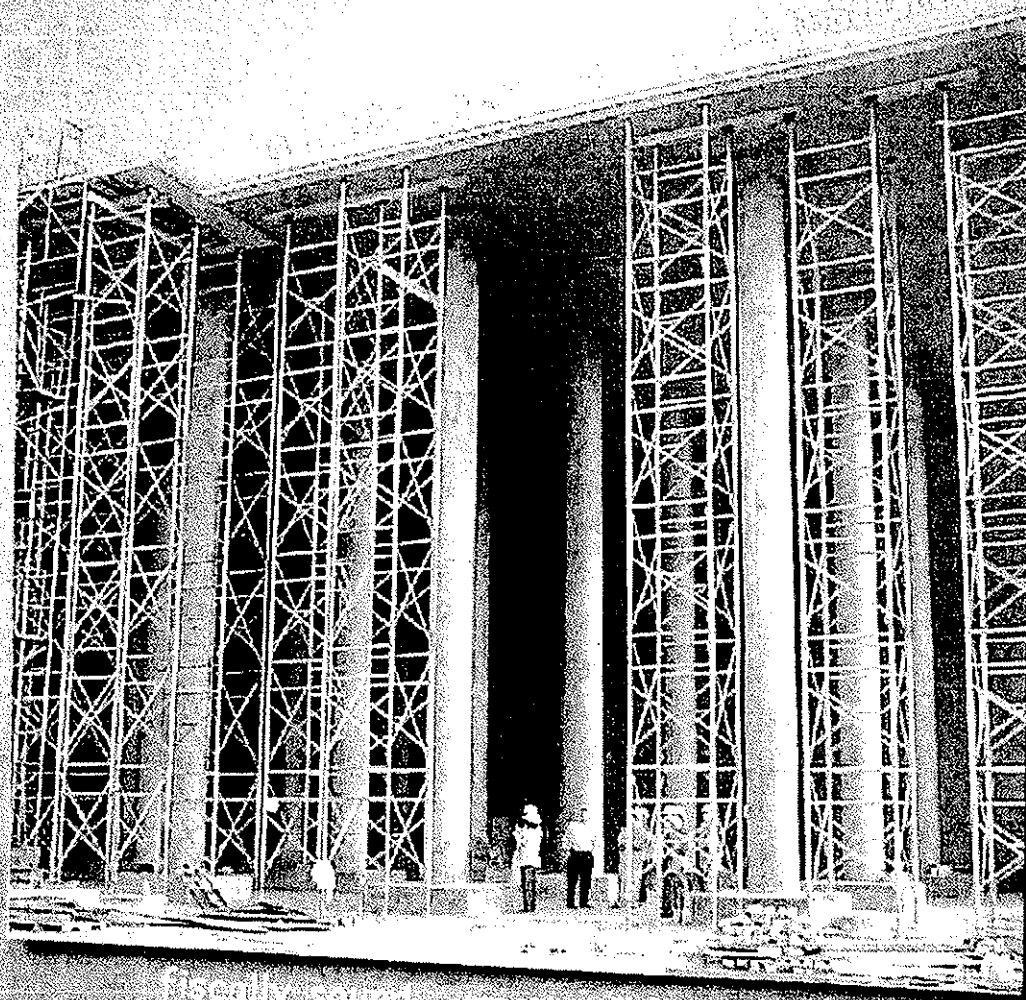


# 2005 Urban



## water management plan



fiscally sound • responsible • efficient

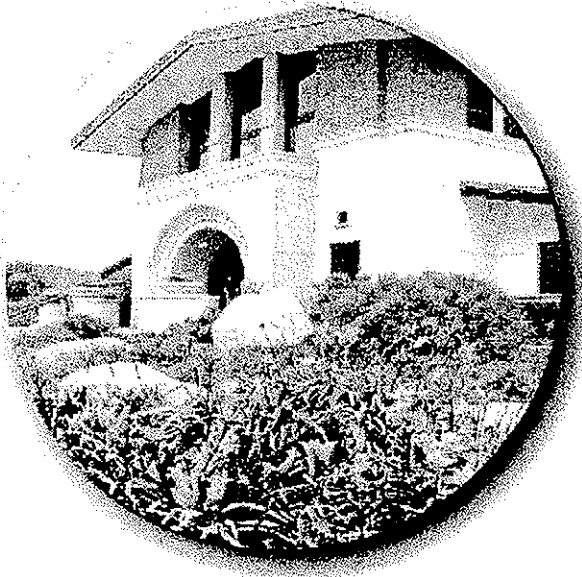


201 Vallecitos de Oro • San Marcos, CA 92069  
(760) 744-0450 • www.vwd.org

Vallecitos Water District



# Vallecitos Water District



## BOARD OF DIRECTORS

Division 1: Tim Shell

Division 2: Trish Hannan

Division 3: Paul A. Davy

Division 4: Margaret E. Ferguson

Division 5: Darrell Gentry

## EXECUTIVE STAFF

William W. Rucker, General Manager

Dale Mason, Assistant General Manager

Dennis O. Lamb, Director of Engineering and Operations

Tom Scaglione, Director of Finance

Len Caudle, Director of Human Resources

Paul D. Freestone, Director of Resources

Ken Gerdes, Engineering Manager

Rich Arrant, Operations and Maintenance Manager

**The Water supplier is an:** Independent Special District

**The Water supplier is a:** Retailer

**Utility services provided by the water supplier are:** Potable Water, Recycled Water, Wastewater Collection, Treatment and Disposal

**Is This Agency a Bureau of Reclamation Contractor?** No

**Is This Agency a State Water Project Contractor?** No

Contact for Vallecitos Water District's 2005 Urban Water Management Plan:

Paul D. Freestone, Director of Resources

Vallecitos Water District - 201 Vallecitos de Oro, San Marcos, CA 92069

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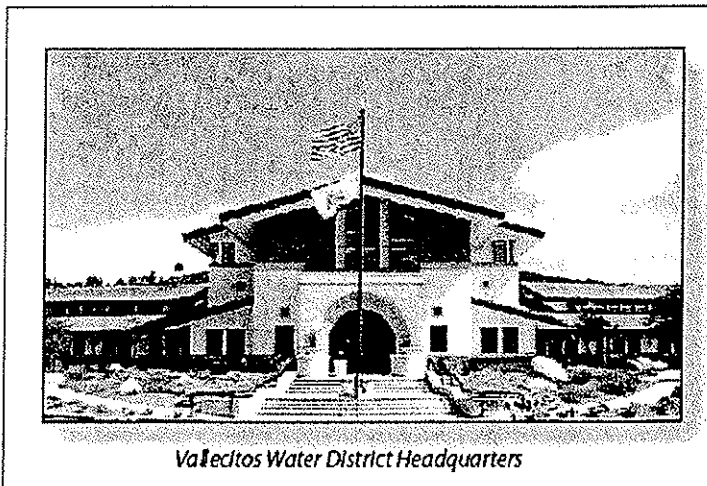
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# Section 1: Introduction

For more than 50 years, the Vallecitos Water District has provided reliable, equitably-sound water and sewer services, now to more than 81,000 people in northwestern San Diego County. And while much may be involved in operating and maintaining the District's hundreds of miles of pipes, various equipment, facilities, and structures, coordinating the reliable services our customers have come to expect rely on one thing – a well thought out plan.

Vallecitos Water District (VWD) is pleased to present its 2005 Urban Water Management Plan. This document is a public statement of the goals, objectives, and strategies the District will soon embark on in its efforts to maintain a reliable supply of water for VWD's 45-square-mile service area.

As a supplier of one of the most precious natural resources to Southern California, this plan is an itinerary to meeting customer water needs for the next 25 years.



The Urban Water Management Plan is just one of the many plans crucial to executing VWD's water, sewer, and reclamation service strategy. It's an update to the 2000 Plan. But even more importantly, it serves as a complement to the District's Water, Wastewater and

Reclamation Master Plan that also guides District business policy direction.

The release of this document is in accordance with the Urban Management Planning Act. The following section provides more information on the Act as well as the public participation and agency compilation process. Also included is more



background information on Vallecitos Water District, its service area, and other figures pertinent to water supply such as District climate, characteristics, demographics, and population projections.

### ***1.1 CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT***

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

Updated every five years, requirements for urban water management plans include:

- Assessment of current and projected water supplies;
- Evaluation of Demand and Customer Types;
- Evaluation of the reliability of water supplies;
- Description of conservation measures implemented by the urban water supplier;
- Response plan for the event of water shortages;
- Comparison of demand projections.

Some major updates made to the Plan since VWD's 2000 Plan was released include:

- Description of specific water supply projects and implementation schedules to meet projected demands over the planning period;
- Description of the opportunities for the development of desalinated water;
- Additional information of groundwater, specifically where groundwater is identified as a 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.

Determination of whether the urban water supplier has submitted an updated plan is verified by the California Department of Water Resources (DWR). The organization will determine eligibility of any funds made available pursuant to any program administered by the department.

The Act specifically states: "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."

Pursuant to the Act, all urban water suppliers distributing water for municipal purposes - directly or indirectly - to more than 3,000 customers or supplies more than 3,000 acre feet (AF) annually, shall prepare, update, and adopt its urban water management plan at least once every five years. This shall be accomplished by December 31 in years ending with zero and five. In accordance with the Act, the District is required to update and adopt its plan for submittal to the DWR. **Appendix A** contains the text of the Act.

Water Code Sections 10910 through 10914 and Government Code Sections 65867.5, 66455.3, and 66473.7 (commonly referred to as SB 610 and SB 221) amended state law to improve the link between information on water supply availability and certain land-use decisions made by cities and counties. SB 610 requires the water purveyor of the public water system to 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 (SDCWA) 2005 Urban Water Management Plan contains documentation on the existing and planned water supplies being developed by SDCWA. This documentation may be used by SDCWA's member agencies in preparing the water supply assessments and

written verifications required under state law. A copy of this section is attached in **Appendix D**, (for reference and limited information only). Readers looking for further details or more information are referred to the SDCWA's 2005 Urban Water Management Plan.

This not only meets the standards of the Urban Water Management Plan Act; it also supports water-supply assessment and verification required by Senate Bills 610 and 221 of 2001. While both bills call for information to be presented to cities and counties for certain-sized projects up for approval, it allows this document to be used to fulfill legislative requirements.

In its current form, the VWD report will show in part:

- The total projected water use in comparison with water supply sources over the next 25 years (in five-year increments);
- Information displayed for a single dry-water year and multiple dry-water years.
- Supply and Demand Projections
- Information on water recycling

## ***1.2 PLAN PREPARATION***

Initial preparation of the plan started with the District reviewing its current Master Plan (for overall water, sewer, reclamation projections) along with the Regional Urban Water Management Plans of its wholesalers. These plans were measured against forecasts from the San Diego Association of Governments to ensure accurate data. District staff then participated in workshops held by the California Department of Water Resources and the San Diego County Water Authority to discuss various plans directly involved with development of this plan and the projected potential for water recycling within our service area and region.

### **1.2.1 Public Participation**

#### **California Law**

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

Public participation has always been encouraged at District meetings; preparation of the 2005 Plan was no different. A public hearing was held February 15, 2006, to offer review and receive comments on the draft plan. Further, a legal public notice was published in the local newspaper and posted at VWD's facility. The District also mailed draft copies of the plan to the cities of San Marcos, Escondido, Vista, and Carlsbad; the County of San Diego; County Library in San Marcos; the community center at Lake San Marcos, and the Twin Oaks Valley Sponsor Group. The Draft Plan was also made available at the District's headquarters, and on our web site at [www.vwd.org](http://www.vwd.org).

### **1.2.2 Plan Adoption**

Compilation of the 2005 Urban Water Management Report was initiated in fall of 2005. The updated plan was adopted unanimously by the Board of Directors following a public hearing on February 15, 2006. A copy of the resolution can be seen in **Appendix B**. The plan was submitted to the California Department of Water Resources within ten days of Board approval.

### 1.2.3 Agency Coordination

#### California Law

10620(d) (2) *Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.*

**Table 1-1 Coordination with Appropriate Agencies**

**Coordination with Appropriate Agencies**

	Participated in UWMP development	Commented on the draft	Attended public meetings	Contacted for assistance	Received notice that copy of draft is available	Sent notice of intention to adopt	Not involved /no information
Adjacent water suppliers				X	X	X	
SDCWA	X			X	X		
Public Agencies (Cities)					X	X	
VWD Staff	X	X	X	X	X	X	
Other					X		

A collaboration with a number of agencies was necessary to present pertinent data and issues for the Plan. A letter of notification regarding the District's Plan was mailed to the cities of San Marcos, Carlsbad, Vista, Escondido and the County of San Diego. VWD staff attended workshops hosted by the California Department of Water Resources to discuss requirements of the Act and ensure coordination among agencies, including the San Diego County Water Authority, its 23 member agencies, and the Metropolitan Water District. Part of the data collection process included the City of San Marcos and San Diego Association of Governments. The process also included input from the Encina Water Pollution

Control Facility and the City of Carlsbad to prepare sections on wastewater collection and water recycling.

### **1.3 SUPPLIER SERVICE AREA**

#### **California Law**

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

- *Describe the service area of the supplier, including current and projected population, climate and other demographics factors affecting the supplier's water management planning...*

#### **1.3.1 Description and History of Vallecitos Water District**

Vallecitos Water District consists primarily of the San Marcos and Twin Oaks valleys. Located in the northwestern part of San Diego County, it is nestled about 10 miles from the Pacific Ocean, 30 miles north of San Diego and 100 miles south of Los Angeles. The District's 45-square-mile boundary includes San Marcos; the unincorporated community of Lake San Marcos; parts of Carlsbad, Escondido, and Vista; and other surrounding unincorporated areas (See **Figure 1-2** for a vicinity map of the District). VWD is an independent special district governed by five representatives voted into office by the local citizens. It is dedicated solely to the provision of water, wastewater, and reclamation services.

