incorporated on April 9, 1959 for the purpose of developing an adequate water supply to the landowners and residents of the District service area. On June 14, 1960 the District voted to become a member of the San Diego County Water Authority (CWA) and the Metropolitan Water District of Southern California (MWD), thus becoming eligible to purchase imported water from CWA aqueducts and distribute this water throughout its service area.

The District strives to provide a high level of service and to maintain close communication with its customers, and is proud of its reputation as an accessible, productive and progressive public agency. The District is governed by a five member board of directors, who are publicly elected by division. All board meetings are noticed to the public and are open for public comment and participation.

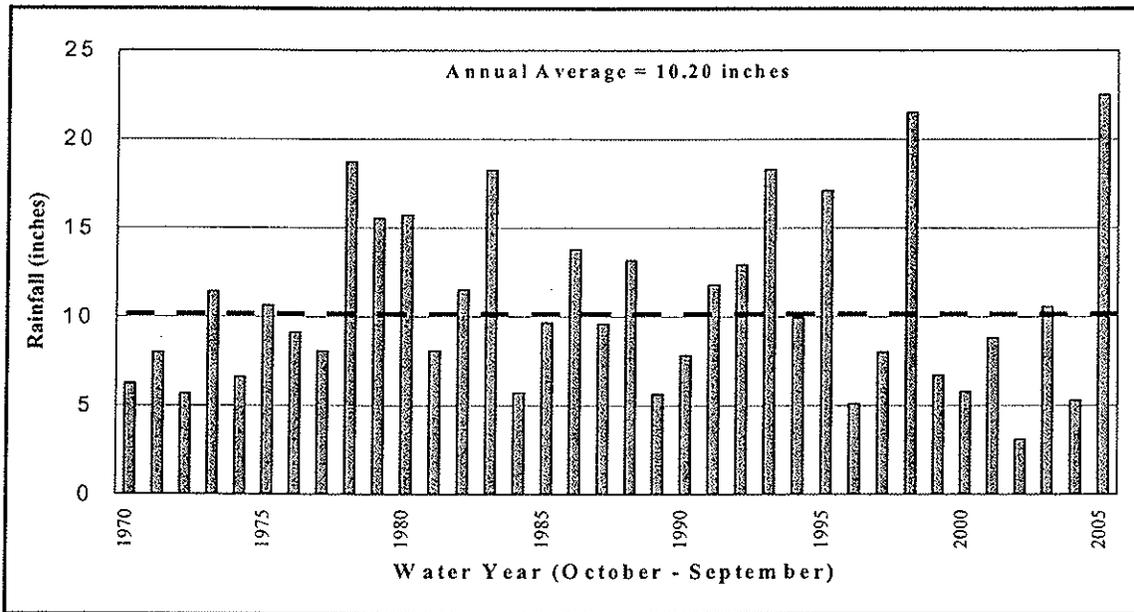
The District is one of 23 member agencies of CWA. Member agency status entitles the District to directly purchase water for its needs on a wholesale basis, and the District relies on CWA to plan for and provide a reliable water supply to the entire County.

Service Area

The District includes portions of the cities of Encinitas, Carlsbad, San Diego, Solana Beach, and San Marcos as well as the unincorporated communities of Olivenhain, Leucadia, Elfin Forest, Rancho Santa Fe, Fairbank Ranch and 4S Ranch. **Figure 2** on the following page is a map of the District service area.

Many of the areas served by the District feature a mild coastal climate, varied topography, and convenient location to major urban areas. Because of these reasons, the District has experienced rapid urbanization, although rural, undeveloped area still remains. Inland areas are both hotter in summer and cooler in winter. More than 80 percent of the region's rainfall occurs in the period between December and March. Variations in weather affect short-term water requirements, causing demand spikes during hot, dry periods and reductions in use during wet weather. Average annual rainfall is approximately 10.20 inches per year on the coast and in excess of 14 inches per year inland. **Figure 3** on the following page shows the Annual Rainfall as recorded by Lindbergh Field Station in San Diego

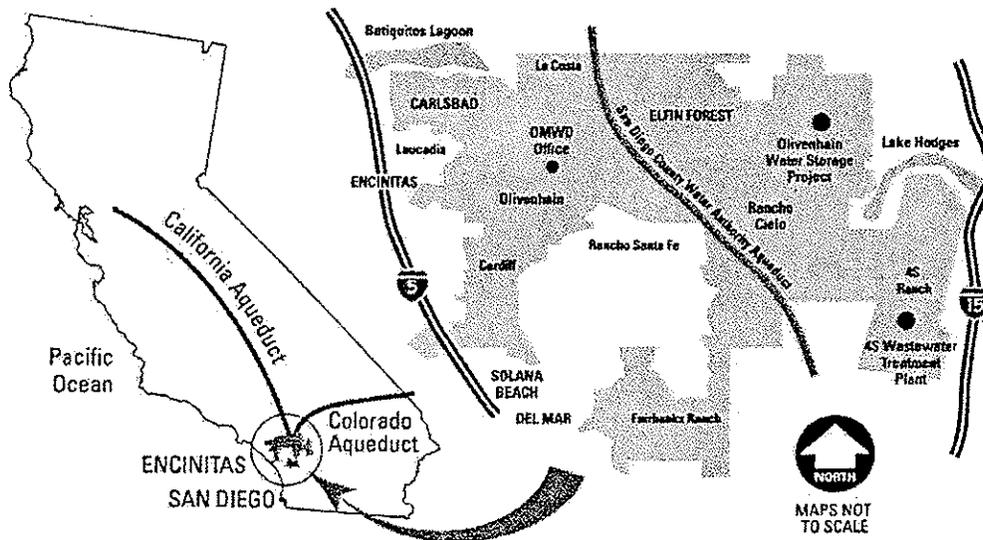
FIGURE 3 - ANNUAL RAINFALL (LINDBERGH FIELD STATION)



The booming market for new home sales throughout San Diego County has resulted in a substantial increase for new water meters set in the District's service area. During the last two fiscal years, the District has added approximately 2,158 new meters. Analysis of growth in the District indicated that over the past five years, the District has been growing at an average rate of 9% per year.

Despite several increases in federal interest borrowing rates, the building industry in San Diego has not slowed down. Several development projects, primarily residential, as well as a mix of

Figure 2 – District Service Area



commercial and light industrial are currently underway. New housing developments involving over 6,900 housing units are either under construction or at various planning stages, and are expected to reach completion within the next five years. If the economy continues to be strong, the District may add as many as 3,000 meters within the next five years.

The District currently covers an area of approximately 30,542 acres (over 48 square miles), and currently serves a population of approximately 50,000 persons through over 23,797 metered service connections. The San Diego Association of Governments (SANDAG) projects that District population will increase to 55,596 in 2010, 63,238 in 2015, 67,780 in 2020, 72,664 in 2025 and by 2030, District will have a population in excess of 73,800. Please note that the District believes that these SANDAG estimates are conservative as our own extrapolation based on the last census places our population at 58,000 in 2005.

Water use in the District was 20,684 AF/YR in 2005, and is projected that the District will need 20,602 AF/YR in 2010, 22,009 AF/YR in 2015, 23,641 AF/YR in 2020, 26,068 AF/YR in 2025 and 27,407 AF/YR in 2030.

Water Supply Facilities

The District purchases 100% of its potable water from CWA, through six service connections to CWA's Second San Diego Aqueduct. Four are filtered water and raw water. This water is then distributed to customers through a system that currently includes approximately 375 miles of pipe, 18 closed storage reservoirs, one covered in-ground reservoir, four pump stations, and a 450 KW hydroelectric generation station. The District treats most of the water it distributes at its 34 MGD ultrafiltration membrane plant which serves 70% of its customers. It is expected that by 2007, 100% of District customers will be served water from the Olivenhain Water Treatment Plant.

In 1979, the District purchased 245 acres of land for the purpose of constructing a dam, reservoir, and potable water treatment plant, together known as the Olivenhain Water Storage Project (OWSP). Additional lands were obtained by the District from the Bureau of Land Management in 1983, in exchange for the development of a public recreation area on the property. In all, the OWSP consists of approximately 750 acres, 550 of which have been preserved in their natural condition. The Olivenhain dam, reservoir and treatment plant provide seasonal and emergency storage and treatment to meet the District's projected needs.

The District has exchange agreements with surrounding agencies with principal supplies coming from CWA via MWD. An Emergency Exchange Interconnections Matrix is included as **Appendix H**. The District is a member agency of CWA and CWA in turn is a member of MWD. The District provided its wholesaler, CWA, with its projections through the year 2030. Agencies included in the exchange figures below in **Table 3** include Vallecitos Water District, Santa Fe Irrigation District and San Dieguito Water District. As noted, the District does not project the need to utilize exchanges with these agencies in the future.

Table 3- Current and Planned Water Supplies - AFY

Water Supply Sources	2005	2010	2015	2020	2025	2030 - opt
Water purchased from:						
San Diego County Water Authority	20,684	22,522	24,309	26,641	28,568	29,907
Exchanges In	1,996.2	0	0	0	0	0
Exchanges out	(55.8)	0	0	0	0	0
Recycled Water	475.6	3,320	3,750	3,700	3,700	3,700
Desalination (Poseidon/Carlsbad)	0	0	5,000	5,000	5,000	5,000
Total	23,096.4	25,842	33,059	35,341	38,268	38,607

In addition to the development of a potable water treatment system, the District is also involved in wastewater collection and treatment and is actively constructing a number of recycled water projects throughout its service area, as described in the chapter on Alternative Water Supply Measures. The District, many years ago, adopted Ordinance 173 which requires all new golf courses, parks, highway landscaped areas, and green belts to take recycled water if it is available or when it becomes available in their area.

Due to significant technological advances in the development and manufacturing of membranes, desalination is now a potential supply for meeting future demands. The planned regional seawater desalination project at the Encina Power station in Carlsbad includes a 50 MGD seawater desalination facility and a conveyance system consisting of pipelines, pumping station(s), storage tanks and other appurtenances necessary to deliver and integrate the desalinated water into the San Diego County Water Authority aqueduct system. Once the project is complete, the District could purchase up to 5,000 AF annually directly from the private developers of the Carlsbad Desalinization Project. It is currently anticipated that some discussions with Poseidon Industries, a private company engaged in desalinated water development, will take place between this project proponent and the District during 2005 and 2006.

The San Diego County Water Authority

The San Diego County Water Authority (CWA) was established on June 9, 1944 under the County Water Authority Act for the express purpose of importing Colorado River water into San Diego County.

Today's imported water, a combination of Colorado River water and State Project water, is sold wholesale to the 23 member agencies of CWA. The member agencies are autonomous and their city councils or boards of directors set local policies and water pricing structures. Each member agency may appoint at least one representative (based on assessed valuation) to the CWA Board of Directors.

Most water distributed by CWA is purchased from the Metropolitan Water District of Southern California (MWD) or the Imperial Irrigation District (IID) and is delivered from MWD's Lake Skinner complex into five pipelines that extend into San Diego County, and which collectively are known as the first and second San Diego Aqueducts as shown in **Figure 4**. CWA ownership of these pipelines begins approximately six miles south of the San Diego County line. CWA annexed to MWD in 1946 and is now represented on the MWD Board by six Directors. The District relies on the regional water management planning of CWA which does not anticipate regional supply shortages due to water quality or supply challenges. The reader is referred to CWA's 2005 Urban Water Management Plan Section 8-1 through 8-7 for more information on regional supplies, demands and reliability and the following text and tables are taken directly from its plan on their dry year assessments for the region.

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 "droughtproof" 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.

TABLE 8-2

SINGLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT

FIVE YEAR INCREMENTS

	(AFYR)				
	2010	2015	2020	2025	2030
Water Authority Supplies					
Regional Seawater Desalination at Encina 0 56,000 56,000 56,000					
56,000	0	56,000	56,000	56,000	56,000
IID Water Transfer	70,000	100,000	10,000	200,000	200,000
ACC and CC Lining Projects	<u>77,700</u>	<u>77,700</u>	<u>77,700</u>	<u>77,700</u>	<u>77,700</u>
Sub-Total	147,700	233,700	323,700	333,700	333,700
Member Agency Supplies					
Surface Water	22,284	22,284	22,284	22,284	22,284
Water Recycling	33,644	40,58	45,459	46,368	47,430
Groundwater	10,838	10,838	10,838	10,838	10,838
Groundwater Recovery	<u>11,400</u>	<u>11,400</u>	<u>11,400</u>	<u>11,400</u>	<u>11,400</u>
Sub-Total	78,166	85,120	89,1	9,89	9,92
Metropolitan Water District Supplies	541,784	477,150	411,879	424,020	457,378
TOTAL PROJECTED SUPPLIES	767,650	79,90	825,560	848,610	883,030
TOTAL ESTIMATED DEMANDS					
w/Conservation	767,650	79,90	825,560	848,610	883,030

TABLE 8-3

MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT

FIVE-YEAR INCREMENTS

	(AFYR)		
	2006	2007	2008
Water Authority Supplies	40,000	71,500	71,500
Member Agencies	58,730	61,770	81,20
Metropolitan Supplies	645,79	616,510	601,610
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	213,700	223,700	233,700
Member Agencies	81,550	80,620	86,810
Metropolitan Supplies	476,160	472,80	452,640
Total Estimated Supplies	771,410	777,280	783,150
Total Estimated Demands	771,410	777,280	79,150

TABLE 8-5

	2016	2017	2018
Water Authority Supplies	233,700	233,700	263,700
Member Agencies	88,080	86,740	102,510
Metropolitan Supplies	479,250	486,710	447,060
Total Estimated Supplies	801,030	807,150	813,270
Total Estimated Demands	801,303	807,150	813,270

TABLE 8-6

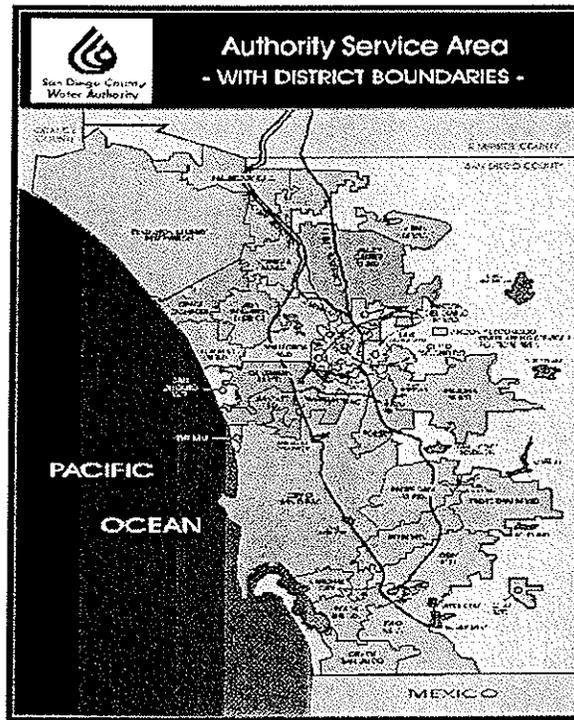
	2021	2022	2023
Water Authority Supplies	333,700	33,700	333,700
Member Agencies	9,150	9,020	105,000
Metropolitan Supplies	404,830	412,120	402,310
Total Estimated Supplies	830,680	835,840	841,010
Total Estimated Demands	830,680	835,840	841,010

TABLE 8-7

	2026	2027	2028
Water Authority Supplies	333,700	333,700	333,700
Member Agencies	9,09	9,9	106,000
Metropolitan Supplies	431,69	440,90	433,070
Total Estimated Supplies	858,480	865,630	872,770
Total Estimated Demands	858,480	865,630	872,770

As shown in the above tables, if the projected 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 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 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. A combination of storage and new supply appears to provide the most reliable solution to alleviating risks during a dry-period.

Figure 4 – San Diego County Water Authority Service Area



Water Conservation Role

In addition to wholesaling water, CWA coordinates countywide water supply planning efforts and provides technical and administrative assistance to its member agencies on a range of issues, including water conservation planning and implementation. Many conservation programs can most efficiently be operated at a Countywide level, rather than having 23 individual member agencies all trying to run their own programs. CWA therefore takes lead roles in implementing a number of measures including public information and education programs, and the implementation of conservation Best Management Practices as directed by the California Urban Water Conservation Council.

The Olivenhain Municipal Water District relies, and will continue to rely, on CWA for assistance and regional implementation of a number of conservation programs. For consistency purposes and to maximize economies of scale, these are best implemented at a larger scale than the District service area. The District's Urban Water Management Plan (Plan) focuses on existing and planned conservation activities of the District, and references existing and planned activities of CWA where appropriate. CWA conservation and water management measures that affect the District service area are discussed throughout the Plan. The reader is also referred to CWA's and Urban Water Management Plan for more complete information on CWA conservation and water management activities.

The Metropolitan Water District of Southern California

The Metropolitan Water District of Southern California (MWD) was created in 1928 for the purpose of providing supplemental water to cities and communities on the south coastal plain of California.

Since its formation, MWD has grown to include 26 member agencies (including the San Diego County Water Authority), as shown on the following page in **Figure 5**, and currently covers an

area which includes portions or all of Ventura, Los Angeles, Orange, Riverside, San Bernardino and San Diego Counties. It acts as a water importer and wholesaler, providing waters from both the Colorado River and the State Water Project.

In addition to wholesaling water, MWD coordinates Southern California regional water supply and water management planning efforts, and provides technical and administrative assistance to its member agencies. MWD provides water conservation assistance to its 26 member agencies in the areas of research, development of public information and school education materials, and financial assistance.

MWD conservation and water management measures that affect the District service area are briefly described in this report. The reader is referred to the 2005 MWD Urban Water Management Plan for more complete information on MWD conservation and water management activities.

Figure 5 – Metropolitan Water District Service Area



Chapter 2

Water Use and Supply

This chapter describes the water use and supply in the District. It includes sections on historical and current water use, projected water use, and historical and projected water supply, including information on water rates.

Historical and Current Water Use

Total annual water use in the District has grown from the District's inception in 1959 from approximately 1,900 acre-feet (AF) in fiscal year (FY) 1969-70, to 5,300 AF in FY 1979-80, to 12,556 AF in FY 1994-95, to 18,170 AF FY 1999-2000, and to 20,684 AF FY 2004-2005.

Sales to Other Agencies

In 2005, the District treated raw water and sold 4,000 AF back to CWA as treated water and anticipates treating and re-selling 10,500 AF in 2010. By 2015, CWA will have its new water treatment plant and will no longer purchase treated water back from the District. The District is a retail agency and not a wholesaler.

The District had a 1.84% estimated unknown water loss for FY 2005. The historical ten-year average of unaccounted water loss has been 3.2% and the District projects this to remain constant in future years. This is significantly lower than the AWWA standard and the average of the surrounding agencies.

Although water use has grown significantly since 1959, the six-year drought of 1987-92 had significant impacts on how water is used and how water will be used in the future. During the drought, the population of the District grew, and the water use declined. The reduction has two general categories, habit change and hardware. Habit change is the change in the manner in which water is used, such as not letting the water run while doing the dishes. This change may or may not be permanent. Hardware change is using a fixture to change the amount of water used, such as a low flow showerhead. This change is for the most part considered permanent.

District water use is broken down into domestic, multi-family, commercial, landscape and agricultural classes. As recently as FY 1969-70, agriculture accounted for over 70 percent of the District's total water use. This percentage has decreased over the years as total agricultural use has declined, and as domestic use has grown. Agriculture today represents only 11 percent of the total water demand in the District, using 1938 AF of water in FY 2004-2005. The current per capita use is approximately 369 gal/person/day. This is higher than most other water districts in San Diego County, due primarily to landscape irrigation demands and an abundance of large single family residences with large landscaped lots. **Table 4** below shows the past, current and projected water deliveries through 2015. All customers in the District service area are metered. The growth in number of installed meters has paralleled the District's growth in water use, with the number of installed meters increasing from 1,250 in 1972 to 23,797 at present. The number of service connections for customer meters vary in size from 5/8-inch to 8-inch. Approximately 70 percent of customer meters are 3/4-inch and smaller, and these are mostly residential customers which account for approximately 76 percent of the District's total water use. The remaining 24 percent of water use is by the 30 percent of customers having 1-inch and larger meters.

Table 4 - Past, Current and Projected Water Deliveries

	2000		2005		2010		2015	
	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY	# of accounts	Deliveries AFY
Water Use Sectors								
Single family (SF)	14034	10887.1	18,187	13,332	20,950	15,100	21,950	16,200
Multi-family (MF)	245	608.9	282	569	400	700	450	800
Commercial (C)	209	617.4	260	522	310	600	400	600
Landscape (Irg)	481	3368.5	521	3643	540	2900	550	2,900
Agriculture (Ag)	348	2215.1	353	1873	350	1,890	350	1,800
Other (District Use & Temporary Meters)	429		223	459	100	1,250	100	1,200
Raw	2	472.1	2	286	0	0	0	0
Total	15,746	18169.1	19,8280	20,684	22,650	22,350	23,800	23,500
The District expects to be built out in 2015 so the future water deliveries would remain constant beyond 2015.								