Vallecitos (known as San Marcos County Water District until 1989) was the result of dwindling ground water supplies of farmers in the region. A majority vote for District formation came in 1955, pursuant to Section 30000 et seq, Division 12 of the California Water Code. The vote established a permanent entity to bring outside water into the area through the operation of a domestic water system. Vallecitos centered its attention on the development of a public water system to supply the principal sections of the 22,000-acre District with Colorado River water.

With the passage of a \$998,000 bond issue in 1956, water system construction began. Growth in population and business activities drove the need for a sewer system, which was added in 1958. Also that year, an additional improvement district was formed to finance the construction of a wastewater treatment plant in 1961.

In 1981, VWD severed ties with the Buena Colorado Municipal Water District to officially become a member of the San Diego County Water Authority. Meadowlark wastewater treatment plant (Meadowlark Water Reclamation Facility) reopened with a new focus on water reclamation a year later.

**Table 1-2 Number of Connections by Customer Type**

Number of Connections by Customer Type<sup>1</sup>

Customer Type	1995	2000	2005	2010	2015	2020	2025	2030
Single family residential	10,557	12,625	16,870	19,086	21,352	23,618	25,884	28,150
Multi-family residential	376	415	438	496	555	614	673	732
Commercial	923	667	725	815	869	923	977	1,031
Industrial	106	114	118	125	129	133	137	141
Institutional and governmental	178	190	156	190	201	212	223	234
Landscape	280	424	687	788	1,101	1,414	1,727	2,040
Agricultural	75	204	213	223	230	237	244	251
<b>TOTAL</b>	<b>12,495</b>	<b>14,639</b>	<b>19,207</b>	<b>21,723</b>	<b>24,437</b>	<b>27,151</b>	<b>29,865</b>	<b>32,579</b>

<sup>1</sup>) Assumptions: 2005 connections = active connections as of 11/30/05 (not including firelines and construction meters). Percentage increases from 2010 through 2030 equal percentage increases in MGD projected in Master Plan (except landscape for 2010). Percentage increase in landscape from 2005 to 2010 equals the Master Plan percentage increase in MGD for commercial, industrial, institutional and government.

What started with a few thousand customers in 1955 has swelled to over 81,000 today. Of course, the infrastructure has grown too. The District now has approximately 19,200 meters that deliver 17,200 acre-feet per year of potable water. Average wastewater flow is currently at 7.5 million gallons per day. Vallecitos recycles 2 million gallons of water per day that are sold to the City of Carlsbad for irrigation purposes. Expansion is currently underway that will increase the current 2.25 million gallons per day capacity to 5 million gallons per day, with the entire amount to be sold under contract to the City of Carlsbad and Olivenhain Municipal Water District for landscape irrigation purposes.

VWD's Master Plan serves as the basis for all current and future decisions. The original plan was created in 1981; the latest edition, an update of the 2002 plan, was adopted August 2005. Future growth projections, water needs, facility

requirements, capital improvement projects, wastewater flow, groundwater, water source alternatives, etc., are analyzed in the 2005 edition.

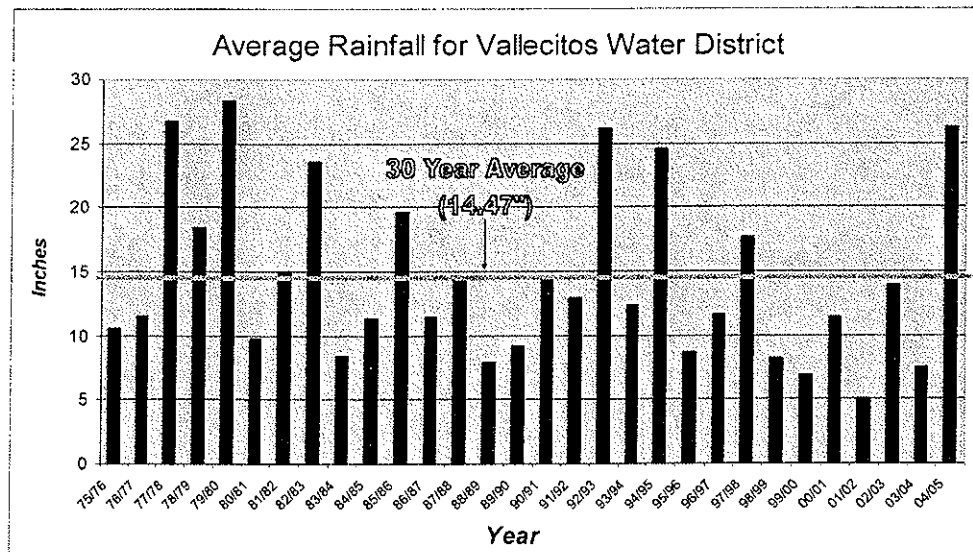
### 1.3.2 Climate

Vallecitos Water District is located in a semi-arid coastal desert environment, which is characteristically Mediterranean with mild temperatures throughout the year. Prolonged rain storms are rare. More than 80 percent of the region's rainfall occurs between December and March. The area averages about 10 inches of rainfall annually, with monthly average temperatures ranging between an average low of 50 degrees and average high of 72 degrees annually.

**Table 1-3 Rainfall for Vallecitos Water District**  
Rainfall for Vallecitos Water District  
By Month for the Last Five Fiscal Years (inches)

Month	2000/01	2001/02	2002/03	2003/04	2004/05
July	-	-	-	0.03	-
August	0.01	-	-	0.01	-
September	0.14	0.01	0.14	-	-
October	1.07	-	0.03	-	5.18
November	0.30	1.48	1.34	0.74	0.99
December	0.06	1.13	2.06	1.15	3.06
January	2.48	0.36	0.04	0.17	7.55
February	4.21	0.15	5.21	4.56	7.08
March	1.42	1.01	1.92	0.45	1.48
April	1.54	0.74	2.52	0.42	0.89
May	0.24	0.13	0.46	-	0.04
June	-	0.01	0.21	0.04	0.01
<b>TOTALS</b>	<b>11.47</b>	<b>5.02</b>	<b>13.93</b>	<b>7.57</b>	<b>26.28</b>

**Figure 1-1 Average Rainfall for Vallecitos Water District**



(source - average of Vista 1 NE, & Escondido 2, California – Western Regional Climate Center – [www.wrcc.dri.edu/](http://www.wrcc.dri.edu/))



**Table 1-4 Average Temperature and ETo For VWD**

**Average Monthly Temperatures for Vallecitos Water District (fahrenheit)<sup>1</sup>**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg. Max.	68.1	68.5	69.3	72.7	74.8	79.4	84.4	85.9	84.4	79.1	72.9	68.3
Avg. Min.	43.5	44.8	46.7	49.5	54.0	57.4	61.0	62.4	60.6	55.1	47.4	42.8
Avg. Temp.	55.8	56.6	58.0	61.1	64.4	68.4	72.7	74.2	72.5	67.1	60.1	55.5

<sup>1)</sup> Temperatures are an average between the Vista 1 station (049378) & the Escondido 2 station (042863) - Source - Western Regional Climate Center (www.wrcc.dri.edu)

**Average Monthly ETo for Vallecitos Water District (in inches)<sup>1</sup>**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average ETo	2.81	2.76	3.78	5.31	6.10	6.97	7.08	6.83	5.67	4.15	3.31	2.56	57.33

<sup>1)</sup> Source - California Department of Water Resources Irrigation Management Information System (Escondido Station # 153)

### 1.3.3 Other Demographics

Vallecitos is located in northern San Diego County – bounded by Olivenhain Municipal Water District to the south, Carlsbad Municipal Water District to the west, Vista Irrigation District to the northwest, Rainbow Municipal Water District to the north, Valley Center Municipal Water District to the northeast, Rincon del Diablo Municipal Water District to the east, and City of Escondido to the southeast.

**Table 1-5 Population Projections**

**SANDAG 2030 Forecast Breakdown for Vallecitos Water District**

SANDAG Forecast	2005	2010	2015	2020	2025	2030
Population	73,820	86,094	89,221	91,836	94,006	96,876
Single Family Households	17,326	20,516	20,806	20,928	21,485	21,845
Multi-Family Households	5,185	6,518	6,905	7,139	7,382	7,388
Mobile Home Households	2,757	2,773	2,780	2,814	2,866	2,904
Acreage	26,777	26,777	26,777	26,777	26,777	26,777
Developed Acres	14,388	16,462	17,209	17,498	20,049	20,785
Vacant (developable) acres	7,533	5,459	4,713	4,423	1,873	1,136
Unusable (constrained) acres	4,856	4,856	4,856	4,856	4,856	4,856
Irrigated Agricultural Acreage	2,162	1,918	1,495	1,470	1,173	1,124

<sup>1)</sup> - Source - SANDAG 2030 Forecast

According to the San Diego Association of Governments (SANDAG) 2030 forecast, the District's population is projected to increase from 73,820 (current

estimate as of this report, after the 2030 projection release is estimated to be 80,650) today, to 96,876 by the year 2030. Included is a housing unit jump from 25, 286 in 2005 to 32,137 by 2030.

More than 33,000 people in VWD are currently employed. Of the District's 26,777 acres, 14,388 are developed. Most of this is single-family homes. Of the 7,533 acres of vacant developable land, only 1,136 acres, of the total developable acres are expected to remain undeveloped by the year 2030.

#### ***1.3.4 Past Drought, Water Demand and Conservation Information***

Population increase aside, the highest sales per meter within the District happened a decade ago. VWD delivered 12,978 acre-feet of water to 10,045 meters during Fiscal Year 1989-1990. This is in comparison to delivering 17,187 acre-feet of water to 19,141 meters in Fiscal Year 2004-2005.

***Table 1-6 Historic and Projected Water Use in Vallecitos Water District***

##### **Historic Water Use in Vallecitos Water District**

Fiscal Year	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05
Water Sales (AF)	11,253	12,948	13,264	11,747	13,170	15,203	14,881	16,301	16,499	18,391	16,812
Meters	12,229	12,535	12,865	13,228	13,782	14,226	15,608	16,582	17,288	17,940	19,141

##### **Projected Water Use**

Fiscal Year	2005-06
Projected Water Sales (AF)	16,882
Projected Meters	20,255

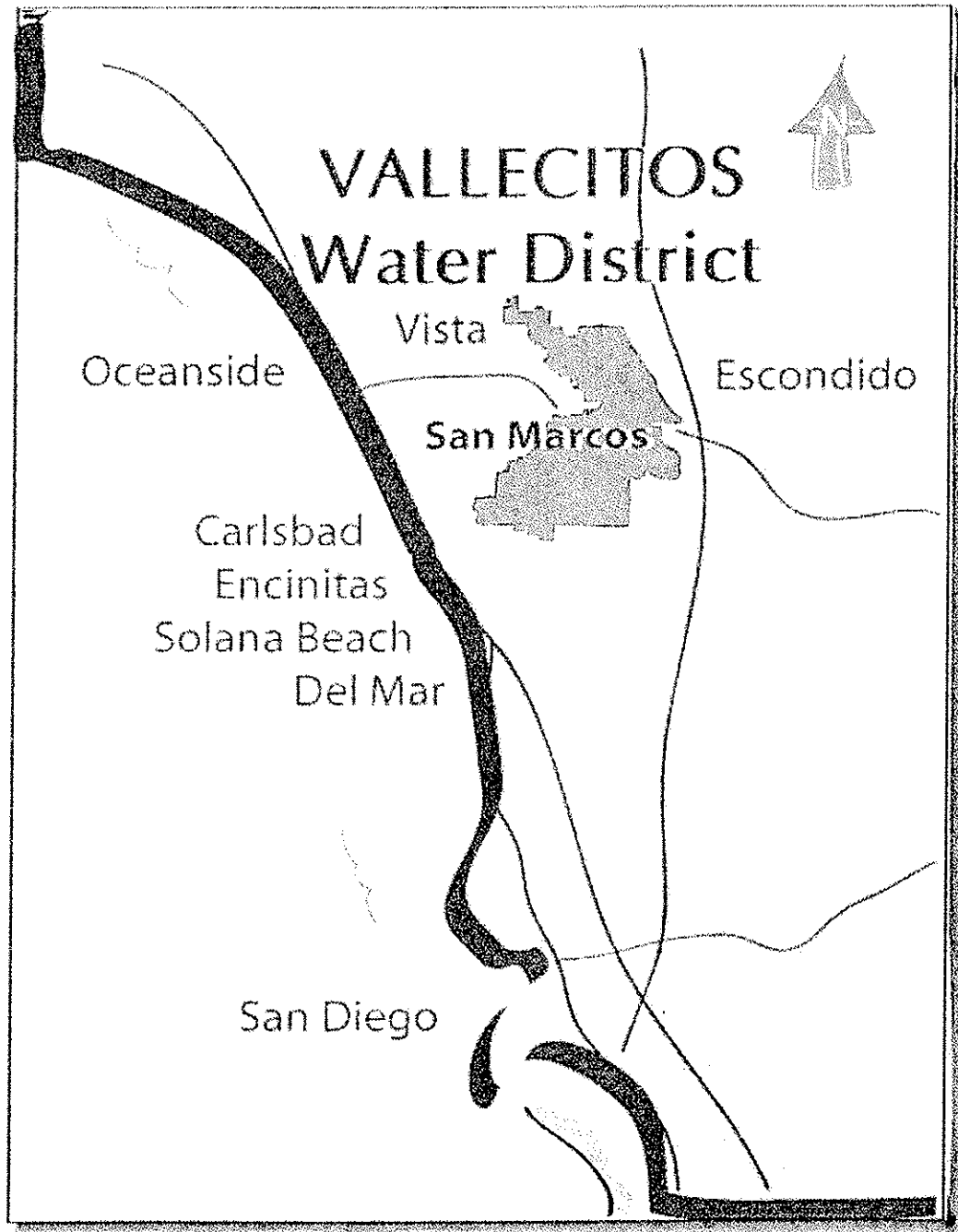
*Source: Vallecitos Water District Budget 2005 - 2006 Fiscal Year*

Over the years, Vallecitos has implemented a variety of conservation programs targeting residential, large turf, business, industrial, commercial, irrigation-only customers, institutional and agricultural customers, as well as others. The numbers are proving that customers are using less water per meter today than a decade ago.