Projected Water Use

If local supplies are developed as indicated, no shortages are anticipated within the Districts service area in an average year through 2030. Though the District does not have any supply projects scheduled itself, the District may participate in a regional desalinization plant that will allow the District to purchase up to 5,000 AF per year.

The District relies on CWA to meet its water needs and the reader is referred to the CWA 2005 Urban Water Management Plan for more details on demand management during dry years. CWA developed a regional multiple dry year scenarios which utilized a 7% average increase in demands from the single dry year modeling effort. This factor was applied to the normal year demand estimates to generate the multiple dry-year demand projections. According to the CWA 2005 Urban Water Management Plan, the demands of the District will be met through 2030 with the potential of desalinated water supply. The reader is referenced to Section 8.1 through 8.7 and Figure 8-1 of the CWA plan as well as Section 1.3 that states, "This report constitutes the 2005 update to the Water Authority's 2000 Plan. To adequately demonstrate how the region will be reliable over the next 25 years, the 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 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."

The CWA and MWD are working on shortage allocation plans and the District will adopt its own plan when the shortage allocation plans become available from these water suppliers

Water Supply

Both MWD and CWA are continually working on increasing the reliability of their water supply. MWD developed a water supply reliability goal of providing 100 percent of full service wholesale water demands 9 percent of the time, and never providing less than 80 percent of full service wholesale demands. "Along with MWD's goal, CWA developed a water supply reliability goal of its own, which is to meet 100 percent of the annual water supply requests of the Authority's member agencies 9 percent of the time, 9 percent of the requests 9 percent of the time, and never less than 80 percent of the requests."

While 100 percent of the District's water supply is purchased from CWA as either treated or raw water, the District provides its own treatment and provides treated water to 70% of its customers. The remainder of the District is provided treated water from connections to the CWA treated water pipeline. However, the District expects to provide 9% of its customers with treated water from its own treatment plant by 2007. CWA water is delivered to the District through four treated water connections, to CWA's Second San Diego Aqueduct, and two raw water connections, to CWA's Second San Diego Aqueduct. A temporary fifth connection provides raw water for distribution to several large irrigation customers which will ultimately be converted to recycled wastewater.

Water supply in the District service area has historically been very reliable, and the District prides itself on operating a well maintained and high-quality water system. The District's water distribution system is sized to meet peak demand conditions. Peak demands are additionally managed and reduced through the use of an extensive conservation program which encourages customers to water lawns and landscaping between the hours of 6:00 p.m. and 9:00 a.m. The District's conservation program will be detailed in the annual Best Management Practices reports provided as part of the Demand Management portion of this Plan. There are no existing or anticipated capacity restrictions that affect service to any District customers.

CWA's current CP identifies development of up to 89600 AFYR of desalinated seawater within the San Diego region by 2030. CWA is currently focusing its efforts on implementing a 50-mgd seawater desalination facility at the Encina Power Station. The additional increment of seawater desalination supply may be developed through potential projects at San Onofre, South County or expansion of the 50-mgd planned at Encina Power Station. The 89600 AFYR serves as the CWA's 2030 seawater desalination goal.

Long-term water supply reliability is provided by CWA and MWD, as discussed above. Currently, the District is operating under Stage 1 of its Water Conservation Ordinance, as will be discussed in Chapter 3. The District relies on CWA for delivery of a reliable water supply and for meeting the future water needs of the San Diego region. CWA and MWD are the agencies responsible for planning for the long-term water supply needs of the San Diego and Southern California regions, and the reader is referred to the Urban Water Management Plans of those agencies for information on regional water supply planning. The District is currently working on a desalinated water purchase from Poseidon Industries and developing an agreement to meet that end. Additionally, the District is working with CWA on a Drought Management Plan.

While the District looks towards MWD and CWA for a reliable water supply, it is also looking at itself. During periods of emergency outage of the District's water supply from CWA, such as may occur in a major earthquake, the District can draw on the 3,443 AF of water storage available to the District from the Olivenhain Water Storage Project, interconnections with its neighboring retail water agencies, and its Emergency Water Conservation Ordinance to attempt to manage water

supply and demand conditions. Additional storage facilities are needed to provide the District with a reliable emergency water supply.

A core element of the Olivenhain Water Storage Project is the 24,000 acre-foot, 318 foot tall, roller-compacted concrete Olivenhain Dam and Reservoir. The dam and reservoir are a joint collaboration between the District and CWA. The joint project agreement between both agencies has resulted in cost savings to the District by allowing it to cap costs on its 3,443 acre-feet of capacity in the reservoir at \$2.5 million. CWA realizes cost savings as well by sharing expenses while concurrently achieving their regional emergency storage goal of 18,000 acre-feet in the reservoir.

In order to fill the reservoir, construction of the 72" water pipeline from the dam to CWA's second aqueduct, referred to as the Pipelines East Project, was completed. A separate contract was for the construction of 13,000 feet of pipeline, called the Pipelines West Project, which connects the 48" treated water pipeline into the District's distribution system.

Located at the base of the Olivenhain Dam and Reservoir, the Olivenhain Treatment Plant was the largest of its kind in the world upon its completion and incorporates the latest membrane ultrafiltration technology, providing more certain removal of waterborne health threats in a cost-effective, environmentally safe manner. The 25 Million Gallons per Day (MGD) Membrane Treatment Plant, a state-of-the-science water treatment facility came on line April 2001. Grants from the Environmental Protection Agency (EPA) in the approximate amount of \$2 million dollars were procured for this project. The Water Treatment Plant was expanded by 9 MGD in 2004-05 to its present capability of 34 MGD.

The mechanisms supporting the Olivenhain Water Treatment Plant result in significant savings to the District in terms of operating costs and increased reliability. The available hydraulic gradient from the 72" raw water pipeline and the dam are converted to energy via the use of turbines. This energy helps run the Treatment Plant and saves the District \$600,000 dollars per year. Ancillary facilities including an electrical sub-station, pump station, and flow control facility, work in the Olivenhain Water Storage Project to form a world class water facility, serving as a model for new treatment plants across the nation and around the world.

Upgrades to the plant to prepare for the receiving of water with Lake Mead in 2008 will be needed. An expansion to the plant may also take place in 2-5 years, expanding the plant up to as much as 50 MGD. The District is currently in preliminary design review for the expansion potential of the plant as well as treatment options for future taste and odor issues surrounding Lake Mead water being received by the plant.

Chapter 3

Drought and Emergency Measures

This chapter describes the District's preparedness to manage water use and supply during periods of water shortage. Two types of shortage are addressed: drought and emergency. A drought is a long-term water shortage that can result in up to a 50 percent reduction in water supply. An emergency is an acute situation with the potential of a complete interruption of the District's supplies.

Drought Measures

The District has prepared itself to deal with periods of drought induced water shortage by adopting a Drought Response Ordinance, which may be considered a water shortage contingency ordinance. The ordinance provides for progressively severe stages of water use restrictions as necessary to accomplish District-wide water use reductions of up to 50 percent. The ordinance is described below and a copy of the ordinance can be found in **Appendix D**. The District plans to update the procedures outlined in Ordinance 204 in 2006 and incorporate the Regional Drought Response Plan under development by a cooperative effort between the San Diego County water agencies general managers and the San Diego County Water Authority.

District Drought Response Ordinance 204

On April 18, 19, the District adopted its drought Ordinance ~~20~~ 204. The ordinance describes the effects a drought may have on the District's water supply, its water conservation stages, and the implementation, violation, and penalties of the stages.

Section 2 of the ordinance lists the events and conditions leading to its adoption. As a result of the events, the District considered it critical to develop and impose mandatory restrictions (water conservation stages) on water use.

Section 7 of the ordinance describes the District's seven mandatory water conservation stages. These stages were developed such that they can be implemented as needed to provide the necessary reductions in demands to meet the desired drought condition or water emergency. The seven stages are listed as follows:

Stage 1. Normal Supply Level Available . Stage 1 applies during periods when a normal supply and distribution capacity is available, while at the same time demand levels are not expected to significantly increase in the immediate future. Elements of Stage 1 include:

- (1) Implementation of the District's adopted Urban Water Management Plan and Conservation Program.
- (2) Adoption of a District policy which is an action plan for implementation of water conservation techniques. (All elements shall apply as in Stage 2, but voluntary basis only.)
- (3) The failure to repair a controllable leak is defined as "waste of water" and is prohibited at all times.
- (4) All new indoor meter applicants must provide a plan indicating installation of 2.5 gpm showerheads and 1.6 gallon flush toilets.

- (5) All new meters that will be used wholly or partially for landscape irrigation shall not be issued without the submittal of appropriate plans incorporating principles of low water use landscaping and irrigation systems.
- (6) Changes to existing landscaping and turf areas or the addition of new landscaping or turf areas shall utilize principles of low water use landscaping and irrigation systems.

(B) Stage 2. Mandatory Compliance - Water Alert. Stage 2 applies during periods when the probability exists that the District will not be able to meet all of the water demands of its customers. Implementation of Stage 2 is intended to result in certain minimum reductions in water use from a base allocation. The specific amount of reduction from the base allocation shall be determined at the time of declaration by a volume of not less than 10%. During Stage 2, the following water conservation measures shall apply except when reclaimed water is used:

- (1) Lawn watering and landscape irrigation is permitted only on designated irrigation days and only between the evening hours of 600 p.m. and 00 a.m. the following morning. Watering is permitted at any time if a hand-held hose equipped with a positive shut-off nozzle is used, a hand-held, faucet-filled bucket of five (5) gallons or less is used, or a drip irrigation system is used. Properties with addresses ending in an even number may use water on Monday, Thursday, and Saturday evenings until the following morning. Addresses ending in an odd number may use water on Tuesday, Friday, and Sunday evenings until the following morning.
- (2) Agricultural users and commercial nurseries as defined in the Metropolitan Water District Code are exempt from Stage 2 irrigation restrictions, but will be required to curtail all non-essential water use. The watering of livestock and irrigation of propagation beds are permitted at any time.
- (3) Washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment is prohibited except on designated irrigation days. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shut-off nozzle for quick rinses. Washing is permitted at any time on the immediate premises of a commercial car wash. Further, such washing is exempted from these regulations where the health, safety, and welfare of the public is contingent upon frequent vehicle cleaning such as garbage trucks and vehicles used to transport food and perishables.
- (4) Filling or refilling swimming pools, spas, ponds, and artificial lakes is permitted only on designated irrigation days.
- (5) Watering golf courses, parks, school grounds, and recreational fields is permitted only between the hours of 600 p.m. and 00 a.m. the following morning, except golf course greens and propagation beds.
- (6) The use of water from fire hydrants shall be limited to fire fighting and related activities, for construction activities, or other activities necessary to maintain the health, safety, and welfare of the public.
- (7) Water shall not be used to wash down sidewalk, driveways, parking areas, tennis courts, patios, or other paved areas, except to alleviate immediate fire, safety, or sanitation hazard.
- (8) Restaurants shall serve water to their customers only when specifically requested.
- (9) The operation of any non-recirculating ornamental fountain or similar structure is prohibited.

(C) Stage 3. Mandatory Compliance - Watering Warning. Stage 3 applies during periods when the District will not be able to meet all of the water demands of its customers. Implementation of Stage 3 is intended to result in certain minimum reductions in water use from a base allocation. The specific amount of reduction from the base allocation shall be determined at the time of declaration by a volume of not less than 15%. During Stage 3, the following water conservation measures shall apply except when reclaimed water is used:

- (1) Lawn watering and landscape irrigation is permitted only on designated irrigation days and only between the evening hours of 4:00 p.m. to 9:00 a.m. the following morning. Watering is permitted at any time if a hand-held hose equipped with a positive shut-off nozzle is used, a hand-held, faucet-filled bucket of five (5) gallons or less is used, or a micro-irrigation system/equipment is used. A "designated irrigation day" is determined by the last digit in the street address. Properties with addresses ending in an even number may use water on Tuesday and Saturday evenings until the following morning and addresses ending in an odd number may use water on Sunday and Thursday evenings until the following morning.
- (2) Agricultural users and commercial nurseries shall reduce water use by an amount to be determined at the time of declaration. The watering of livestock and irrigation of propagation beds are permitted at any time.
- (3) Washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment is prohibited except on designated irrigation days. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shut-off nozzle for quick rinses. Washing is permitted at any time on the immediate premises of a commercial car wash. The use of water by all types of commercial car washes not using partially reclaimed or recycled water shall be reduced in volume by an amount to be determined at the time of declaration. Further, such washing is exempted from these regulations where the health, safety, and welfare of the public is contingent upon frequent vehicle cleaning such as garbage trucks and vehicles used to transport food and perishables.
- (4) Filling or refilling of swimming pools and spas is permitted only on designated irrigation days between the hours of 4:00 p.m. and 9:00 a.m. the following morning. The filling or refilling of ornamental lakes and ponds is prohibited. Irrigation reservoirs may be exempted when specifically requested.
- (5) Watering golf courses, parks, school grounds, and recreational fields is permitted only between the hours of 4:00 p.m. and 9:00 a.m. the following morning, except golf course greens.
- (6) The use of water from fire hydrants shall be limited to fire fighting and related activities, for construction activities, or other activities necessary to maintain the health, safety, and welfare of the public.
- (7) Water shall not be used to wash down sidewalks, driveways, parking areas, tennis courts, patios, or other paved areas, except to alleviate immediate fire or sanitation hazards.
- (8) Restaurants shall serve water to their customers only when specifically requested.
- (9) The operation of any ornamental, non-recirculating fountain or similar structure is prohibited.
- (10) New construction meters or permits for unmetered service shall not exceed the existing number of currently authorized meters. A new meter shall be issued only when an old meter is returned. Construction projects requiring water from a construction meter or a water truck

shall not use water unnecessarily for any purposes other than those required by regulatory agencies.

(D) Stage 4. Mandatory Compliance Water Warning. Stage 4 applies during periods when the District will not be able to meet all of the water demands of its customers. Implementation of Stage 4 is intended to result in certain minimum reductions in water use from a base allocation. The specific amount of reduction from the base allocation shall be determined at the time of declaration by a volume of not less than 20%. During Stage 4, the following water conservation measures shall apply, including all provisions and conditions of Stage 3, except when reclaimed water is used:

- (1) All water users shall minimize water use.
- (2) Shower and sink warm up water shall be captured with a bucket and used outdoors or to flush toilets.
- (3) All golf courses, parks, school grounds, and recreational fields must reduce from their base 1999 usage by a volume of not less than 20% at the time of declaration, or for new projects a base allocation to be determined by the General Manager.
- (4) Agricultural users and commercial nurseries shall reduce water use by an amount not less than 20%.
- (5) The use of potable water for commercial, industrial, manufacturing, processing purposes, resorts, hotels, motels and restaurants may be reduced in volume by an amount to be determined by the General Manager.

(E) Stage 5. Mandatory Compliance Water Warning. Stage 5 applies during periods when the District will not be able to meet all of the water demands of its customers. Implementation of Stage 5 is intended to result in certain minimum reductions in water use from a base allocation. The specific amount of reduction from the base allocation shall be determined at the time of declaration by a volume of not less than 30%. During Stage 5, the following water conservation measures shall apply, including all provisions and conditions of Stage 4, except when reclaimed water is used:

- (1) All lawn and turf watering, other than golf courses, shall be limited to one day per week between the hours 6:00 p.m. and 8:00 a.m. the following morning. Properties with addresses ending in an even number may use water on Saturday evenings until the following morning and addresses ending in an odd number may use water on Sunday evenings until the following morning. All Homeowners Associations may use water on Wednesday evenings until the following morning.
- (2) All construction water must be reclaimed or from a non-imported source unless the District determines in its sole discretion that those sources are not reasonably available.
- (3) Washing at home of autos, trucks, trailers, boats, airplanes and other types of mobile equipment is prohibited except with water captured from sink and bath warm-up water or other recovered water in a handheld bucket.
- (4) All new meter applicants must mitigate their specific impact upon the water supply by participating in a toilet/showerhead retrofit program or contributing to a reclaimed water project such that an off-setting supply of new water capacity is created, prior to the District's issuing a new water meter(s).

- (5) All golf courses, hotels, motels, and resorts must reduce a minimum of 30% from their 1991 base usage or for new projects a base allocation to be determined by the General Manager.

(F) Stage 6. Mandatory Compliance. Stage 6 applies during periods when the District will not be able to meet all of the water demands of its customers. Implementation of Stage 6 is intended to result in certain minimum reductions in water use from a base allocation. The specific amount of reduction from the base allocation shall be determined at the time of declaration by a volume of not less than 40%. During Stage 6, the following water conservation measures shall apply, including all provisions and conditions of Stage 5, except when reclaimed water is used:

- (1) All outdoor watering shall occur between 9:00 a.m. and 4:00 p.m. except when using reclaimed water, greywater (solely upon approval of such use by the County of San Diego Health Services according to issued rules and regulations) or private well water. Anyone using such water at other than a private residence shall post signs, with a minimal area of four square feet, and at intervals of two hundred feet along public rights-of-way where such water is being used noticing such usage.
- (2) Washing of personal vehicles other than in commercial carwashes or commercial vehicles for reasons of public health and safety is prohibited except when water used has been salvaged from indoor use, i.e., warmup water from showers, sinks, and/or lavatories.
- (3) There shall be no filling of new pools, new spas, or new fountains from imported sources.
- (4) Golf courses shall reduce water use by 40%.

(G) Mandatory Compliance - Water Emergency. A Water Emergency applies when a major failure of any supply or distribution facility, whether temporary or permanent, occurs in the water distribution system of the State Water Project, Metropolitan Water District, San Diego County Water Authority, or District facilities, when the District determines that a water shortage exists for any reason, requiring use reductions of 50% or more. It is anticipated that these measures will result in a reduction of water use from a base allocation to be determined at the time of declaration by a volume of not less than 50%. During a Water Emergency, the following potable water use prohibitions shall apply, including all provisions and conditions of Stage 6, except when reclaimed water or well water is used.

(1) General Requirement

- (a) All water users are expected to minimize water use for the duration of the drought emergency. All classes of water, including agricultural use, are expected to achieve a fifty percent reduction in use from the base allocation, as determined by the General Manager, except where specifically relieved of such reduction by the Board of Directors. Indoor uses will, in general, be reduced by such practices as fewer and shorter showers and baths, no running water while brushing teeth and shaving, full loads in dish and clothes washers, avoidance of unnecessary toilet flushing, frequent checking and repairing of leaks, and other conservation practices.

(2) Potable Water Use Prohibitions.

- (a) Irrigation of Turf. Irrigation of turf with potable water is prohibited except under the following circumstances:

1. for active public park and school ground areas no more than twice weekly;

2. at day care centers where required by license no more than twice weekly;
 3. for purposes of maintaining public safety (such as fire protection);and
 4. when using reclaimed water, greywater (solely upon approval of such use by the County of San Diego Health Services according to issued rules and regulations), or private well water.
 5. at public parks, where trees and shrubs are interspersed amidst turf supported by the same irrigation system, provided the area of irrigation is within the drip line of each tree or shrub and irrigation is no more than once every two week.
- (b) Irrigation of Ground Cover. Irrigation of ground cover with potable water is prohibited except under the following circumstances:
1. for fire protection;
 2. where trees and shrubs are interspersed amidst ground cover supported by the same irrigation system;and
 3. for preservation of existing ground cover which is designed to stabilize slopes.

Irrigation of ground cover under this Section is restricted to once every 14 days.

- (c) Irrigation of Trees, Shrubs, Including Certified Agricultural Production. Outside irrigation of trees, shrubs, and other plants which are not turf or ground cover, is allowed only by hand-held hose with positive shut-off nozzle, bucket, or micro irrigation systems equipment. Sprinkler systems may only be used for certified agricultural production, watering active public park and school ground areas, maintenance of ground cover in accordance with this Ordinance and for purposes of maintaining public safety such as, fire protection.
- (d) Irrigation Water Hours. All outdoor irrigation shall occur between 8:00 a.m. and 4:00 p.m., except when using a micro irrigation system equipment, or for certified agricultural production, or when using reclaimed water, greywater (solely upon approval of such use by the County of San Diego Health Services according to issued rules and regulations), or private well water. Anyone using reclaimed water at other than a private residence shall post signs, with a minimal area of four square feet, and at intervals of two hundred feet along public rights-of-way where such water is being used noticing such usage.
- (e) Hosing or Spraying of Paved or Hard Surfaces. Hosing paved or hard surfaces including, but not limited to, sidewalk, driveways, patios, streets and parking areas is prohibited except for compelling public health and safety reasons. Allowed hosing activities shall be done only with a hose equipped with a positive shut-off nozzle.

Spraying hard surfaces during irrigation activities is prohibited.