Conservation and public information efforts also target drought situations, a recent occurrence in the late 1970s, and again in the early 1990s. VWD is

preparing for the future should a drought strike again. These programs will be further discussed in section 6 of this plan.

**Figure 1-2 VWD Vicinity Map**



## Section 2: Water Supply

The Vallecitos Water District imports 100 percent of its potable water supply from the San Diego County Water Authority (SDCWA), who in turn, buys it from the Metropolitan Water District of Southern California (MWD). In the past the SDCWA relied mainly upon imported supplies purchased entirely from MWD who had two primary sources, the State Water Project (SWP) and the Colorado River. After experiencing shortages during the 1987-1992 drought, SDCWA and MWD began pursuing actions to expand the Region's and County's supply sources. Today the SDCWA and MWD have diversified their supply sources to include development of local supplies, desalination and water transfers to help provide a dependable supply for their member agencies. The reliability of these supplies are further discussed in Section 3 of this plan. For further information on these supplies please review the SDCWA's 2005 Urban Water Management Plan.

This section explains the existing and future imported water supplies for Vallecitos Water District.

### 2.1 WATER SUPPLY SOURCES

#### California Law

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

*10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a)...*

### 2.1.1 Current Sources of Supply

The District currently meets all of its potable water demands through purchases from SDCWA. Before this water enters SDCWA's aqueducts, it is treated at MWD's Lake Skinner Water Treatment Plant, located northeast of Temecula.

The District's water service area encompasses a wide range of ground surface elevations ranging from approximately 500 to 1,600 feet above mean sea level (amsl). This results in the need for numerous service areas and pressure zones.

**Table 2-1 Current and Projected Water Supplies**

**Current and Projected Water Supplies (AF/YR)**

Water Supply Sources	2005	2010	2015	2020	2025	2030
<b>Wholesale Water Provider</b>						
San Diego County Water Authority (SDCWA)	16,812	19,409	19,741	20,365	21,317	22,903
<b>Other Sources</b>	-	-	-	-	-	-
<b>TOTAL</b>	16,812	19,409	19,741	20,365	21,317	22,903

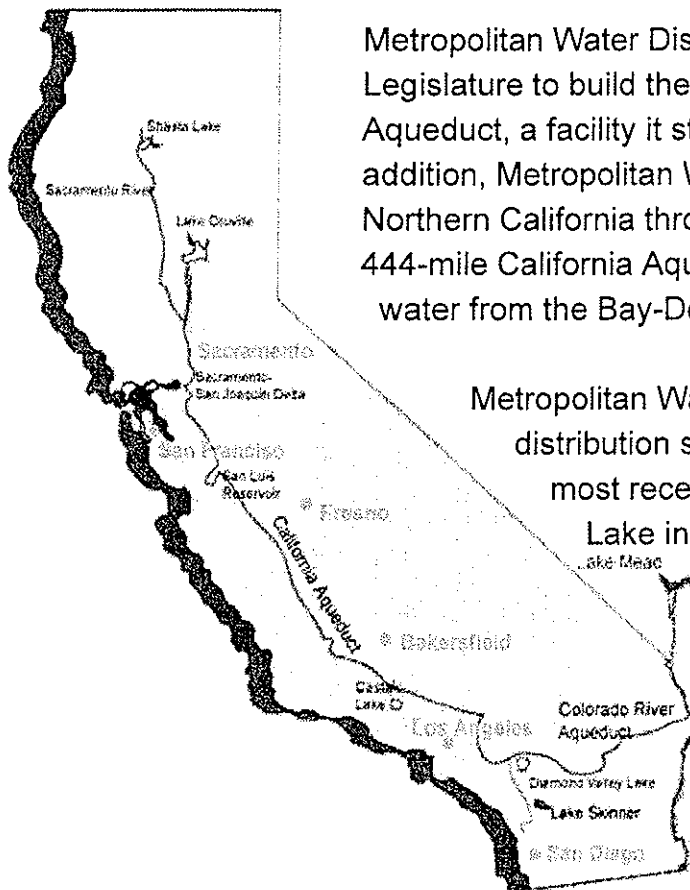
*Source - SDCWA's member agency 2030 demand forecast*

Vallecitos Water District currently receives potable water from one source: imported from the San Diego County Water Authority. However, the District does offer an alternative that helps ease regional source demand - recycled water from the Meadowlark Water Reclamation Facility (MWRF). Currently about 2 million gallons of recycled water a day is sold under contract to the City of Carlsbad and is being used for landscape irrigation. The District is currently in the construction phase of expanding MWRF output to a 5 million-gallon-per-day plant which is contracted to be sold for landscape irrigation to the City of Carlsbad and Olivenhain Municipal Water District. Though the water is not necessarily contributing to Vallecitos Water District's supply, it lessens imported demand into the region as a whole. Vallecitos Water District lacks local potable water sources, but is constantly looking for alternatives to develop these sources for non-potable, or if possible, potable uses. These alternatives will be discussed later in this section.

### **2.1.2 Metropolitan Water District (MWD)**

Metropolitan Water District is one of the sources of imported water supply to the San Diego County Water Authority. It was created in 1928 by the vote of the people following the passage of the Metropolitan Water District Act by the California Legislature. Metropolitan Water District was established to provide supplemental water for cities and communities on the south coastal plain of California. It is a consortium of 27 cities and water districts that provides drinking water to nearly 17 million people in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties.

**Figure 2-1 California and Colorado River Aqueducts Map**



Metropolitan Water District was formed by the state Legislature to build the 242-mile Colorado River Aqueduct, a facility it still owns and operates. In addition, Metropolitan Water District imports water from Northern California through the State Water Project, the 444-mile California Aqueduct carrying water from the Bay-Delta.

Metropolitan Water District's expansive water distribution system is continually growing, most recently with the Diamond Valley Lake in the Hemet Valley. This 260-billion-gallon reservoir doubles Southern California's storage, secures six months emergency storage south of the San Andreas Fault, and reduces the threat of shortages during peak demands or drought. For a detailed analysis of

Metropolitan Water District's supply, please refer to its 2005 Urban Water Management Plan. It also can be viewed online at [www.mwd.h2o](http://www.mwd.h2o). Just click on 2005 Regional Urban Water Management Plan.

### ***2.1.3 San Diego County Water Authority (SDCWA)***

The San Diego County Water Authority is one of Metropolitan Water District's 27 member agencies, and one of MWD's largest consumers. It was formed in 1944 by the California Legislature to provide a supplemental supply of water as the San Diego region's civilian and military population expanded to meet wartime activities. Today, the San Diego County Water Authority has 23 members throughout San Diego County, with Vallecitos Water District becoming a direct member agency in 1981, and is the predominant source of water servicing between 75 to 95 percent of the region's needs.

The San Diego County Water Authority's service area encompasses 908,959 acres and delivers water through two aqueducts containing five large-diameter pipelines.

In 1947, water was imported by the San Diego County Water Authority from the Colorado River via a single pipeline that connected to Metropolitan Water District's Colorado River Aqueduct in Riverside County. To meet future demands, the San Diego County Water Authority built four more pipelines between the 1950s and early 1980s that are connected to Metropolitan Water District's distribution system and deliver water to San Diego County. Meanwhile, in the early 1990s, the San Diego County Water Authority built the Ramona Pipeline and in 1997, the North County Distribution Pipeline, for improved water distribution to several of the north San Diego County water agencies, including Vallecitos Water District. The water is treated at Metropolitan Water District's Skinner Filtration Plant in Riverside County prior to delivery to the San Diego County Water Authority.

The San Diego County Water Authority is also continually growing to prepare for the future. Its \$736 million Emergency Storage Project broke ground in February 2000 and should be complete by 2010. The system of interconnected pipes, reservoirs and pumping zones is designed to meet San Diego County's projected emergency storage needs through the year 2030. To reduce its dependency on Metropolitan Water District and diversify imported supplies, the San Diego County Water Authority entered into a Water Conservation and Transfer

Agreement with Imperial Irrigation District, an agricultural district in neighboring Imperial County in 1998. Through the transfer agreement, SDCWA will receive 30,000 AF in 2005, with the volume increasing annually until it reaches 200,000 AF/YR in 2021. To further help diversify regional supplies, SDCWA's Board approved a Seawater Desalination Action Plan in 2001. This plan set forth an action plan to develop a 50-mgd seawater desalination facility at the Encina Power Station in the City of Carlsbad by 2011. In addition, SDCWA looked for other competitive imported water sources to meet the demands of the region. In 2003, as part of the execution of the Quantification Settlement Agreement (QSA) on the Colorado River, the Water Authority was assigned rights to 77,700 AF/YR of conserved water from projects to line the All-American and Coachella Canals. Deliveries of this conserved water from the Coachella Canal will reach the region by 2007, and from the All-American Canal by 2008.

During the next 30 years it is expected that the above projects will enable the San Diego County Water Authority to increase its water supply reliability and reduce sole reliance of Metropolitan Water District. For more details on the San Diego County Water Authority's water supply, please refer to its 2005 Urban Water Management Plan online at [www.sdcwa.org](http://www.sdcwa.org) – *click on 2005 Urban Water Management Plan*.

#### ***2.1.4 Vallecitos Water District's Water System***

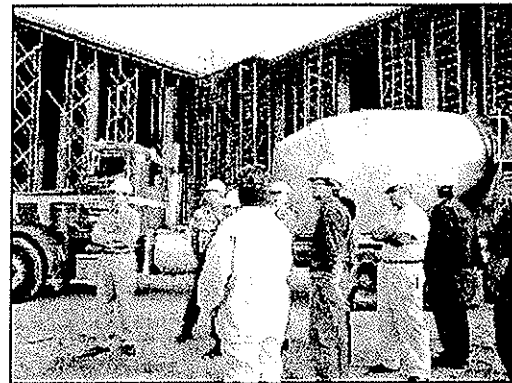
Vallecitos Water District delivers water through a system of 323 miles of transmission and distribution pipelines ranging from in diameters of 4 inches to 48 inches, 17 operational storage reservoirs from 100,000 gallons to 33 million gallons, and seven pump stations. Vallecitos Water District's total operational storage capacity is 74 million gallons.

Customer demand is met through approximately 19,141 meter connections, serving residential, commercial, light industrial, institutional, construction, landscape irrigation and agricultural uses. The greatest portion of development within Vallecitos Water District boundaries consists of residential areas.



Taking into consideration the great distances water must travel from its source, much is involved in distributing it through VWD's system. The District operates five pipe turnouts which receive treated water from SDCWA aqueduct pipelines. These turnouts supply water to the District to meet maximum week demands, and are the water supply source for the District's reservoirs. In addition to the turnouts, the District currently operates 24 pressure zones within its water service boundaries. Various types of water facilities include pump stations, water transmission pipelines, storage reservoirs and pressure reducing stations to serve these pressure zones. Of the 24 pressure zones, seven are referred to as pumped zones. Pumped zones require pump stations in order to transfer water from the source aqueduct connections to customers' taps. The remaining 17 zones, the majority of the system, are referred to as gravity zones, where the introduction of a water supply to the pressure zone's water system does not require further pumping.

Gravity zones include most of the residential, commercial and industrial users, and pump zones enable the delivery of water to development within the hills that surround the large gravity zones, serving water primarily to agricultural and low-to high-density housing developments. Storage has been carefully planned to accommodate peak demands and provide operational flexibility with the recent addition of the 33-million-gallon



*Group takes a tour during construction of the first Twin Oaks Reservoir Facility. The new tank will be similar in design and appearance, but will be larger.*

Twin Oaks Reservoir Facility in the northern portion of Vallecitos Water District. This award-winning, underground tank went online in the spring 2000 and nearly doubled Vallecitos Water District's storage capacity, and provides some emergency storage. The site was designed to add a second tank, which is under construction at this time (40 million gallon capacity) and should be completed and put into service in 2007.

Other recent projects include the addition of two new water tanks (2.3 million gallons and 3.7 million gallons) and water pump station in the new San Elijo Hills

development in the southern part of Vallecitos Water District. The tanks are now in service. In addition, a new 3.95 million gallon tank, also for the San Elijo Hills, is planned to be put into service in the first quarter of 2006. In other parts of the District, new North Twin Oaks tanks number 2 and 3, which are 3.5 million gallons each, are currently at 100 percent design, with one of them scheduled to start construction in 2006. The District also has two new 2.8 million gallon Meadowlark tanks planned. Construction is slated to begin in 2006 on one of the tanks, with the other to follow shortly thereafter.

Upon completion of these projects, the District will have 124 million gallons of operating storage.

The District also plans on building onto and upgrading the North Twin Oaks Pump Station and replacing the Wulff Pump Station, both of which are currently under construction. This helps illustrate the District's commitment to building and upgrading our facilities.

### ***2.1.5 Recycled Water***

Vallecitos Water District's Meadowlark Water Reclamation Facility, a tertiary wastewater treatment plant, was originally built in the 1960s and upgraded in 1982. (Wastewater treatment levels and suitable uses of recycled water are defined by the California Department of Health Services under California Administrative Code, Title 22, Division 4.)

Vallecitos Water District currently produces 2 million gallons of recycled water daily. A small amount is used for the plant's landscaping with the remaining currently being sold under contract to the City of Carlsbad for reuse. The recycled water is used for landscaping at city facilities, schools, and both the Aviara and La Costa golf courses. Meadowlark is currently undergoing an expansion that will increase output to 5 million gallons per day (8 million gallons peak) to produce more recycled water and improve the treatment process with state-of-the-art equipment. This additional production will be sold under contract to the City of Carlsbad and the Olivenhain Municipal Water District for reuse.

### **2.1.6 Alternatives**

Vallecitos Water District's South Lake Reservoir has been designated to be used only in an extreme emergency situation. Water from this open reservoir would need to be treated prior to releasing it in the distribution system. At this time, Vallecitos Water District does not have this capability, and treatment would be costly. Financing issues have not been considered to pay for a treatment system. The lake can store up to 75 million gallons of water and is currently fed only by rainwater and natural runoff, but could serve as storage for non-potable sources in the future.

The District has signed a lease agreement with the City of San Marcos that allows the structure to be leased for recreational use, but still under the District's control. As a result, it can still be used as a water source in a dire water supply emergency.