- (f) Runoff and Repairing of Leak. All runoff from outside water usage from property is prohibited. Leak to irrigation and plumbing systems shall be immediately repaired.
- (g) Filling of Pools and Spas. Filling of new pools and spas is prohibited except under the following circumstances:
1. where the owner can produce and demonstrate a conservation offset;or,

2. where the owner can produce evidence that private well water meeting public health standards will be utilized.

Draining of existing pools is prohibited except under orders of the appropriate local health or building official.

- (h) Recreational and Ornamental Lakes and Ponds. Recreational and ornamental lakes and ponds may not be filled or refilled except with reclaimed water or private well water. Lakes and ponds utilizing reclaimed water at other than a private residence shall post signs around the lakes and ponds of where such water is being used noticing such usage.
- (i) Golf Course Irrigation. Golf courses may use potable water supplied by the District only to irrigate tees and greens. Irrigation of fairways and roughs with potable water or any blend thereof is prohibited. Golf courses irrigating with reclaimed water shall post signs, with a minimal area of four square feet, and at intervals of two hundred feet where such water is being used noticing such usage.
- (j) Restaurants. Restaurants shall serve water only upon request.
- (k) Ornamental Fountains. Operation of ornamental fountains is prohibited except when private well water or reclaimed water is used. Ornamental fountains utilizing reclaimed water at other than a private residence, shall post signs around the ornamental fountain of where such water is being used, noticing such usage.
- (l) Washing of Vehicles. Washing of vehicles is prohibited except:
1. in commercial car washes;
 2. commercial vehicles for reasons of public health and safety;
 3. where water has been salvaged from indoor use, e.g. warmup water from showers, sink, and/or lavatories; or
 4. by a mobile high-pressure low volume service.
- (m) New Services. Except as to property for which a building permit has been heretofore issued, no new potable water shall be provided, no new temporary meters or permanent meters shall be provided and no commitments (such as, will serve letters, certificates or letters of availability) to provide potable water service shall be issued, except for the following circumstances:
1. the commitment includes a notice that a water shortage emergency prevails, resulting in a water moratorium and no water service is currently available;
 2. for projects necessary to protect the public's health, safety, and welfare;
 3. when it can be demonstrated that no net increase in potable water use will occur; or
 4. when a conservation offset is provided.
- (n) Certified agricultural irrigation shall reduce 50% from the 1990 base year. Certified agricultural irrigation may be discontinued for varying durations, as determined necessary by the District's General Manager depending upon the circumstances of the water emergency.

- (o) The use of potable water for commercial, industrial, manufacturing, processing purposes, resorts, hotels, motels, and restaurants shall be reduced in volume by 50% from the base allocation for that user. These users shall be monitored by the District to ensure compliance with the 50% reduction. Any such user who exceeds their 50% reduction by 10% or more during any period monitored by the District shall have a flow restrictor installed at the user's expense until the user's total use for the year no longer exceeds a 50% reduction from that user's base allocation. All fees and charges for the removal of the restrictor shall be paid by the user.

Section 9 of Ordinance 204 (Attached as Exhibit D) describes the procedure for implementation of the stages, from monitoring and stage selection to public announcement. Sections 10 through 12 describe the violation and the corresponding penalties issued to offenders. **These penalties can range from a warning letter, to hundreds of dollars in fines, to water service termination, depending on the violation(s).**

During a drought or emergency shortage, the District monitors production and distribution records daily and will increase public outreach.

Recent Experience

The drought of 197 - 2 had significant impacts on the use (at the time) and future use of water.

In FY 1999, the District had reached its height of water use, with a total per capita water use of 326.6 gal/cap/day (gallons per capita per day). The effects of a long-term drought were just being realized and conservation measures were on the verge of being implemented. By FY 1992, the drought had peaked and through aggressive water conservation measures, including the District's implementation of stage 4 of its Waste Water Ordinance, the water use had dropped to approximately 230.4 gal/cap/day. This was over a 25 percent reduction of water use from FY 1999, and exceeded CWA's request for a 20 percent reduction.

The drought of 197-2 changed the way water managers look at drought situations. Both MWD and CWA have developed elaborate drought management plans to fairly deliver reduced water to its member agencies (the reader is referred to the Urban Water Management Plans of MWD and CWA); and both MWD and CWA are heavily involved in water supply reliability planning.

Supply Reliability and Consistency of Supply

The reader is referenced to Table 8-1 and Section 8-2 of the CWA plan for normal year projections for the region that include the District's supply. Table 8-3 and Section 8-2 show a single dry year assessment and Section 8-3, Table 8-3 shows multiple dry year assessments that the District is relying on. The Tables from CWA were also included earlier in this Plan.

Worst Case Drought

While MWD and CWA both have similar water reliability goals of never providing less than 80 percent of full service demands, recent drought history, as described in the previous chapter, encourages the District to look at the possibility of an event of an extreme drought causing a reduction in water supply of up to 50 percent from normal. In this situation, the District's neighboring water agencies will most likely not be able to provide any supplemental water supply to the District, and the District will need to manage with only half of its normal supply.

In this worst case situation, the District would implement progressively severe water conservation stages of its ordinance as necessary to reduce District-wide water use by 50 percent. The District would look for significant public information and educational assistance from CWA and MWD. This would be an extreme situation and would likely put a severe social and economic burden on the District's customers. The landscape industry could be particularly hard hit. However, with the

addition of the Olivenhain Water Storage Project, the District has the ability to be self-reliant for periods of over 60 days.

Emergency Measures

The District has prepared itself to deal with emergency interruptions in water supply by developing an Emergency Response Plan and an Emergency Management Committee. The Plan, currently being revised, is described below.

Emergency Response Plan

In January 1988, the District produced, in conjunction with CWA, an *Emergency Disaster Manual*. The manual covered various types of disasters and the steps to take in the event one occurs. It addresses types of disasters that might occur, problems that may occur, communication, resource contacts, and an emergency plan.

The District has begun revising its Emergency Response Plan. The new plan will cover the needs and concerns to be handled within the District, as well as procedures and agreements in relation to adjacent water districts. Some of the procedures addressed in the plan will include:

- Assessing the status of water service needs within the District and in relation to adjacent water districts.
- The establishment of liaison with other agencies.
- The coordination with other agencies in initiating mutual aid.
- Determining how much water can be available to other districts, and when.
- The transfer of water to or from adjacent water districts as necessary.
- The transfer of other resources, personnel, equipment, or supplies, to or from adjacent public works, emergency agencies, or districts.

The District has established cooperative agreements with its adjacent water agencies for the emergency exchange and transportation of water. The District borders six other water districts: City of San Diego, San Dieguito WD, Santa Fe D, Carlsbad MWD, Mlecitos WD, and Rincon Del Diablo MWD. Of these six, the District has emergency connections and agreements with four: San Dieguito WD, Santa Fe D, Carlsbad MWD, and Mlecitos WD. The agreements describe the number, location, type of connection, and the agreed rate of flow.

In addition, the District completed a Vulnerability Assessment in 2003 and a Local Hazard Mitigation Plan in 2005.

Major Facility Failure

An earthquake, regional power outage or other emergency situation could result in an emergency interruption of the District's water supply from CWA. In this event, the District would manage the situation utilizing Standardized Emergency Management System (SEMS) procedures as called out in its Emergency Response Plan. The projected duration and severity of the outage would be assessed and an appropriate response developed and communicated to the public and governmental agencies as called out in the plan. **The Olivenhain Water Storage Project has back-up generators near the dam and water treatment plant.**

The District's storage facilities would provide some level of emergency supply. The duration of supply available from storage would depend upon the elapsed time between the emergency and the full implementation of the rationing, the availability of water transfers from adjacent districts,

and the percent of reduction in water use by District customers. The District's current total tank usable storage capacity is 76 million gallons (MG) and typically operates between 50 and 55 MG. In an average year at current development levels the District has an average daily demand of 17.5 million gallons per day (MGD). In addition, the Olivenhain Water Storage Project provides the District with the ability to be self-reliant for periods of over 60 days with 3,442 AF in the Olivenhain Reservoir.

Chapter 4

Financial Consideration

This chapter discusses the District's preparedness to manage its finances during periods when water sales to customers are reduced by drought conservation measures. This is a potential problem for many water agencies because reductions in water sales can produce reductions in revenues and result in budget shortfalls. Advance financial planning can address such problems before they arise.

The District's financial goal as a public agency is to be revenue positive, that is, to maintain revenues equal to costs and budgeted expenses, and maintaining adequate reserves for economic uncertainties of changes in water sales and costs. The District's normal water rates are established using normal expected water use and supply, and are set such that revenues slightly exceed costs.

To deal with drought situations, the District maintains reserve funds to mitigate the risk of large unexpected rate increases that are more difficult for its customers to manage, plan, and budget for. Water sales generate over 70% of the revenues needed to cover the District's expenses. Changes in water sales can dramatically impact the District's financial stability.

District Water Rates

The District charges its customers for water under an increasing block rate structure, in which the unit price of water increases as the volume used by each customer goes up. The lowest tier for residential users is a lifeline type allocation, and the highest tier is typically consumed for irrigation.

The District implemented a tiered water rate structure based on volume use. Meter sizes are rated in terms of equivalent dwelling units (EDU), where one EDU represents a single-family residence with a typical 3/4-inch meter and a maximum flow capacity of 27 gallons per minute. These 800 gallons of water per day is an average use developed from analysis of historical water use in the District.

Water revenues are collected from commodity rates and monthly system access fees. About 78% of the District's water sales are collected from commodity revenue. The District adopted an inclining block structure for collecting water user fees based on monthly consumption.

The District's rate structure was designed to ensure users pay a proportionate share of costs. Residential/Domestic users have a rate structure based on volume use in each block priced at a rate ranging from \$.32 to \$.34 per 748 gallons. For commercial and irrigation users, the District implemented a two-tiered water rate structure that relates water consumption to the amount of water capacity each particular meter size was intended to provide. Tier breakpoints for Commercial/Irrigation customers were established based on meter size and set in both winter and summer seasons, based on water use during each season because commercial/Irrigation customers are on a seasonal schedule. It is anticipated that greater conservation efforts will also enhance revenue stability. For agricultural users, the District implemented a uniform rate for simplicity.

A system access charge is a cost recovery mechanism that is generally included in the rate structure to pay for customer and meter costs. Because of seasonal fluctuations, and changing weather patterns, a monthly system access charge provides a stable source of revenue independent of on-going water consumption.

Following are the District's current water rates as of May 2005.

Water Rates Per Unit

(1 unit = 748 gallons)

The rates include costs from San Diego County Water Authority (CWA) from which the District must purchase 100% of its potable water supply.