The District currently is in the process of developing an Integrated Resource Plan (IRP). Consultants and staff are working on a draft plan to be presented at a Board workshop in the Spring of 2006. The plan will explore various water resources related to District potential uses along with costs and timelines to develop additional resources.

### **2.1.7 Groundwater Feasibility**

**Groundwater Sources:** Vallecitos Water District is continually searching for potential groundwater sources for potable water. A groundwater feasibility study was conducted for the 1997 Master Plan and revisited again in the 2002 plan update that was completed in August 2005. The study determined that the groundwater quality in Vallecitos Water District, "appears to be similar to surrounding basins, and is characterized by moderately high TDS concentrations and occurrences of relatively high concentrations of bicarbonate, sodium, chloride and nitrate ions." The quality and availability of groundwater, at this time, is inadequate to support Vallecitos Water District's drinking water supply; however, the District continues to study bedrock wells, as well as other sources,

for potential future supplies. As technology and cost of treatment changes, Vallecitos Water District will continue to pursue its groundwater sources. Vallecitos Water District will once again review an in-depth analysis of all its groundwater and potential other sources during the IRP process currently underway. An excerpt from the updated master plan on groundwater follows:

- *In an effort to find alternative water supply methods to meet this projected increase in water demand, the use of groundwater and the use of a District operated water treatment plant were explored as part of this Master Plan. Based upon the results of the groundwater feasibility analysis, development of groundwater resources in the District for municipal use is constrained by limited groundwater storage, relatively low well yields, and poor water quality. Therefore the use of groundwater as a water supply source for potable water is not considered feasible... For more information on the groundwater feasibility study please refer to the District's 2002 Water, Wastewater, and Water Reclamation Master Plan update from August 2005, section six.*

## **2.2 WATER QUALITY**

The 2005 Plan requires information, to the extent practicable, on the quality of existing supply sources and the manner in which water quality affects water supply reliability. This section summarizes water quality issues associated with supplies serving the San Diego region. Information on Colorado River Aqueduct (CRA) and State Water Project (SWP) supplies came in the most part from San Diego County Water Authority's 2005 UWMP.

The potable water is a blend from the Colorado River delivered via the Colorado River Aqueduct, approximately 244 miles in length, and the Northern California's Bay-Delta, approximately 444 miles in length, via the State Water Project.

### **2.2.1 Colorado River**

Perchlorate contamination and high salinity levels represent two areas of concern regarding the quality of Colorado River supplies.

#### **Salinity**

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

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

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

## **Perchlorate**

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

Because of the growing concerns over perchlorate levels in drinking water, in Metropolitan adopted a Perchlorate Action Plan in 2002. Objectives include expanded monitoring and reporting programs and continued tracking of remediation efforts in the Las Vegas Wash. Metropolitan has been conducting monthly monitoring of Colorado River supplies. The perchlorate originates in the Las Vegas Wash, and the most likely source was a chemical manufacturing site located in Henderson, Nevada. The Nevada Department of Environmental Protection manages a comprehensive groundwater remediation program in the Henderson area. As of December 2004, the amount of perchlorate entering the Colorado River system from Henderson has been reduced from approximately 900 pounds per day (lb/day) to less than 150 lb/day.

### ***2.2.2 State Water Project***

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

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

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

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

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

The TDS levels of SWP water can also vary widely over short periods of time. These variations reflect seasonal and tidal flow patterns, and they pose an additional problem to blending as a management tool to lower the higher TDS from the CRA supply. For example, in the 1977 drought, the salinity of SWP water reaching Metropolitan increased to 430 mg/l, and supplies became limited. During this same event, salinity at the Banks Pumping Plant exceeded 700 mg/l. Under similar circumstances, Metropolitan's 500 mg/l salinity objectives could only be achieved by reducing imported water from the CRA. Thus, it may not be possible to maintain both salinity standards and water supply reliability unless salinity levels of source supplies can be reduced.

The CALFED Bay-Delta Program's EIS/EIR, Technical Appendix, July 2000 Water Quality Program Plan, identified targets that are consistent with TDS objectives in Article 19 of the SWP Water Service Contract: a 10-year average of 220 mg/l and a maximum monthly average of 440 mg/l. These objectives were set in the 1960s when Metropolitan expected to obtain a greater proportion of its total supplies from the SWP. Because of reductions in expected SWP deliveries, Metropolitan's Board believes that this standard is no longer appropriate, so it has adopted a statement of needs from the Bay-Delta. Under the drinking water quality and salinity targets element, the Board states its need "to meet Metropolitan's 500 mg/l salinity-by blending objective in a cost-effective manner while minimizing resource losses and ensuring the viability of recycling and groundwater management programs."

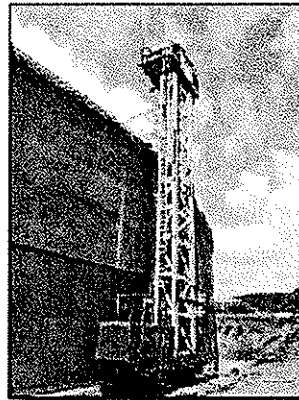


## Section 3: Supply Reliability

The Vallecitos Water District is dedicated to providing water to meet the demands within its boundaries. Since Vallecitos Water District imports 100 percent of its potable water supply from the San Diego County Water Authority, supply reliability is directly related to the dependability of the supply and operational efficiency of the San Diego County Water Authority and Metropolitan Water District of Southern California.

Vallecitos Water District has witnessed intermittent supply deficiencies associated with severe peak demands caused by unusually hot and dry weather conditions, particularly during the 1987-1992 drought that heightened concerns throughout Southern California of the reliability of imported water should another drought happen. Consequently, Vallecitos Water District has a storage management and expansion program that maximizes the amount of water storage in peak demand situations. Flow from the aqueducts and weather conditions are constantly monitored, and storage requirements are adjusted accordingly.

With the 2000 addition of a 33-million-gallon storage tank in the District's northern Twin Oaks Valley, Vallecitos Water District has significantly minimized deficiencies and helped increase reliability during peak demand situations and aqueduct maintenance shutdowns by the San Diego County Water Authority. Demand has increased to the point that the District is currently in the construction process of adding an additional tank with the capacity of 40 million gallons along with several smaller tanks. The 40-million-gallon tank, which is expected to be online in the spring of 2008, along with its sister 33 million gallon tank will allow the District to deliver water to the District's entire service area.



*Prestressing of the tank, as shown here, is a vital process to make the facility more durable.*

This section summarizes Vallecitos Water District's plans to assure reliable water supply and transfer or exchange opportunities.

California Law

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

10631 (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable and provide data for each of the following:

(1) An average water year, (2) A single dry water year, (3) Multiple dry water years.

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

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

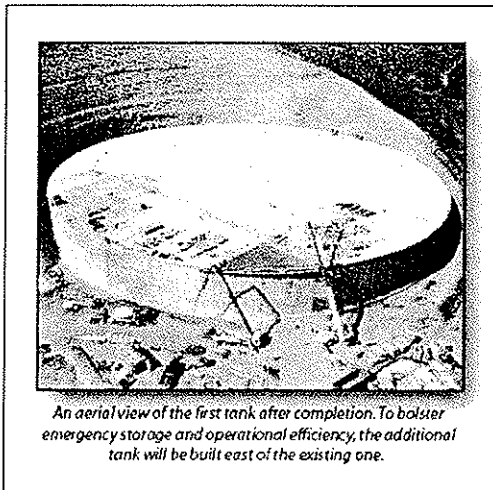
10632 (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.

### ***3.1 PLANS TO ASSURE A RELIABLE SUPPLY***

Vallecitos Water District's formation was the result of water reliability. The District is responsible for maintaining not only quality, but reliable supply too. Though Vallecitos Water District is guided by its 2002 Master Plan, updated August 2005, to assure future reliable water supplies, it is dependent on the water-supply abilities of its wholesaler, the San Diego County Water Authority. According to its Draft 2005 Urban Water Management Plan, the San Diego County Water Authority anticipates meeting all future demands of its member agencies in normal, single and multiple dry-year scenarios.

Water supply in the District's service area has historically been very reliable; VWD prides itself on operating as well-maintained and highly efficient/quality water and wastewater systems. Peak demands are additionally curved through the use of an extensive conservation program that will be detailed in the annual Best Management Practices reports and in Section six.

The San Diego County Water Authority's (SDCWA) current Capital Improvement Program (CIP) identifies development of up to 89,600 Acre Feet per year of desalinated seawater within the San Diego region by 2030. Currently, the wholesaler is focusing its efforts on developing a 50-mgd desalination facility at the Encina Power Station. The incremental increases via seawater desalination supply may become reality through pending projects at San Onofre, south San Diego County or expansion of 50-mgd planned at Encina Power Station. The 89,000 Acre Feet Per Year is SDCWA's 2030 seawater desalination goal.



Long-term water supply reliability is provided by SDCWA and MWD. The District is currently operating under "Stage 1" of its Water Conservation Ordinance 80-5 (see **Appendix F**). The District relies on SDCWA for delivery of a reliable quality water supply and for meeting the future water needs of the San Diego region. See the 2005 Urban Water Management Plans of those agencies for information on regional water supply planning. The District is currently working

with the SDCWA on a Drought Management Plan.

The near-term reliability of imported water from the San Diego County Water Authority and its supplier, Metropolitan Water District, are the same. For many years, Metropolitan Water District has been the sole provider of imported water to the San Diego County Water Authority. Circumstances have changed dramatically since the San Diego County Water Authority joined Metropolitan Water District in 1944. Today, both agencies' have diversified their water supplies to ensure a high quality and reliable sources of water for the present

and future. Readers are encouraged to view these agencies 2005 Urban Water Management Plans for further information and detail.

Future reliability will be improved by the addition of major storage facilities for the San Diego County Water Authority and Metropolitan Water District. These facilities will provide emergency storage sufficient to handle their respective service area needs with major aqueduct outages for up to six months. In addition, other facilities and local supply development, planned by individual agencies will enhance the overall regional system reliability via redundancy and system enhancements. Both the San Diego County Water Authority and Metropolitan Water District have extensive plans to continue implementing groundwater recovery, recycled water, conservation, groundwater storage, transfers and conjunctive use programs to decrease the region's dependency on imported supplies during extended drought periods. Recognizing the importance of discovering alternative water sources, Metropolitan Water District became a member of the Desalination Research and Innovation Partnership, a public/private partnership of 17 different agencies, in 1997. The organization is charged with researching and developing cost-effective desalination technologies. Results from this program should occur in the near future. Seawater desalination, and the possibility of building a facility along the San Diego coastline near a power plant, is also being researched by the San Diego County Water Authority. Vallecitos Water District is an active participant in these programs whenever possible.

### ***3.1.1 Senate Bills 610 and 221***

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

a tentative map. Section 4 of the San Diego County Water Authority's 2005 Urban Water Management Plan contains documentation on the existing and planned water supplies being developed by the Water Authority. The Water Authority permits member agencies to use this documentation for Senate Bills 610 and 221 compliance, particularly for preparing the water supply assessments and written verifications required under state law. Specific documentation on member agency supplies and Metropolitan supplies may be found in their respective plans. Since the District is currently totally reliant upon water supplies from SDCWA, the reader is directed to their 2005 plan for information on SB 610 and 221.

### ***3.2 FREQUENCY/MAGNITUDE OF DEFICIENCIES***

The drought of the late 1980s and early 1990s forced all water suppliers and retailers in Southern California to re-evaluate water usage and encourage customers to cut back. Though conservation efforts have always existed, they became a priority during this drought. The Vallecitos Water District Board of Directors demonstrated its commitment to conservation efforts by adopting a resolution in May 1991 formalizing a staged conservation program within Vallecitos Water District boundaries. **Appendix F** contains the text of the ordinance, which enacts six stages of water awareness during varying conservation and drought situations. Each stage requires customers to cut back their water usage, beginning with voluntary conservation and ending with mandatory conservation. The resolution also allows for penalties and enforcement. By the early 1990s, Vallecitos Water District delivered near capacity levels and was forced to issue a stage 4 warning, requiring customers to cut back water usage by 20 percent to ensure water deliveries for necessities.

The District has not witnessed a similar drought period since the early 1990s, nor has anything of similar magnitude been projected through 2030. Regardless, VWD is pro-actively preparing for the future. Since all of Vallecitos Water District's water is purchased from the San Diego County Water Authority, this assumption is based on the San Diego County Water Authority's 2005 Urban Water Management Plan. According to this plan, the San Diego County Water Authority does not anticipate any water shortages in any average rainfall years

through 2030. If projected, imported and local supplies are developed as indicated, no shortages are anticipated within the San Diego County Water Authority's service area in the single and multiple dry-year scenarios as well.

**Table 3-1 Vallecitos Water District's Projected Supplies and Demand**  
Projected Supplies and Demand (Normal Year - AF/YR)

	2010	2015	2020	2025	2030
<b>Projected Supplies from SDCWA<sup>1</sup></b>	19,409	19,741	20,365	21,317	22,903
<b>Estimated Demand<sup>2</sup></b>	20,110	22,279	24,444	26,613	28,781
<b>Estimated Conservation Savings<sup>3</sup></b>	701	2,538	4,079	5,296	5,878
<b>Total Estimated Demand w/conservation</b>	19,409	19,741	20,365	21,317	22,903
<b>DIFFERENCE</b>	0	0	0	0	0

1) Source - SDCWA-MAIN PMCL Baseline Point Projections model forecast for Vallecitos Water District (November 2005)

2) Source for baseline demand - Vallecitos Water District's 2002 Water, Wastewater, and Water Reclamation Master Plan Update - August 2005

3) Source for conservation savings estimates in 2010 & 2015 from SDCWA - starting in the year 2020 through 2030 the savings estimates are from both SDCWA & VWD and include potential BMPs, efficiency standards & other VWD programs

### 3.3 RELIABILITY COMPARISON

The following tables estimate that water supply sources and demand will vary; however, supplies are expected to meet demand. Projections associated with several water supply reliability scenarios are presented in those tables. The District also refers the reader to the San Diego County Water Authority 2005 Urban Water Management Plan, section 4 (a copy of that section is attached for reference only in **Appendix D**) for demand and supply projections.