Domestic

0 - 8 Units \$.32

9 - 70 Units \$.9

Over 70 Units \$.34

Agricultural \$1.93

Ag. Credit (0.27)

Recycled \$.73

Raw Water \$.73

Construction \$.62

Commercial /Irrigation

B"Base \$.03

C"Over Base \$.36

Combined Agricultural / Domestic

First 26 Units per month: Follow Domestic Rate Structure.

Over 26 Units per Month: Follow Agricultural Rate Structure.

Commercial /Irrigation Unit Allotments

"B" Base Allotment

Based upon water use by meter size.

Winter (Dec-May)

Summer (Jun-Nov)

Meter Size

5/8" 12 22

3/4" 23 47

1" 78 140

1 1/2" 170 360

2" 240 550

3" 750 1,600

4" 1,475 5,600

"C" Over Base Allotment

Response to Water Shortages

Effects on Overall Sales

The District's annual revenue requirement to be collected from rates and charges was developed based on historical average of water sales with staff projected growth. If drought conditions occur, the District's ability to recover its costs of service from water sales would be impacted depending upon the severity of water reductions as a result of the drought. In order to mitigate this risk the District adopted the Revenue Policy in which the Board of Directors set the goal to collect at least 50% of the District's revenue requirement from low to medium users and utilize the District's Rate Stabilization Fund when water sales are lower than expected due to drought and revenues are not sufficient to pay for expenditures.

When water sales are lower than expected, due to prolonged dry weather conditions or a wet winter, and revenues are not sufficient to pay for the expenditures, these reserve funds are used to offset the need to a higher rate increase due to the drop in sales. However, if the reserves fall below the Board minimum goal of 25% of net estimated water sales, a rate increase beyond the planned increases of 3-5% per year may be necessary. The Board has also developed several guidelines for the user rate and setting process to minimize the potential rate impacts due to variation in weather conditions, thus avoiding revenue fluctuations.

Chapter 5

Existing Water Conservation Measures

The Olivenhain Municipal Water District (District) has been active in the development and implementation of water conservation measures, including those programs administered by CWA and MWD. The District has also demonstrated its commitment to water conservation through its participation as a Signatory to the California Urban Water Conservation Council (Council) Memorandum of Understanding. A description of the Council's Best Management Practices and the California Water Ethic follow.

"Best Management Practices" and the California Water Ethic

During the course of the State Water Resources Control Board's Bay-Delta Proceedings in the late 190s and early 195s, major urban and environmental interests worked cooperatively to develop a mutually accepted approach to the evaluation and implementation of urban water conservation measures. The result of this work was the statewide Memorandum of Understanding (MOU) on water conservation Best Management Practices (BMP), and the creation of the California Urban Water Conservation Council (Council) to monitor and administer implementation of BMP throughout the State.

As a signatory to the MOU, the District demonstrates generally accepted, cost effective, environmentally and socially acceptable water conservation planning and implementation. Through the cooperative efforts of the District, CWA, and MWD, all of the BMP measures are now being implemented within the District's service area. The complete BMP MOU is included in **Appendix E**.

See **Appendix F** for the District's 2001 to 2004 BMP reports. The online report to complete the annual BMP report for 2005 is not available from the Council. Once completed, the District will amend the report into the Plan.

The BMP, per the MOU, originally described 16 measures of water conservation that were encouraged to be implemented by water agencies /districts. The MOU was amended in September 197 and reduced to 14 measures of water conservation. These measures include:

- Interior and Exterior Residential Water Audits
- Plumbing, Sewer and Retrofit
- Distribution System Water Audits, Leak Detection and Repair
- Customer Metering
- Large Landscape (Turf) Water Audits and Incentives
- High-Efficiency Clothes Washers
- Public Information Programs
- School Education Programs
- Commercial and Industrial Water Conservation
- Conservation Pricing Programs
- Water Waste Ordinance
- Water Conservation Coordinator
- Ultra-Low Volume Toilet Replacement Programs

The California Water Ethic

The development of the water conservation BMP and the State Conservation Council assisted urban water agencies by streamlining the evaluation of water conservation measures. Perhaps more important, however, is the contribution that the BMP agreement has made to the development of a California water ethic.

The California water ethic recognizes the responsibility of water users to make the reasonable and best use of their existing water supplies before developing new ones. In the case of urban water users, this has meant the more aggressive implementation of water conservation, water reclamation, and groundwater management programs.

By demonstrating on a statewide basis their commitment to efficient use and careful management of existing supplies, urban water agencies have had increased success in their ability to gain political and regulatory approvals for the development of water transfers and other water supply projects. In this sense, the continued aggressive development of water conservation and water management measures by urban water agencies can be considered a prerequisite to new water transfers from Central Valley agriculture and to new solutions to the continuing water supply and environmental problems in the Sacramento-San Joaquin Delta.

Criteria for Evaluating Conservation Measures

For a water conservation measure to be practical for the District, it must meet four criteria:

- Technically feasible
- Environmentally acceptable
- Socially and politically acceptable
- Cost-effective to the District

A water conservation measure is determined to be cost-effective to the District if implementation of the measure reduces the District's reliance on purchasing water and reducing the costs by more than the cost of the conservation measure. This determination is made by comparing the District's costs of implementing the conservation measure with the costs that the District avoids by not having to purchase treated or raw water, and deliver the water that is now being conserved.

The incremental cost to the District of purchasing raw or treated water, and distributing an additional acre-foot of water is known as the District's marginal cost of supply.

Marginal Cost of Supply

The District currently purchases all of its treated potable water, both potable and raw, from the San Diego County Water Authority (CWA) via Metropolitan Water District of Southern California (MWD). Even as water recycling, groundwater, seawater desalination, and other local projects come on line in future years, the District's purchases of CWA water will continue to increase. The District's marginal cost of supply is its cost of purchasing an additional unit of CWA water.

The treated water the District buys is purchased at a commodity cost of \$71 per acre-foot (AF). This is the District's marginal cost of supply for treated water. Raw water is purchased for \$5/AF. Water treated at the Olivenhain Water Treatment Plant costs the District \$41/AF if debt service is included.

The marginal cost of supply is significant to an evaluation of water conservation and alternative supply sources because it provides a useful economic benchmark. If the District can implement a conservation or alternative supply measure for less than its marginal cost of supply, then it reduces its overall costs of meeting its customers' water needs, and from a broad economic perspective the measure can be said to be cost-effective. Specifically, when faced with a new increment of growing water demand, the District can bring supplies into balance with demands either by purchasing more supply from CWA (at \$71AF), or by implementing further conservation measures to reduce demands. If the latter approach can be done for a unit cost of less than \$71AF, then the District has reduced its total costs and reliance upon purchasing water from CWA.

In looking at the economic and financial implications to the District of implementing water conservation programs, it is important to recognize that the ledger sheet has two sides: 1) costs, and 2) revenues. Although conservation is properly labeled as cost-effective when it reduces a district's costs, the implementing district must also grapple with a potential reduction in revenues that results if conservation-induced reductions in water sales are not offset by rate adjustments. This effect is illustrated in the following discussion.

Effects on Water Bills

The economics of water conservation sometimes become contentious when the focus is placed on water rates instead of on water bills. Because water conservation measures are designed to reduce water sales, some increase in rates may be necessary to balance revenues with costs. However, water conservation measures are by definition cost-effective when they reduce the District's total cost of meeting the water needs of its customers, and thereby **reduce the average customer's water bill**.

A hypothetical example of the effect of cost-effective conservation on an average water bill is shown in the box on the next page. In the example, water conservation measures have reduced average customer water use by 10 percent. In order to fund these measures and to balance revenues with costs, the District has implemented a 7 percent rate increase. The net effect is to reduce the average water bill by approximately 5 percent.

EFFECT OF CONSERVATION ON MONTHLY WATER BILL

	Water Use (100 cu. ft.)	Water Rate	Total Bill*
Without Conservation	20	\$.32 (0-8 units)	\$3.6
With Conservation	18	\$.41 (0-8 units)	\$2.18
Percent Change	-10%	7%	-5%

*Commodity Charge only; excludes fixed meter charges.

An outside observer could conclude that this 7 percent rate increase is an undesirable and possibly unacceptable result of water conservation. When in fact, what is occurring is that the

customer is now paying 5 percent **less** in total, while continuing to use showers, clothes washers, toilets, and landscapes just as before. But now, as a result of conservation measures, each of these uses is consuming less water. The customer gets the same **utility** benefits from his/her water use, but does so with less water and at a lower monthly cost.

Wastewater and Energy Cost Savings

Utilities other than the District may also benefit from cost-effective water conservation measures. Local wastewater districts may benefit from reduced hydraulic loading on their facilities, and the local electric and gas utilities may benefit from reduced energy demand for hot water heating and less pumping of water to the region. Because these potential cost savings do not accrue directly to the District, cooperative arrangements are necessary in order to allow these benefits to be factored into the economic evaluation of conservation programs.

In the case of wastewater service throughout the District, wastewater collection and disposal is managed by 5 individual special districts and two Districts owned and operated systems. The individual special districts include: Leucadia Wastewater District, Fairbank Ranch Community Services District, Rancho Santa Fe Community Service District, Cardiff Sanitation District, and Whispering Palms Community Services District. The District owns and operates the 4S Ranch Sanitation Plant and the Rancho Cielo Sanitation District. The District's 4S Ranch Water Reclamation Facility treats 4S and Rancho Cielo Sanitation District wastewater for 100% beneficial reuse.

A water conservation-induced reduction in hydraulic loading could benefit some of these wastewater plants by relieving stress on existing hydraulically overloaded outfalls and treatment plants, or by allowing for the deferment of capacity expansion projects. All the wastewater plants should benefit from reduced operating costs and energy savings from smaller volumes of wastewater requiring treatment. The value of these potential benefits is currently unknown, although they do figure into District planning efforts described in the Water Recycling section of Chapter 6.

Cost Savings by Wholesale Water Suppliers

As explained previously, the District purchases imported water from CWA, which in turn purchases its water from MWD. Both CWA and MWD also benefit from water conservation in the District. CWA benefits from water conservation by being able to delay or reduce the size of large new water delivery facilities necessary to meet the needs of the County's growing population. MWD likewise benefits by not having to develop as much new water supply, and by being able to delay or reduce the size of large new water delivery facilities.

MWD passes its cost savings on to its member agencies through financial assistance to its members. CWA has worked closely with its member agencies to utilize MWD funds as efficiently as possible, through its Cooperative Communications Program. This program splits the costs of approved conservation programs between MWD, CWA, and CWA member agencies.

CWA assists member agencies by providing for a joint participation in the following conservation programs: water budgets, artificial turf, landscape audits, public information and education, school education, and residential, commercial, industrial, and institutional water saving-devices.

Water Conservation Activities

The following list contains the water conservation measures being implemented, planned, or studied, including the BMP as well as additional measures.

General Measures

- Interior and Exterior Water Audits and Incentive Programs for Single Family Residential, Multi-Family Residential, and Government /Institutional Customers.
- School Education Programs.
- Metering with Commodity Rates for all new Connections and Retrofit of Existing Connections.
- Conservation Pricing.
- Water Conservation Coordinator.
- Water Waste Prohibition.

Residential Measures

- Plumbing, Sewer and Retrofit.
- Residential Water Audits.

Commercial/Industrial Measures

- Commercial and Industrial Water Conservation: Continuing program. CWA implemented an industrial water audit program.

The commercial /industrial audit program was discontinued by CWA after 240 audits. The water savings was not realized and the customers did not find the surveys helpful. The program was designed to provide a complimentary water use survey of facilities to identify and evaluate water usage. The District now offers point-of-purchase vouchers for specific water saving devices to commercial /industrial accounts. The vouchers are for such devices as urinals, cooling tower conductivity controllers and pre-rinse spray heads. Conservation advice and other outdoor programs are available to accounts that request help in lowering their water usage, but the audit program is no longer advertised.

- Vouchers for the purchase of Cooling Tower Conductivity Controllers, water brooms, Mop machines, pre-rinse spray nozzles, dishwashers, and Water Efficient Urinals.

Landscape Measures

- Landscape Water Conservation for Sewer and Existing Single Family Homes.
- Large Landscape Water Audits (Turf Audits) and Incentives.

System Maintenance Measures

- Distribution System Water Audits, Leak Detection and Repair.

Since the District is meeting or exceeding its requirements, it plans to continue to pursue conservation measures especially those related to water recycling and groundwater use alternatives.

Financial Incentives

The District does not provide its customers with direct financial incentives for implementing conservation measures. The District does provide incentives for customers to conserve water

through its water rate structure. The existing water rates, as shown in the District Water Rates section of Chapter 4, are in three (3) tiers for promoting revenue stability, simplicity and conservation objectives. The District's rate structure was designed to encourage conservation through efficient usage and send the proper price signal to the customers about commodity use.

Chapter 6

Alternative Water Supply Measures

This Chapter evaluates alternative water supply measures for implementation within the Olivenhain Municipal Water District. Where applicable, the unit cost of an alternative water supply measure is compared to the District's marginal cost of conventional supplies. Other relevant considerations are also discussed.

The alternative water supply measures considered are the following:

- Water Recycling
- Desalination
- Local Runoff
- Exchanges and Transfers
- Groundwater Recharge

Water Recycling

Water recycling is the treatment and reuse of municipal wastewater or groundwater for irrigation and other non-potable uses. Recycled water benefits the region's water supply by reducing imported water demands and by providing a drought resistant local water supply. The District is aggressively pursuing the use of recycled water within both the Northwest and Southeast quadrants of the District. The production and distribution of recycled water within the District service area is accomplished through cooperative interagency agreements between the District, the City of San Diego, the City of Carlsbad, Rancho Santa Fe Community Services District and Millicent Water District. The District developed its Wastewater Reclamation Master Plan in coordination with these participating agencies with the result of developing recycled water use programs that have a regional benefit and assist other agencies with meeting their water reclamation goals.

In the Southeast quadrant, expansion of the 4S Ranch Water Reclamation Facility (Facility) was completed in 2004 to provide up to two million gallons per day (MGD) of recycled water (2,200 acre feet per year) for various irrigation uses. The Regional Water Quality Control Board determined effluent limits for the Facility based on local groundwater basin plan objectives. The State Department of Health Services approved the Facility for producing tertiary treated recycled water and authorized the District to distribute recycled water. The County of San Diego Environmental Health Department was involved in the approval of recycled water users. The District also purchases recycled water from the Rancho Santa Fe Community Services District for the Southeast Quadrant.

In the Northwest quadrant, another recycled water system is currently under construction with coordination and recycled water purchases from the Millicent Water District. Anticipated ultimate demands within this quadrant which could be served by recycled water average between 1,200 and 1,800 acre feet per year.

In 2005, the Facility collected and treated 750 AF of wastewater. It is projected that the Facility will treat 2,000 AF of wastewater each year through 2030, starting in 2008. The District originally believed the Facility would be treating 2,000 AF in 2005; however, construction of the facility was delayed while negotiating with DBI for certification of the UV disinfection system. Recycled water production was limited to 1 MGD during this period. The facility is currently capable of producing up to 2.0 MGD of tertiary treated recycled water.

Wastewater Collection and Treatment

The Olivenhain Municipal Water District boundary covers portions of five individual cities and the County of San Diego. Within this area, eight (8) Special Districts including the District provide wastewater collection and treatment to individual portions of the District. These Special Districts include the following:

- Olivenhain Municipal Water District
- Leucadia Wastewater District
- Rancho Santa Fe Community Services District
- Fairbank Ranch Community Services District
- Whispering Palms Community Services District
- Cardiff Sanitation District (City of Encinitas/San Elijo Joint Powers Authority (JPA))
- City of San Diego

Each of these Special Districts collects and treats the wastewater from their service area to either secondary or tertiary levels depending upon their individual permit requirements and their disposal method. Some agencies such as the San Elijo JPA and City of San Diego only treat the effluent to secondary levels because they use an ocean outfall or percolation pond for disposal. Other agencies such as OMWD treat to full Title 22 tertiary levels for beneficial reuse of the recycled water.

The boundaries of each of the special districts and cities which provide wastewater collection and treatment span outside of the boundary of the Olivenhain Municipal Water District. Due to the overlapping nature of the boundaries of the special districts, the cities and county in which they are located and other factors, it is very difficult to quantify how much of the wastewater collected and treated by each of the above agencies is solely from within OMWD. No agency maintains flow records delineated by other jurisdictional boundaries and consequently accurate data is unavailable. An estimate of the amount of wastewater collected from within the OMWD boundaries could be calculated by utilizing the amount of treated potable water purchased by customers within the OMWD boundaries. Based on historical averages, approximately 60 to 70 percent of all water used by customers is for landscape irrigation. Of the 30 - 40 percent of the water used for other than irrigation, approximately 80 percent is discharged as wastewater requiring collection and treatment via showers, toilets, washing machines, sinks, etc. This number is variable each year as population increases within the District's boundaries.

The District anticipates using 3,320 AF Tertiary Title 22 water for landscaping in 2010, 3,750 in 2015, and 3,700 in 2020 through 2030. Currently, the District is the only agency serving recycled water within its service area.

4S Ranch Wastewater Treatment Plant Expansion

On July 1, 1988, the District assumed ownership of the 4S Ranch Sanitation District and Rancho Cielo Sanitation District from the County of San Diego to provide wastewater collection and treatment services for these areas. These two areas encompass a total of approximately 4,000 acres and will ultimately contain over 6,000 single family dwelling units in addition to a variety of other commercial and public uses. In conjunction with the development of these areas, the District is constructing a recycled water system which will provide irrigation water for most of the

major irrigation water users in the southern portion of the District, including parkways, schools, greenbelts, and as many as six golf courses.

Within the 4S Ranch development area, the District owns and operates a wastewater treatment plant with an existing capacity of up to 2.0 MGD to accommodate the buildout of the 4S Ranch and Rancho Cielo specific planning areas.

This expansion project included the addition of filters and other treatment facilities necessary for treatment of the wastewater to Title 22 tertiary levels. This tertiary treated effluent is utilized throughout the District as recycled water to provide an uninterrupted source of irrigation water for the District's existing and proposed golf courses, greenbelts, and other large public irrigation uses.

Southeast Quadrant Regional Recycled Water Project

The District has completed construction of a comprehensive recycled water system in the Southeast Quadrant of the District. This recycled water system, combined with the 4S Ranch Water Reclamation Facility and the existing pipelines provides the ability to accommodate the recycled water needs of current and future customers. The recycled water system facilities include a 3 million gallons (MG) recycled water blending reservoir, several pump stations, a 1 MG recycled water tank supplemental water connection to the CWA raw water aqueduct, and over 5 miles of recycled water pipeline ranging in size from 12 inches to 20 inches. All golf courses and a large number of parks, schools, and greenbelt areas within the southern and eastern portions of the District, will ultimately be irrigated using recycled water.

Northwest Quadrant Recycled Water Project

The District proposes to construct approximately 2.9 miles of 8 and 12-inch diameter recycled water pipelines within existing streets in the northern portion of the City of Encinitas and the southern portion of the City of Carlsbad. The District will source the recycled water from the Allentons Water Districts Mahr Reservoir once the current expansion is completed. This project is known as the Northwest Quadrant (NWQ) Recycled Water Pipelines Project. The area the project will service was identified by the 10 recycled water master plan as having a significant number of landscape irrigation users and close proximity to a source of recycled water as the District does not have the facilities to service the area with recycled water from the 4S Ranch WWTP. In anticipation of future recycled water service, the District has previously installed, or required developers to install, pipelines in the NWQ that will eventually become dedicated recycled water services. Construction of the remaining pipelines to connect the system is anticipated to take place in 2006.

Technical and Economic Feasibility

To reduce both the need for imported water and the cost of obtaining this imported water, the District constructed its water reclamation facility and secured the ongoing purchase of recycled water from participating agencies. The construction cost of the District recycled water projects are funded through the use of federal grants, contributions from the 4S Ranch and Rancho Cielo developers and water sales revenues. The District also participates in MWD's Local Resources (LRP) and the CWA Recycled Water Development Fund Program. These programs provide regional funding to offset the initial cost of recycled water production. The District most recently received a grant for the Northwest Recycled Water Project in the amount of \$50,000 from the U.S. Department of the Interior.

To promote the use of recycled water by District customers, the District has adopted a mandatory use Ordinance 173 that requires new irrigation and other qualifying customers to use recycled water when and where available. Conditions of the ordinance are incorporated into detailed "conditions of service" agreements that the District signs with new customers. A copy of the District's reclamation ordinance is included in **Appendix G**.

The District encourages and mandates the use of recycled and other non-potable water sources through the execution of binding agreements with the golf courses and other users. The agreements stipulate that when recycled water is available, the users shall retrofit their facilities to utilize the water. The District also requires the installation of purple pipe and irrigation facilities to facilitate conversion to recycled water use when the water is available. The cost of recycled water is 9% of the cost of treated water and customers pay reduced capacity fees.