### 3.4 SINGLE AND MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND

Vallecitos Water District purchases all of its water from the San Diego County Water Authority, whose 2005 Draft Urban Water Management Plan projects having adequate supplies to meet demand during single and multiple dry years. For further information, look in Section 8 of the SDCWA Plan (single/multiple dry year supply and demand tables).

**Table 3-2 VWD Single Dry-Year Water Supply and Demand Forecast**

**Single Dry-Year Water Demand Forecast - Five Year Increments (AF/YR)**

	2010	2015	2020	2025	2030
<b>Estimated Supplies from SDCWA <sup>1</sup></b>	20,826	21,152	21,791	22,739	24,413
<b>Total Estimated Supplies <sup>2</sup></b>	20,826	21,152	21,791	22,739	24,413
<b>Estimated Demand <sup>3</sup></b>	21,578	23,872	26,155	28,388	30,652
<b>Estimated Conservation Savings <sup>4</sup></b>	752	2,720	4,364	5,649	6,239
<b>Total Estimated Demand (with conservation)</b>	20,826	21,152	21,791	22,739	24,413
<b>Difference</b>	0	0	0	0	0

1) As stated in the SDCWA's 2005 Urban Water Management Plan (VWD's w wholesaler), no water supply shortages are anticipated during single and multiple dry year events (demand will increase during these events, how ever, so is the projected supply)

2) Source for supply estimates - SDCWA-MAIN PMCL Baseline Point Projections model forecast for Vallecitos Water District (November 2005) & from SDCWA 2005 UWMP supply projections for single dry-year assessments

3) Source for demand estimates - Vallecitos Water District's 2002 Water, Wastewater, and Water Reclamation Master Plan Update - August 2005, adjusted for dry weather year demands

4) Source for conservation savings estimates from SDCWA & VWD - starting with the year 2015 assessments include potential BMPs, efficiency standards, and other VWD programs

### **Multiple Dry-Year Water Supply and Demand Assessment** **Five Year Increments <sup>1,2,3</sup>**

**Table 3-3**

**Multiple Dry-Year Total Water Demand Forecast (AF/YR)**

	2006	2007	2008
<b>Estimated Supplies from SDCWA <sup>1</sup></b>	19,745	20,015	20,285
<b>Total Estimated Supplies <sup>2</sup></b>	19,745	20,015	20,285
<b>Total Estimated Demands <sup>3</sup></b>	19,745	20,015	20,285
<b>Difference</b>	0	0	0

**Table 3-4**

**Multiple Dry-Year Total Water Demand Forecast (AF/YR)**

	2011	2012	2013
<b>Estimated Supplies from SDCWA <sup>1</sup></b>	20,891	20,957	21,022
<b>Total Estimated Supplies <sup>2</sup></b>	20,891	20,957	21,022
<b>Total Estimated Demands <sup>3</sup></b>	20,891	20,957	21,022
<b>Difference</b>	0	0	0

**Table 3-5****Multiple Dry-Year Total Water Demand Forecast (AF/YR)**

	<b>2016</b>	<b>2017</b>	<b>2018</b>
<b>Estimated Supplies from SDCWA<sup>1</sup></b>	21,280	21,408	21,535
<b>Total Estimated Supplies<sup>2</sup></b>	21,280	21,408	21,535
<b>Total Estimated Demands<sup>3</sup></b>	21,280	21,408	21,535
<b>Difference</b>	0	0	0

**Table 3-6****Multiple Dry-Year Total Water Demand Forecast (AF/YR)**

	<b>2021</b>	<b>2022</b>	<b>2023</b>
<b>Estimated Supplies from SDCWA<sup>1</sup></b>	21,980	22,170	22,360
<b>Total Estimated Supplies<sup>2</sup></b>	21,980	22,170	22,360
<b>Total Estimated Demands<sup>3</sup></b>	21,980	22,170	22,360
<b>Difference</b>	0	0	0

**Table 3-7****Multiple Dry-Year Total Water Demand Forecast (AF/YR)**

	<b>2026</b>	<b>2027</b>	<b>2028</b>
<b>Estimated Supplies from SDCWA<sup>1</sup></b>	23,048	23,394	23,739
<b>Total Estimated Supplies<sup>2</sup></b>	23,048	23,394	23,739
<b>Total Estimated Demands<sup>3</sup></b>	23,048	23,394	23,739
<b>Difference</b>	0	0	0

1) As stated in the SDCWA's 2005 Urban Water Management Plan (VWD's w wholesaler), no water supply shortages are anticipated during single and multiple dry year events (demand will increase during these events, however, so is the projected supply)

2) Source for supply estimates - SDCWA-MAIN PMCL Baseline Point Projections model forecast for Vallecitos Water District (November 2005) & from SDCWA 2005 UWMP supply projections for multiple dry-years

3) Source for baseline demand - Vallecitos Water District's 2002 Water, Wastewater, and Water Reclamation Master Plan Update, August 2005 - demand figures have been adjusted for estimated conservation savings



### **3.5 TRANSFER/EXCHANGE OPPORTUNITIES**

#### **California Law**

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

*10631 (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.*

Vallecitos Water District also has a transfer and exchange agreement with Vista Irrigation District. Vallecitos Water District's 2002 Master Plan update (August 2005) also lists potentially feasible sources of water from neighboring agencies in the event of a shutdown or an emergency, including Rincon Del Diablo Municipal Water District, Carlsbad Municipal Water District, Olivenhain Municipal Water District, Rainbow Municipal Water District, Valley Center Municipal Water District and City of Escondido.

The District also has existing emergency water supply connections with neighboring water districts. These inter-ties are strictly for the purpose of transferring limited amounts of water between agencies in the event of an emergency and during short-term water system shutdowns due to planned maintenance or emergencies. Few of the neighboring water agencies have local water supplies that can satisfy more than a fraction of each agency's current demands, much less provide a sustained short- or long-term additional supply relief to Vallecitos Water District.

In 1999, Vallecitos Water District entered into an agreement with Western Water Company to buy more than 5,000 acre-feet of water within a one-year period. To date, Vallecitos Water District has not received any water from Western Water Company, who must first satisfy all of the conditions of other agencies that will actually transport the water through their conveyance systems (otherwise known as "wheeling.")

Vallecitos Water District does not anticipate any deliveries in the near future from Western Water; however, the contract remains valid until Western Water can satisfy the wheeling arrangements.

Since Vallecitos Water District's water is 100 percent imported from the San Diego County Water Authority, transfer and exchange agreements outlined in the San Diego County Water Authority's Draft 2005 Urban Water Management Plan will affect Vallecitos Water District. The San Diego County Water Authority believes that water transfers - the purchase of water during a specified time from an agency or district that then reduces its water use by that amount - offers the greatest potential resource for meeting future demands. The San Diego County Water Authority signed a historic agreement in 1998 with the Imperial Irrigation District (IID) for the long-term transfer of Colorado River Water to San Diego, increasing the reliability of the San Diego County Water Authority's imported water supplies. **Appendix D** contains the text of the SDCWA's 2005 Urban Water Management Plan sections regarding the San Diego County Water Authority-IID Water Transfer, as well as other sources of imported water.

**Appendix D** contains a copy of Section 4 (for reference only) from the SDCWA's 2005 UWMP which meets the guidelines of SB 610 and 221. Those readers who want more information or detail are referred to the SDCWA's 2005 Plan.

## Section 4: Water Use Provisions

**W**ater use within the Vallecitos Water District is directly related to demographic, economic and climatic factors. Given the past and projected growth, planning for the Vallecitos Water District's future water demands has been and continues to be extremely important.

This section focuses on the District's past, current and projected water use for Vallecitos Water District. With a better understanding of historic, existing and future water demands, along with Vallecitos Water District's update of the 2002 Master Plan (adopted August 2005), water demand and management programs can be implemented more effectively.

### ***4.1 PAST, CURRENT & PROJECTED WATER USE***

#### **California Law**

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

*10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.*

*(2) The water use projections shall be in the same 5-year increments described in subdivision (a).*

In the past few years, residential areas continue to flourish in the Vallecitos Water District. The commercial and industrial growth rates have been somewhat

moderate with the agricultural demand basically static. However, Vallecitos Water District projects that residential, commercial, light industrial, and agricultural demand will increase over the next few years.

For the past nine years, an average of approximately 676 new connections were added annually. Despite the rise in connections, the amount of water delivered by Vallecitos Water District is less per meter than it was a decade ago because of successful conservation programs, including water-efficient plumbing devices, landscaping guidelines and educational programs.

Unaccounted water losses average about 6.0 percent of total production. Vallecitos Water District is able to track the majority of this "unbillable" water primarily used for fire fighting, and flushing of water mains.

The following two tables show Vallecitos Water District's past, current and projected water use from 1990 to 2030, in acre-feet per year and the number of connections by customer type.

**Table 4-1: Past, Current and Projected Water Use**

Past, Current and Projected Water Use (fiscal year - Acre Feet)<sup>1</sup>

Water Use Sectors	1995	2000	2005	2010	2015	2020	2025	2030
Single-family residential	4,271	6,113	7,544	8,126	9,358	10,607	11,871	13,146
Multi-family residential	1,686	1,833	1,862	2,006	2,310	2,618	2,930	3,245
Commercial	1,024	1,645	1,630	2,242	2,428	2,610	2,791	2,969
Industrial	286	332	274	277	295	312	329	346
Institutional and governmental	665	856	577	670	729	787	845	902
Landscape	1,380	1,661	3,072	3,357	3,456	3,541	3,616	3,683
Agricultural	2,211	2,801	2,228	2,225	2,366	2,502	2,634	2,763
Unaccounted/Unbillable losses	308	1,176	963	1,207	1,337	1,467	1,597	1,727
<b>TOTAL</b>	<b>11,831</b>	<b>16,417</b>	<b>18,150</b>	<b>20,110</b>	<b>22,279</b>	<b>24,444</b>	<b>26,613</b>	<b>28,781</b>

<sup>1</sup>) Total water used equals the MGD demand per the District's Master Plan plus 523 acre feet through temporary construction meters included in "commercial."

Unbilled water equals 6% of total water use. Water use is allocated to customer types similar to the allocation in the District's Master Plan.

Past, current and projected water use in Vallecitos Water District is divided into seven categories: single-family residential, multi-family residential, commercial/industrial, institutional, irrigation and agriculture. A breakdown of our uses is shown in Table 4-2:

**Table 4-2 Number of Connections by Customer Type**

Number of Connections by Customer Type<sup>1</sup>

Customer Type	1995	2000	2005	2010	2015	2020	2025	2030
Single-family residential	10,557	12,625	16,870	19,086	21,352	23,618	25,884	28,150
Multi-family residential	376	415	438	496	555	614	673	732
Commercial	923	667	725	815	869	923	977	1,031
Industrial	106	114	118	125	129	133	137	141
Institutional and governmental	178	190	156	190	201	212	223	234
Landscape	280	424	687	788	1,101	1,414	1,727	2,040
Agricultural	75	204	213	223	230	237	244	251
<b>TOTAL</b>	<b>12,495</b>	<b>14,639</b>	<b>19,207</b>	<b>21,723</b>	<b>24,437</b>	<b>27,151</b>	<b>29,865</b>	<b>32,579</b>

1) Assumptions: 2005 connections = active connections as of 11/30/05 (not including firelines and construction meters). Percentage increases from 2010 through 2030 equal percentage increases in MGD projected in Master Plan (except landscape for 2010). Percentage increase in landscape from 2005 to 2010 equals the Master Plan percentage increase in MGD for commercial, industrial, institutional and government.

#### 4.1.1 Residential Sector

Within the District, persons per household averages 2.9. Residential per capita water use (including landscape irrigation for multi-family homeowner associations) averages 104 gallons per capita per day. Water efficiency measures have proven to be reducing per capita water use. Ultra-low-flow toilets alone are saving Vallecitos Water District an estimated 332,000 gallons of water per day.

Residential water consumption consists of both indoor and outdoor uses. Typical indoor uses include sanitation, bathing, laundry, cooking and drinking, while outdoor uses consist of landscape irrigation, car washing and surface cleaning. Landscaping is by far the highest water use in residential water consumption. A portion of use for residential common area landscaping is in the Landscape category.

Residential uses represent more than half of Vallecitos Water District's total water use.

#### 4.1.2 Commercial/Industrial/Institutional Sector

Vallecitos Water District has a complex mix of commercial customers, ranging from markets, antique stores, insurance offices, beauty shops, and gas stations

to multi-story office buildings, outlet and regional shopping centers, and high-volume restaurants and other facilities serving the general population.

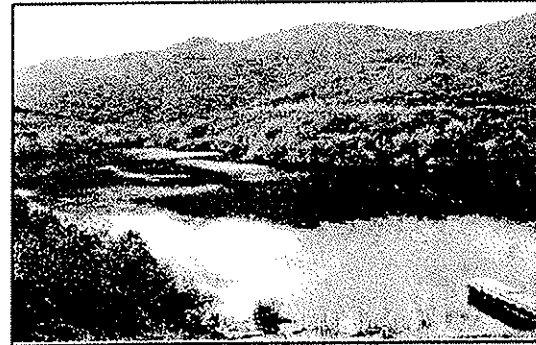
Commercial businesses currently represent approximately 5 percent of the customer accounts and use about 10 percent of Vallecitos Water District's water. Industrial accounts represent 1 percent of the customer accounts and use 2 percent of Vallecitos Water District's water. Institutional accounts represent 1.3 percent of the customer accounts and uses 5 percent of Vallecitos Water District's water.

Commercial uses are general in nature, and demands consist mostly of incidental uses, such as sanitation, drinking and landscape irrigation. Major commercial water users consist of car washes, restaurants, laundries and hotels.