In addition to the District's efforts, the entire San Diego county area is presently in an intensive phase of water recycling planning and construction. The District is coordinating its recycling planning activities with the CWA. Reference is made to CWA's Urban Water Management Plan for additional information on area wide recycling planning.

Desalination

The Olivenhain Municipal Water District sits adjacent to the world's largest water supply: the Pacific Ocean. With a dissolved mineral content of roughly 35,000 parts per million (ppm), however, ocean water is unfit for either drinking or irrigation.

The technology exists for desalting ocean water to a high level of purity. Leading desalination technologies include distillation methods and membrane treatment such as reverse osmosis. Distillation methods involve heating salt water to produce steam, which is then collected and condensed as freshwater. Reverse osmosis involves forcing salt water at very high pressures through specially designed semipermeable membranes that act as a filter to salt and other dissolved minerals.

Once prohibitively expensive, seawater desalination is now a practical, cost-competitive source of new water for residents and businesses throughout our semiarid region. CWA's first regional seawater desalination project, on the site of the Encina Power Station in the City of Carlsbad, is expected to be up and running by 2011. If successful, the District would purchase desalinated water from the City of Carlsbad. The District anticipates purchasing up to 5,000 AF per year.

Environmental studies for the project are under way now. The Water Authority has identified a preferred route for a new underground pipeline that will deliver the desalinated seawater to the agency's regional aqueduct 10 miles inland. CWA is also looking at the feasibility of building a regional seawater desalination facility in the San Onofre area of Camp Pendleton.

Seawater desalination figures prominently in San Diego County's future. By 2020, the San Diego County Water Authority expects 6-15 percent of the county's water supply will come from seawater desalination facilities now on the drawing boards. Additional information on desalination can be found in the Urban Water Management Plans of CWA and MWD.

Improved Use of Local Surface and Groundwater

Improved use of local surface and groundwater benefits the region's water supply by reducing the need for imported water. As discussed in the Water Supply section of Chapter 2, the District purchases all of its water from CWA and has limited rights of its own to any local water supplies. The District is however currently involved in a project which could increase water quality and utilization of local groundwater by injecting raw or recycled water into the San Dieguito Groundwater Basin. By improving the water quality of the basins, the projects would make available for beneficial use, local water that currently recharges to the basin but is unusable because of poor water quality. The District could use 100 AF per year for groundwater recharge in years 2015 through 2030 and 100 AF per year for wetlands.

The District could utilize up to 250 AFYR if a groundwater project was implemented. An Environmental Impact Report & Study and injection/recovery study have been completed for a potential future project in the San Dieguito Groundwater Basin which is not currently adjudicated. **Figure 6** on the next page shows the San Dieguito Groundwater Basin. The District currently has no basin management plan. If a groundwater injection project is implemented, a basin management plan will be completed and District rights for pumping from the groundwater basin will be negotiated from current rights holders. The District currently has no pumping rights within the basin.

Exchanges and Transfers

Exchanges and transfers are projects that allow for surplus water of one agency to be used or stored for future use by another agency. Both the San Diego County Water Authority (CWA) and the Metropolitan Water District of Southern California (MWD) are actively engaged in exchanges and transfers designed to increase the storage of wet year surplus water for use in dry years. The reader is referred to the Urban Water Management Plans of CWA and MWD for additional information on the exchange and transfer activities of these agencies.

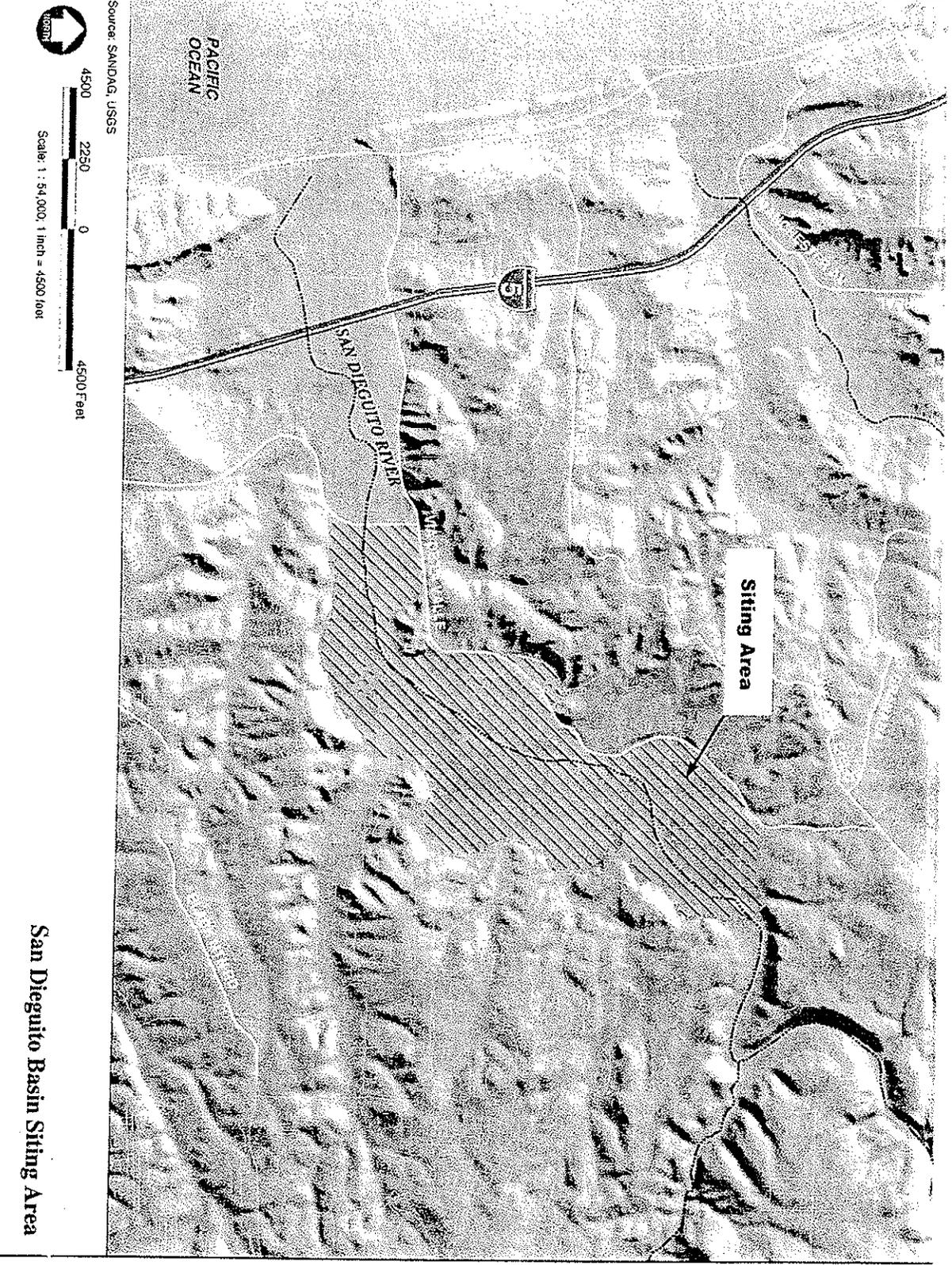
In the future there may be the possibility of purchasing water from other wholesalers. Currently, the Metropolitan Water District owns the infrastructure that delivers water to the San Diego County Water Authority who wholesales the water to local water agencies. The costs of maintaining the infrastructure are a large factor in water expenses.

The District entered into an agreement with Western Water in July 1990 to purchase 7,500 acre feet of water if a fair wheeling rate could be negotiated with MWD. The water from Western Water was supposed to be deliverable at a savings over the current rates. Recently, however, the 2nd District Court of Appeals ruled that MWD could charge any customers a fixed rate for using their distribution system. At this time, the District is not able to save money by buying water from other suppliers that had hoped to use MWD's pipelines for a low wheeling rate.

The District does not currently control any water resources or major storage facilities of its own, and therefore is not now in a position to engage in significant exchanges and transfers. The Olivenhain Reservoir is available for emergency and seasonal storage of up to 24,000 acre-feet of water, of which, the District will have 3,443 AF of its own storage capacity. This storage availability will allow the District to store winter and other surplus water during times of abundance, for use during the summer or times of shortage.

As mentioned in the Water Recycling section, the District is currently evaluating the feasibility of using recycled water to rehabilitate the San Dieguito groundwater basin. Implementation of these projects will allow the groundwater basin to be used as a storage reservoir, where winter and other surplus recycled water can be stored for use during the summer or other periods of shortage.

As a member agency of CWA, which in turn is a member agency of MWD, the District shares its imported water supply with all the rest of the Southern California south coastal plain, using only what it needs when it needs it. The District also maintains emergency system interconnections with its neighboring retail water agencies. These interconnections allow for the transfer of limited amounts of water between agencies during emergencies and other short-term supply outages. See **Appendix H** for a copy of the District's Emergency Exchange Interconnections matrix. This chapter presents the Olivenhain Municipal Water District's plan for water conservation and alternative water supply management activities over the next five years.



San Diegoito Basin Siting Area

Alternative Water Supply Management Activities

Alternative water supply management activities will consist of the following:

- Water Recycling:** District to continue Southeast and Northwest Quadrant Recycled Projects as well as conduct feasibility, planning and permit studies for Recycled Water Distribution; for San Dieguito Groundwater Basin Recharge project.
- Desalination:** CWA and the District to study and monitor developing technologies. Possible purchase of desalinated water from City of Carlsbad.
- Local Runoff and Groundwater:** District to continue with planning for San Dieguito Groundwater Recharge project.
- Exchanges and Transfers:** CWA and MWD to coordinate for region.

Figures

1. Map of Olivenhain Municipal Water District Recycled Water service Area
2. Map of Olivenhain Municipal Water District Service Area
3. Map of San Diego County Water Authority Service Area
4. Map of Metropolitan Water District Service Area
5. Map of Metropolitan Water District Service Area

Tables

1. Cooperation with Appropriate Agencies
2. Annual Rainfall
3. Current and Planned Water Supplies
4. Current and Planned Water Deliveries

Appendices

- A. Text of the California Urban Water Management Planning Act
- B. San Diego County Water Authority 2005 Urban Water Management Plan
- C. Resolution Adopting the 2005 Urban Water Management Plan
- D. Olivenhain Municipal Water Drought Response Ordinance 204
- E. List of the MOU Best Management Practices
- F. District's Best Management Practices Annual Reports for FY 2001-2004
- G. Olivenhain Municipal Water Recycled and Non-Potable Water Ordinance 173
- H. Department of Water Resources Checklist