The District has implemented a plan to review water and sewer capacity, flows for Commercial, Industrial, and Institutional customers, review their usage, and offer conservation surveys. It's an involved process that first enlists the District's Accounting Analysis to analyze water usage for each of the District's commercial/industrial accounts. After reviewing accounts, numbering in the thousands, the analysis formulates a list of customers whose businesses regularly surpass initial water and sewer capacity allotments. Letters are generated and sent to all those whose usage is more than the purchased capacity, informing them of the District's findings and a recommendation to regulate use to pre-determined levels of purchased capacity, or purchase the additional capacity. The letter-notification process is repeated a minimum of four times in an effort to get commercial/industrial uses to comply. In the letters, assistance is provided by way of encouraging conservation practices. The District's programs such as water-use surveys and implementation of low-water-use appliance vouchers are offered as a quick and easy way to restore capacity compliance.

#### **4.1.3 Landscape/Recreational Sector**

Landscaping and irrigation uses include a varied mix, including medians, golf courses, common areas, parkways and municipal landscaping. This sector accounts for about 3.57 percent of the total customer accounts and uses about 15 percent of Vallecitos Water District's water.



*The District's South Lake  
Emergency Water Supply*

#### **4.1.4 Agricultural Sector**

Agricultural accounts have remained steady over the past few years. However, this sector is expected to increase in total usage over the coming years. These customers account for about 1.1 percent of the total customer accounts, yet consume about 13 percent of the total water demands.

## Section 5: Supply & Demand

Vallejos Water District is responsible for meeting the area's water demands. However, since VWD's success hinges on current water supply provided by the San Diego County Water Authority via Metropolitan Water District of Southern California, the ratio of supply to demand is primarily dependent upon the carefully executed supply plans of these two entities.

This section details supply and demand comparisons and assesses supply versus demand during dry water years.

The following demand projections are taken in the most part from the District's 2002 Master Plan update (adopted August 2005), primarily from Section three and four. These sections explain how the District has used an established ArcGIS/ArcINFO-based Geographic information system (GIS) to assist in support of various planning, engineering and management-related projects.

### 5.1 SUPPLY & DEMAND COMPARISON

#### California Law

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



### ***5.1.1 Projected Water Demands***

Water demand projections by year were calculated based on SANDAG Series 9 census tract population growth rate projections combined with the unit water duty factors presented in Section 3 of the VWD's 2002 Master Plan update (August 2005). Ultimate water demand projections were calculated using the GIS land use database created as part of this project. Historical and projected water demands by year are shown in the District's 2002 Master Plan update (August 2005).

While the District is responsible for planning and delivering an adequate water supply, we only use adopted land use plans from the land planning agencies as we are a service provider and not a land planning agency. The District does not use any speculative draft land use plans development of projects or land use agencies for any planning purposes. VWD relies solely on approved documents from the land planning agencies within our service area.

### ***5.1.2 Existing Water Demand***

Existing (2005) water demand for the District was calculated using two sources. The first of these sources was the billing records of District water users. The monthly consumption records for each user were calculated to create a total for the year, and these yearly records were then calculated across pressure zones and across the District to determine the total demand. In order to confirm the District's water demand for 2001, records for each of the District's seven water turnouts were used to conclude how much water the District purchased from the SDCWA. These records were adjusted for the 6 percent water loss factor given in Section 3. The changes in water storage levels within the District were assumed negligible over the time scale of one year for this analysis.

**Table 5-1 Normal Year Water Demand**

**Normal Year Water Demand Forecast Adjusted For Water Conservation**

Year	M&I Baseline Forecast (AF)	Estimated Conservation Savings (AF) <sup>1</sup>	Estimated Additional Conservation (AF) <sup>2</sup>	M&I Forecast Reduced by Conservation (AF)	Agricultural Forecast (AF) <sup>3</sup>	Total Projected Demand (AF)
2010	19,044	2,475	-	16,569	1,742	18,311
2015	21,486	2,739	364	18,383	1,358	19,741
2020	23,928	2,840	2,059	19,029	1,336	20,365
2025	26,370	3,047	3,072	20,251	1,066	21,317
2030	28,812	3,233	3,697	21,882	1,021	22,903

Source - Vallecitos Water District's 2002 Water, Wastewater, and Water Reclamation Master Plan Update - August 2005 &

SDCWA-MAIN PMCL Baseline Point Projections model

1) Conservation savings do include potential bmps and efficiency standards - from SDCWA

2) Additional Conservation savings from other VWD programs

3) Certified IAWP agricultural water only

### **5.1.3 Five-year and Planning Period Water Demand Projections**

SANDAG's Series 9 projection data was utilized to project how the District's water demands will make the transition from current to ultimate demand levels. The SANDAG data contained projections of the developed acreage, undeveloped acreage, and population for each census tract in the District for the years 1995, 2005, 2010, and 2020. A GIS layer containing the census tract boundaries was overlaid on the District's pressure zone boundaries. GIS analysis was used to determine the total developed acreage, undeveloped acreage, and population in each pressure zone for the time steps listed above.

### **5.1.4 Ultimate Water Demand Projections**

Ultimate water demand for the District was calculated using the GIS land use database and the unit water duty factors presented in Section 3. Fully developed ("build-out") conditions were assumed, and the acreage of each parcel in the District was multiplied by the unit water duty factor appropriate to that parcel's District land use category. In this way the ultimate water demand of each parcel was calculated. This parcel-level demand was then summed by both land use category and pressure zone in order to calculate the total ultimate demand for

the District. Ultimate average water demands are projected to be 31.94 mgd, an increase of 145 percent over current demands.

**Table 5-2 Projected Demand and Supply**

**Projected Supplies and Demand (Normal Year - AF/YR)**

	2010	2015	2020	2025	2030
Purchases from SDCWA	19,409	19,741	20,365	21,317	22,903
Exchanges In	0	0	0	0	0
Exchanges Out	0	0	0	0	0
Other Sources	0	0	0	0	0
<b>TOTAL PROJECTED SUPPLIES</b>	19,409	19,741	20,365	21,317	22,903
<b>TOTAL ESTIMATED DEMAND w/conservation</b>	19,409	19,741	20,365	21,317	22,903

### **5.1.5 Water Duty Factors**

Unit water duty factors were developed for 23 generalized land uses within the District. These generalized land use categories are consistent with those established in the 1997 Water, Wastewater and Reclamation Master Plan Update, with the exception of the Right of Way land use category, which was added for the purposes of the District's Master Plan update (for further information please refer to Section 4 of VWD's Master Plan).

The land use categories were developed from the 87 land uses comprising the GIS land use database, which is a compilation of adopted land use planning information from the City of San Marcos, the City of Carlsbad, the City of Escondido and the County of San Diego.

Utilizing District supplied water-billing data for the period July 1997 to June 2001 for each existing customer, and cross referencing this data with the land use database, water use factors were developed for each generalized land use category.

### **5.1.6 Land Use Database**

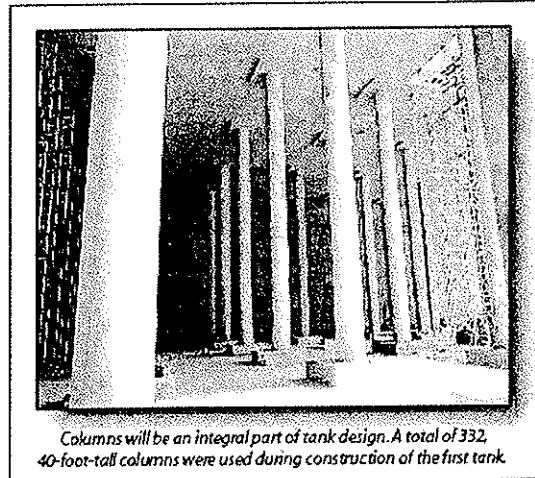
Measured unit water duty factors were calculated based upon water usage data for the period July 1997 to June 2001. Units were taken from District billing records and land parcel acreages were taken from the parcel-level GIS land use database developed as part of this planning effort. GIS land use planning data was obtained from the City of Carlsbad, the City of Escondido and the County of San Diego. Digital data was not available from the City of San Marcos; therefore the City of San Marcos' General Plan was digitized into GIS coverage from hard-copy paper maps and populated with associated land planning information. The planning coverages for each separate land planning agency were merged in GIS, and a master GIS database was created. The master GIS database includes 87 separate land use codes: 10 specific to the City of Carlsbad, 9 specific to the City of Escondido, 33 specific to the County of San Diego and 35 specific to the City of San Marcos.

Each of the 87 specific land use classifications were fit into one of the District's 23 generalized land use categories. GIS overlay analysis was used to assign each parcel within the District's service area a land use code specific to the District's land use categories, creating a parcel-level GIS land use coverage.

The 2002 Land Use Database differs significantly from the land use database used for the 1997 Master Plan Update in the way that transportation right of way parcels are handled. The 1997 database did not include a separate land use category for these parcels. Thus, their acreage was distributed among the other land use categories. The 2002 Land Use Database was generated at the individual parcel level, and transportation right of way parcels were assigned to a distinct land use category. The right of way land use encompasses over 2000 acres, nearly seven percent of the water area of interest within the District. The District's consultant augmented the 22 land use categories utilized in 1997 Master Plan with a separate right of way land use category.

### **5.1.7 Measured Water Duty Factors**

Using the billing data supplied by the District in conjunction with the parcel-level land use database, measured water duty factors were developed for each of the District's land use categories. Utilizing the Assessor's Parcel Number (APN) to Utility Billing System (Account No.) link developed as part of this planning effort, water meter records were attached to individual parcels in the District's GIS parcel database. After combining accounts on parcels with multiple meters, discarding accounts with zero consumption, and discarding obvious land use discrepancies, 12,768 accounts were used to calculate residential, commercial, industrial, agricultural and public facility water duty factors.



Vallecitos Water District will be able to meet its demands and provide a sufficient water supply for the next two decades. This assumption is dependent on continued conservation measures, the availability of recycled water and the San Diego County Water Authority's ability to meet their projected water supply programs, as outlined in their 2005 Urban Water Management Plan. The District's wholesaler, SDCWA, has established extensive shortage contingency plans, including emergency storage.

## Section 6: Water Demand Management Measures

Vallecitos Water District isn't only committed to implementing water supply strategy, it's also an advocate to preserving this precious natural resource too. Success so far has best been achieved through conservation programs to help meet the District's long-term water needs and lessen the region's demand for future imported water supplies.

Historically, the main approach to developing more water supplies has focused on building new conveyance and storage structures, such as dams, water diversions and tanks. Over the past few decades, conservation has increasingly become a major player in enhancing supply reliability. Unlike the significant costs and planning associated with building new facilities, water demand management measures are typically low-cost in comparison, and promote a sense of co-stewardship with the customer.

Broadening knowledge related to wise water management has resulted in water-waste reduction for the short- and long-term District timelines. Although consistent reinforcement of water conservation messages is a key component to wise decision-making in our customer base, it is evident that clear communication and coherent education often instills an attitude of responsibility toward their water resources. Education can never hurt water conservation efforts, but ignorance can cripple them. By seeking to reduce wasted water, the Vallecitos Water District contributes significantly to the overall reliability of our water supply.

This section discusses Vallecitos Water District's conservation programs, including a brief overview of when the Vallecitos Water District began its programs. Details about the programs will be briefly explained using the 14 comprehensive Best Management Practices (BMPs) as a framework. For a detailed BMPs report, see **Appendix E** of this year's California Water Conservation Council report (CUWCC). Though this section focuses heavily on Vallecitos Water District's conservation programs, it is imperative to mention that

VWD actively participates in countywide and regional conservation programs at the San Diego County Water Authority and Metropolitan Water District of Southern California. This includes each of the Voucher Incentive Programs, the Education Outreach Curriculum Program, and the Commercial, Industrial, and Institutional, Agricultural, and Residential Survey programs.

## **6.1 VALLECITOS WATER DISTRICT'S CONSERVATION BACKGROUND**

Vallecitos Water District started a water conservation program in 1975, before the 1976-77 drought. At the program's inception, efforts steered toward a long-term public information program and active cooperation with the regional water conservation programs of the San Diego County Water Authority.

With the support of the Board of Directors, the District's Water Conservation Program expanded significantly during the drought of 1976-77. Though the drought ended, many of the programs that emerged during that time remained focused on switching from an "emergency situation" agenda to a long term public information effort aimed at outreach in wise water management. Through the addition of a Water Conservation Supervisor and Resources Assistant, the framework of a long-term conservation program had been formed, continuing to serve as a backdrop for the next major drought of 1987-1992. With the extra staff and a clear understanding of the importance of conservation, Vallecitos Water District aggressively revamped the conservation program and developed a variety of innovative and effective approaches to demand management.

Reaffirming its commitment to conservation, Vallecitos Water District officials became one of the original signatories on September 16, 1991, to the "Memorandum of Understanding (MOU) Regarding Urban Water Conservation" in California. The California Urban Water Conservation Council, of which Vallecitos Water District is a long-time member, emerged from the MOU, as well as urban water conservation practices known as the Best Management Practices (BMPs) aimed at reducing California's long-term urban water demands.

## **6.2 BEST MANAGEMENT PRACTICES**

### **California Law**

*10631 (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

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

### **6.2.1 BMP 1- Water Survey Programs**

Since 1992, Vallecitos Water District provides free water audits to its entire customer base. Particular emphasis has been put on residential customers. The program instructs customers on instrumental ways to save water in their own homes - which in turn saves them money - by reviewing their landscaping, irrigation system and indoor plumbing system. Other programs include certified irrigation surveyors performing a meter leak detection test, and checking the irrigation system. Through the program staff suggests seasonal adjustments for a customer's individual water schedule, monitors the soil to be sure irrigation reflects moisture absorption, recommends proper lawn maintenance and offers tips on low-water-use landscaping. An indoor water use review, detection of indoor leaks, and a complete educational packet with information about other water conservation programs are also offered. Available for distribution are free faucet aerators and low-flow showerheads. The complete educational packet provides detailed booklets outlining effective irrigation practices, drought-tolerant plant selections, and simple tips to reducing water waste indoors and outdoors.

The residential survey program is advertised on the District web site, regularly through the District newsletter, and frequently through concerned calls routed to the Vallecitos Customer Service Department. Once contacted, the District's Water Conservation Specialist makes arrangements with the residential customer and assesses any specific needs related to that particular account. Special attention is paid to any specific needs of the customer, but all areas of the residential survey BMP are addressed. Each residential survey customer



develops a file, held in the Water Conservation Office, to enabling the tracking of survey field papers, results, and water use status. Occasionally, a water survey may warrant the need for the placement of a "Meter Master," an electronic data logging device on the customer's meter. In these instances, the customer is eventually provided with a statistical analysis of their water use patterns. Out of this analysis, irrigation cycles become obvious and the customers can clearly see the ratio of their irrigation expenditures as compared to their total usage. To date, in every case that a "Meter Master" has been deployed, the customers ultimately reduced their water use significantly.

### ***6.2.2 BMP 2- Residential Plumbing Retrofit***

State legislation effective January 1, 1992, requires the installation of efficient plumbing in new construction (1.6 gpf toilets; 2.5 gpm showerheads; 1.0 gpf urinals; and 2.2 gpm kitchen/bathroom faucets.) State legislation effective January 1, 1994, requires that only ultra-low-flow toilets be sold in California. Further, Vallecitos Water District continues to offer free low-flow showerheads, toilet flappers, toilet tank displacement kits and faucet aerators to its customers. Also offered are District incentives and rebates for retrofit installation of water-efficient toilets, washers and other appliances.

The Vallecitos Water District has remained highly supportive of the regional effort to retrofit residential plumbing. Through the San Diego County Water Authority, VWD actively participates in the following retrofit voucher incentive programs by providing significant funding in conjunction with the Metropolitan Water District and the San Diego County Water Authority for ultra-low-flush toilet; dual-flush toilet; high-efficiency clothes washer; coin-operated high-efficiency washers for multi-residential customers; weather-based irrigation controllers for single-family customers; and weather-based irrigation controllers for multi-family customers and single-family customers with more than one acre of irrigated land.

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

Many of Vallecitos Water District's "system water audits, leak detection and repair" programs contribute to better water management and reduction in water loss. As a result, the Vallecitos Water District's annual water loss percentage (unbilled water) has dropped significantly over the last decade hovering around 4 percent in 1995 to 1997 and less than 6 percent from 1998 to 2005, from an average high of 10.6 percent between 1980 and 1990.

**Water Audits:** Vallecitos Water District conducts a monthly water audit to compare total water sales with water acquisitions and purchases to determine the amount of unaccounted water. This comparison enables Vallecitos Water District to review the need, if any, for implementation of formal water loss reduction programs.

**Leak Detection:** All transmission lines within Vallecitos Water District's distribution system are constantly monitored for leaks by a centralized control system and visual inspections. Although a rare occurrence, leaks are quickly noticed and corrected when they happen. Further, Vallecitos Water District has purchased a new electric leak detection device to help safeguard against future problems.

**Water System Improvements:** Vallecitos Water District's telemetry room is state of the art, utilizing a computerized Supervisory Control and Data Acquisition (SCADA) system to monitor water flow more efficiently. Routine and preventative maintenance is performed on the entire delivery system. Further, Vallecitos Water District has spent millions of dollars in capital improvements, including transmission lines, pressure reducing stations and storage tanks.

The first phase of the tank strategy was met in 2000 with the construction of the 33-million-gallon Twin Oaks Reservoir. Phase two of the strategy is currently taking shape with construction of an additional 40-million-gallon tank being constructed adjacent to the existing one.

**Facility Inspection:** Many facilities, including pump stations and valve vaults, are inspected daily. Visual inspections of all easements and pipelines are performed annually.

**Meter Maintenance and Replacement Program:** Every meter within Vallecitos Water District is part of a “10-year replacement program” with annual testing of 2-inch or larger meters. Two Vallecitos Water District vehicles are outfitted with meter testing equipment and personnel have been assigned to test and replace meters. In addition, Vallecitos Water District has nearly replaced all plastic water laterals with reliable copper services over the past decade.

**Meter Switch to Radio Read:** Vallecitos Water District is in the process of upgrading to a new radio meter read technology that will drastically simplify the meter reading process. The conversion will allow reads to be taken remotely as a District vehicle passes the residence. Meter reads that use to take days for staff to complete will soon be accomplished in a matter of hours. As of December 2005, approximately 60 percent of the District's meters had been converted. One hundred percent conversion is projected by the end of 2008.

**Prosecution For Water Theft:** Vallecitos Water District personnel continually watch for instances of water theft and prosecutes as necessary.

**Water Loss Billing:** Whenever possible, the parties responsible for water loss (for example, damages fire hydrants, dig-ins, etc.) are billed for the cost of required repairs and for all water lost.

#### ***6.2.4 BMP 4- Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections***

Metering of all water use and billing by volume has long been the standard practice at Vallecitos Water District. All new and existing water service connections are metered. For large parcels and commercial developments, separate dedicated irrigation meters are placed when needed. Customers are billed based on monthly reads and according to “Tier Ranges” adopted July 1, 2003. The “Tier Ranges” are divided into three step pricing tiers with separate

use requirements for Residential, Irrigation, Agriculture, and Commercial/Industrial, in an effort to promote conservation and wise water use by charging a higher rate for each incremental use of water.

#### ***6.2.5 BMP 5- Large Landscapes Conservation Programs***

Vallecitos Water District participates in the San Diego County Water Authority's contractor-operated large landscape programs:

**Large Turf Surveys:** The "Professional Assistance for Landscape Management Program" offers free irrigation system and landscape audits at sites with one or more acres of irrigated landscape. Using methodology developed by the Irrigation Training and Research Center at California Polytechnic State University at San Luis Obispo, the surveyor performs catch-can tests, makes numerous soil and plant observations and calculates an ETo-based irrigation schedule.

**Agricultural Surveys:** The "Agricultural Water Management Program" offers free irrigation system evaluations to agricultural properties with two or more acres of irrigated crop or grove. The surveyor makes observations of the plant material, soil and irrigation system. Emission uniformity and pressure readings are determined for the irrigation system and recommendations are given along with crop data and technical information about the particular type of irrigation equipment in use.

**Commercial Landscape Incentive Program (CLIP):** As another method to combat water waste, the Water Conservation Office monitors a monthly compiled list of the District's highest commercial, industrial, and institutional water users. The goal is to work directly with the higher users to reduce unnecessary water waste.

#### ***6.2.6 BMP 6- High-Efficiency Washing Machines Rebate Programs***

Since 1998, Vallecitos Water District has been a regular participant of the San Diego County Water Authority's initial "High-Efficiency Washing Machine Rebate Program." Lending continued support to the regional plan, the District continues

to offer financial incentives. Today the program has evolved into the "San Diego County Water Authority Voucher Incentive Program." This program - aimed specifically at commercial and residential users - provides a solid financial incentive to customers replacing their standard top-loading washing machine model with a low-water-use, high-efficiency washers. This program is rigorously promoted through website information, occasional written correspondence, and through a widely distributed, active commercial water conservation education packet.

### **6.2.7 BMP 7- Public Information**

With the initial hiring of a Public Information Representative in 1990, Vallecitos Water District launched an intensive public outreach/education program that continues to grow today. The program includes internal and external communication such as a quarterly newsletter mailed to all customers, its [www.vwd.org](http://www.vwd.org) web address, a diverse Speaker's Bureau, and an employee newsletter. Also critical to outreach success are press releases and media kits, brochures, paid newspaper advertisements, bill inserts and bill messages, workshops, promotional events, displays, free workshops for customers, Open Houses, Lending Library, classroom presentations, field trips for area schools, and facility tours. Outreach examples include paid newspaper advertisements during summer peaks to remind people to conserve, bill messages reminding people to curb non-essential water use until off-peak hours, hour-long school presentations demonstrating water conservation techniques, and detailed indoor and outdoor water conservation measures available online at our web site.

Vallecitos Water District's dedication to public information in the community is evident in its participation at a multitude of community events and festivals, its development of a comprehensive educational curriculum related to water allocation and water conservation for K-12 school students, and its efforts at providing schools with mini-grants to increase water-use awareness.

Vallecitos Water District is also an active member of North County Water Agencies, a consortium of 11 agencies that coordinate an annual fourth grade poster competition and sponsors the printing of the annual Water Awareness

Calendar. Each year the theme of the poster contest and the calendar change, however water conservation is consistently a key component of the event's message. To encourage participation, District winners are provided with savings bonds.

### **6.2.8 BMP 8 - School Education**

The Vallecitos Water District values water, recycled water, and wastewater education.

Each of the Vallecitos Education Program components is designed to effectively meet and follow the California State Standards adopted by the California State Board of Education in October, 1998.

Furthermore, the presentations seek to instill a better understanding of the role of water in the local community, while also addressing larger water issues. Students can expect, at each level, to improve their personal knowledge of water allocation and conservation, while building a deeper understanding of the water issues that Southern Californians face now and in the future. Upon graduation from an area high school, we hope that each student will have had multiple encounters with the District's Education Program. By "Bringing Science, Community, and Public Service Together in the Classroom", Vallecitos Water District hopes to instill a passion for water issues in each and every student.

#### ***The all-new Vallecitos Education Program includes the following:***

- **Kindergarten** – a program to bring the science of the water cycle together with an effort to personalize the student's scientific knowledge of the role of water
- **First Grade** – a program to help students comprehend the role of water in essential industries and introduce water conservation
- **Second Grade** – A visit to an hands-on time with exhibits of native plants, etc. (a partnership with the City of San Marcos), this will

expose students to nature, importance of water in the ecosystem and the development of human settlements

- **Fourth Grade** – in class presentation and “water awareness calendar” poster contest. This is to deepen the student’s understanding of the water cycle.
- **Fourth, Fifth, and Sixth Grade** – Splash Science Mobile Lab, visits area schools funded by Vallecitos Water District; presented by the San Diego County Office of Education.
- **Seventh and Eighth Grade** – Water Computations
- **Ninth through 12** – Speaker’s Bureau
- **Private Schools** - Our area’s smaller private schools and home schools are each invited to a special two-day Splash Science Mobile Lab event at Jack’s Pond Park. The City of San Marcos’ Jack’s Pond Nature Center is opened in conjunction with the Splash Science Mobile Lab event, and the Nature Center’s Director offers nature walks discussing storm water issues, local flora and fauna, and water allocation topics.
- **High School** - In-Class Presentations Under Development; Careers in the Water Industry; Presentation “Cost of Water”; Presentation “Water Bill of Rights”; Classroom Activity “Value of Water”
- **The Vallecitos Water District’s Speaker’s Bureau . . . .**

Vallecitos Water District also offers water education opportunities in conjunction with the San Diego County Water Authority. The programs through the Water Authority cover a variety of water resource topics, with a strong emphasis on water conservation. The San Diego County Water Authority school education programs can be found at <http://www.sdcwa.org/education/teachers.phtml>.

### ***6.2.9 BMP 9 - Conservation Programs for Commercial, Industrial & Institutional Customers***

A vital part of conservation has been participation in the San Diego County Water Authority's Commercial, Industrial & Institutional Program. This program features point-of-purchase vouchers that customers can apply toward replacing inefficient water equipment or implementing techniques in commercial, industrial, or institutional (CII) settings. The vouchers reduce the up-front costs for businesses, and the equipment produces long-term savings in water, sewer and energy costs. Some of VWD's offerings include significant funding for all of the Voucher Programs. This entails: pre-rinse spray valves, ultra-low-flush- toilets, urinals (waterless models included), water brooms, single-load/high-efficiency washers, cooling tower conductivity controllers, multi-load high-efficiency washers, and weather-based irrigation controllers through the "Smart Landscape" program.

The Commercial, Industrial, and Institutional (CII) water conservation program is regularly promoted through direct and indirect interaction with the CII community via mailings, bill inserts, letter writing, and answering inquiries fielded by our Customer Service Department. Generating a monthly article in the San Marcos Chamber of Commerce Newsletter that consistently addresses water issues, and frequently includes water conservation messages is one such example.

Building on an opportunity during 2005 sewer re-assessment inventory, many of VWD's CII accounts received personalized water conservation information letters offering assistance through the voucher programs and the Vallecitos Water District's CII survey program.

During a Vallecitos CII survey, the water-use practices of the CII customer account is reviewed and assessed for water efficiency. This is in addition to the traditional components of the residential survey. A certified irrigation surveyor performs a meter leak detection test, checks the irrigation system, and suggests seasonal adjustments for a customer's individual water schedule. The soil is also monitored to ensure irrigation is consistent with moisture absorption. Also reviewed are other aspects of the program, including indoor water use review, detection of indoor leaks, and a complete educational packet. The complete



educational packet includes detailed booklets outlining effective irrigation practices, drought-tolerant plant selections, and simple tips to reducing water waste indoors and outdoors.

#### ***6.2.10 BMP 10- Wholesale Agency Programs***

Vallecitos Water District is a retail water agency, not a wholesale agency. Therefore BMP requirements are not applicable.

#### ***6.2.11 BMP 11- Conservation Pricing***

Customers are billed based on monthly reads and according to "Tier Ranges" adopted July 1, 2003. The "Tier Ranges" are divided into three step pricing tiers with separate use requirements for Residential, Irrigation, Agriculture, and Commercial/Industrial. This is an effort to promote conservation and wise water use by charging a higher rate for each incremental use of water. ...

Conservation Pricing Incentives: Vallecitos Water District currently offers a financial incentive for water conservation, called the "Frugal User." Customers that use 5 units or less of water receive a 20 percent discount on their "Ready-to-Serve" charge, as well as on the sewer charge.

#### ***6.2.12 BMP 12 - Water Conservation Coordinator***

In May 1991, Vallecitos Water District welcomed its first specifically designated, Water Conservation Supervisor. This position was created with the solid understanding that water conservation is a high priority to the administrative staff and Board of Directors of Vallecitos Water District. The District had added a conservation assistant in 1990, prior to the hiring of the conservation supervisor in 1991. In July 2005, VWD welcomed aboard a Water Conservation Specialist. This person is charged with the coordination of all water conservation programs and BMP implementation, the Water Conservation Specialist is to improve the

customer's water conservation efforts through education and specialized programs.

Serving in a reporting capacity to the California Urban Water Conservation Council, the Board of Directors, and senior administrators, the Water Conservation Specialist monitors the District's conservation efforts and implements new conservation programs. Additionally, acting in the capacity of public outreach, the Water Conservation Specialist actively promotes both Vallecitos Water District conservation programs and San Diego County Water Authority conservation programs to the public. Participating in the California Urban Water Conservation Council is a priority for this position.

Whenever possible, the Water Conservation Specialist attends plenary meetings, communicates with CUWCC staff, and showcases the Vallecitos Water District's rigorous water conservation efforts at events. The specialist Corresponds and meets with other water conservation representatives within San Diego County, Joint Public Information Committee meetings, Conservation Co-coordinator meetings, and North County Water Agencies meetings. The Water Conservation Specialist is constantly gaining exposure to new products, policy, and programs throughout the region.

The development of the Vallecitos Water Education Curriculum Program is a direct result of the creation of the new Water Conservation Specialist position at Vallecitos Water District.

### ***6.2.13 BMP 13- Water Waste Prohibitions***

In 1988, Vallecitos Water District adopted a comprehensive water conservation program (**Appendix F**) to "inform and educate the public on the reasonable use of water and to reduce the per capita quantity of water used by the people therein for the purpose of conserving water supplies of the District." This ordinance, No. 80-5, was revised in 1989, 1990 and 1991. Vallecitos Water District is currently using the 1991 edition.

During “drought” or another emergency condition where additional water-use restrictions are necessary, the ordinance sets forth six water conservation stages as shown in table 6-1.

In the event that supply interruptions caused by a major failure or other related situation, a Water Emergency would declare severe restrictions. This could result in a reduction beyond 40 percent. In this case, the General Manager has the authority to declare a reduction beyond measures detailed in ordinance No. 80-5 (see appendix F).

Ordinance No. 80-5 is enforced by the water conservation department with routine drives throughout Vallecitos Water District, as well as responding to customer and employee reports of water waste. If necessary, penalties can and will be enforced, resulting in a series of warnings prior to monetary fines and ultimately a discontinuance of service.

**Table 6-1 Conservation Stages**

**Water Conservation Program - Conservation Stages <sup>1</sup>**

Stage	Reduction	Type of Program
1	Voluntary	Voluntary Compliance: <b>Water Watch</b> - applies during normal periods to encourage conservation
2	10%	Enforcement Required: <b>Water Alert</b> - applies during periods that the District determines that water usage should be reduced approximately 10%
3	15%	Enforcement Required: <b>Water Warning</b> - applies during periods that the District determines that water usage should be reduced approximately 15%
4	20%	Enforcement Required: <b>Water Warning</b> - applies during periods that the District determines that water usage should be reduced approximately 20%
5	30%	Enforcement Required: <b>Water Warning</b> - applies during periods that the District determines that water usage should be reduced approximately 30%
6	40% or more	Enforcement Required: <b>Water Warning</b> - applies during periods that the District determines that water usage should be reduced approximately 40%

1) Source - Vallecitos Water District Ordinance No. 80-5 (May 6, 1991), also, the District has another Ordinance, No. 90, that authorizes the General Manager to restrict the use of water as a result of a system failure (July 2, 1990)

## Section 7: Water Shortage Contingency Plan

**E**nsuring a reliable supply of water and an uninterrupted supply for our customers is a critical responsibility of Vallecitos Water District as well as other water agencies throughout Southern California. Contingency plans are in place to protect our customers in the event of an emergency and/or shortage, such as a drought situation, major system failures, contamination due to chemical spills or other adverse conditions.

Vallecitos Water District's Board of Director's approved its current plan in February 1991 to deal with drought and crisis situations. This plan outlines step-by-step conservation measures depending on the severity of the situation, asking customers to cut back. This plan has been used in the past and will be used, if necessary, in the future to manage water shortages.

When analyzing water supplies in relation to contingency plans, the San Diego County Water Authority must be brought into the discussion since Vallecitos Water District's water is 100 percent imported and purchased from the San Diego County Water Authority. The San Diego County Water Authority has developed an Emergency Response Plan and Emergency Storage Project to protect public health and safety and limit economic damages that could occur from a severe drought.

### **California Law**

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

*10632 (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.*

## 7.1 STAGES OF ACTION

Vallecitos Water District's Board of Directors adopted ordinance No. 80 in June 1988 laying out the guidelines for a water conservation program and setting stages for cut backs in the event of a drought. This ordinance has been repealed and modified over the years, with ordinance No. 80-5 (see **Appendix F**) currently in affect. In this ordinance, the Board defines that a water shortage could exist based on the occurrence of one or more of the following:

- A general water supply shortage due to increased demand or limited supplies.
- Distribution or storage facilities of the Metropolitan Water District of Southern California, the San Diego County Water Authority, Vallecitos Water District or other agencies become inadequate.

### **California Law**

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

*10632 (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*

Vallecitos Water District's Water Conservation Program outlined in ordinance No. 80-5 only addresses customer reduction goals up to 40 percent. Ordinance No. 90 (See **Appendix G**), adopted by the Board of Directors in July 1990, gives the General Manager of Vallecitos Water District the authority to reduce water use beyond Stage 6 and 40 percent during a threatened or existing shortage.

According to ordinance No. 90, the General Manager or his designee are authorized "to manage the water system and available water supply, or any system providing water to the District, including the express authority to declare a

temporary moratorium on outside water usage and to limit or curtail agricultural and golf course use of imported water for irrigation purposes until service is restored.”

The ordinance defines an emergency as “the failure of any portion of the District’s water supply system, or any system providing water to the District, requiring prompt action to protect the District’s water supply for human consumption, sanitation, and fire protection purposes until the failed system is repaired.”

**Table 7-1 Water Conservation Program, Conservation Stages**

**Water Conservation Program - Conservation Stages<sup>1</sup>**

Stage	Reduction	Type of Program
1	Voluntary	Voluntary Compliance: <b>Water Watch</b> - applies during normal periods to encourage conservation
2	10%	Enforcement Required: <b>Water Alert</b> - applies during periods that the District determines that water usage should be reduced approximately 10%
3	15%	Enforcement Required: <b>Water Warning</b> - applies during periods that the District determines that water usage should be reduced approximately 15%
4	20%	Enforcement Required: <b>Water Warning</b> - applies during periods that the District determines that water usage should be reduced approximately 20%
5	30%	Enforcement Required: <b>Water Warning</b> - applies during periods that the District determines that water usage should be reduced approximately 30%
6	40% or more	Enforcement Required: <b>Water Warning</b> - applies during periods that the District determines that water usage should be reduced approximately 40%

1) Source - Vallecitos Water District Ordinance No. 80-5 (May 6, 1991), also, the District has another Ordinance, No. 90, that authorizes the General Manager to restrict the use of water as a result of a system failure (July 2, 1990)

## 7.2 PENALTIES

### California Law

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

*10632 (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.*

*10632 (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.*

*10632 (f) Penalties or charges for excessive use, where applicable.*

Under ordinance No. 80-5, surcharges will be imposed and water service will be discontinued or limited for any customer who does not comply with the stages. Currently, the District is in a Stage 1, which applies during normal periods to encourage conservation by the reasonable use of water. Stage 1 is voluntary compliance.

The penalties outlined in ordinance 80-5 that could be imposed if a customer violates reduction measure outlined in an active "Stage" are:

- *First violation: letter of warning accompanied by a copy of the ordinance*
- *Second violation: \$50 surcharge added to customer's bill*
- *Third violation: \$100 surcharge and limitation of water with a flow restrictor for 72 hours. Cost of installation and removal of flow restrictor will be paid by customer.*

- *Fourth violation: \$200 surcharge and discontinuance of service for a minimum of 48 hours. The cost of discontinuance shall be charged to the customer.*
- *For any subsequent violations within a period that a Water Conservation Stage is in effect, the Board would conduct a hearing and may, in its discretion, order either (1) an installation of a flow restrictor, or (2) the discontinuance of service, each for such a period of time that the Board deems appropriate under the circumstances. Vallecitos Water District shall, at least 10 days before the date set for the hearing, mail a written notice of the hearing.*

Furthermore, penalties also exist in ordinance No. 90 if a customer violates any limitation or restriction on water service adopted by the action of the General Manager, or his designee. Violators could face imprisonment for up to 30 days and/or a fine of up to \$600. Additionally, after receiving one warning notice posted at the customer's address, violators may be subject to termination of service or restrictions on further service until the failure has been repaired and service restored.

### **7.3 REVENUE AND EXPENDITURE IMPACTS AND MEASURES TO OVERCOME IMPACTS**

#### **California Law**

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

*10632 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier to overcome those impacts, such as the development of reserves and rate adjustments.*

A drought situation would produce a "minimal" impact on Vallecitos Water District's overall revenues and expenditures. Approximately 80 percent of Vallecitos Water District's fixed costs are shared between all water customers via



a monthly ready-to-serve charge. This charge, which varies depending on meter size, recovers water system infrastructure and equipment repairs and maintenance, meter reading, billing, engineering, safety and administration.

Revenue impacts from drought conditions or required cutbacks would be mostly offset by reduced wholesale water costs, since, as mentioned previously, about 80% of fixed costs are recovered from fixed charges, not commodity charges. The District also reserves 90 days of budgeted operating expenditures, \$4,288,400 in 05/06, that may be used to supplement a loss of revenue if needed to cover expenses.

Water conservation is a well-established practice in ensuring that there will be a reliable water supply in the future for the increasing population and commerce of Vallecitos Water District. However, conservation occasionally suffers from the perception that it reduces revenues. Over the long-term, conservation measures actually serve to defer or limit rate increases by reducing the District's need for other, more expensive supplies and increased infrastructure. The District's FY 05 budget included \$135,000 for conservation and public awareness programs, which represents an average cost of \$7.99 per acre-foot of projected water sales during FY 06. Conservation programs also reduce imported water demand that in turn allows the Water Authority to purchase less of Metropolitan's more expensive Tier 2 water. Tier 2 water is more expensive since it represents Metropolitan's cost to develop additional supplies.

## Section 8: Water Recycling

Cleaning wastewater and recycling that water by releasing it back to nature is important to Vallecitos Water District - and is a task that is accomplished daily by Vallecitos Water District's Meadowlark Water Reclamation Facility (Meadowlark) and the regional Encina Water Pollution Control Facility, of which Vallecitos Water District owns jointly with other public agencies. About 2.25 million gallons per day of wastewater is treated by Meadowlark, with about 2 million gallons per day being redistributed back into the hydrologic cycle by watering landscaping at parks, schools, golf courses, flower fields and municipalities. Purple piping and signs clearly distinguish the recycled (also known as reclaimed) water, which is useful for many purposes except drinking.

This section will describe Vallecitos Water District's wastewater system, as well as how the wastewater is generated, collected and treated. Further, this section will detail how the wastewater is disposed of or recycled, and how Vallecitos Water District encourages water recycling.

### **8.1 WASTEWATER SYSTEM DESCRIPTION, GENERATION & TREATMENT**

#### **California Law**

*10633. The plan shall provide, to the extent available, information on recycled water and its potential Section 8: Water Recycling for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:*

*10633 (a) A description of the wastewater collection and treatment systems in the supplier's service area...*

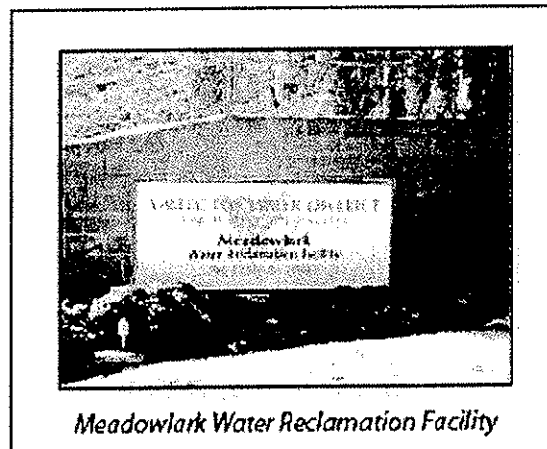
Vallecitos Water District's existing system includes a wastewater collection system, wastewater treatment facilities and water reclamation facilities (See

**Figure 8-1).** In general, the wastewater collection and conveyance system consists of more than 232 miles of pipeline ranging in size from 4-inch to 54-inch land outfall. Vallecitos Water District operates three lift stations, which serve low lying areas and convey the wastewater for treatment, with a total of eight pumps ranging from 8 hp to 100 hp.

The collection system is divided into two principle drainage basins: the Encina Basin, which collects wastewater and sends it to Encina Water Pollution Control Facility on the coast in Carlsbad, and the Meadowlark Basin, which sends the remaining wastewater to Meadowlark Water Reclamation Facility in the southern tip of Vallecitos Water District. These collection and conveyance systems primarily consist of gravity collectors, trunk lines, interceptor lines and an outfall line.

#### ***8.1.1 Meadowlark Water Reclamation Facility:***

Meadowlark is located in the City of Carlsbad in the southwest tip of Vallecitos Water District. It was originally built in 1958 as a 0.25 million gallons per day (mgd) secondary treatment plant, and expanded to a 2 mgd, tertiary treatment facility in 1982. Capacity was re-rated in 1996 to 2.25 mgd, which is the size of the facility at the present. However, the plant is under construction currently to expand/upgrade to 5 million gallons per day by early 2007. This recycled water will be sold under contract to the City of Carlsbad and the Olivenhain Municipal Water District.



Currently, recycled water (up to 2 mgd) from Meadowlark sold to the City of Carlsbad is transported through Vallecitos Water District's new 24 inch main that will provide additional points of service to both Carlsbad and Olivenhain. Surplus water can be stored in Vallecitos Water District's 54-million-gallon Mahr Reservoir just south of Meadowlark. Improvements to Mahr are pending construction during the 2006/07 years. Upgrades will include dredging and

cleaning, new aeration system, inlet outlet tower and a new treatment system to ensure compliance with Department of Health guidelines for recycled water use. If necessary, water from both Meadowlark and the Mahr Reservoir can be sent through Vallecitos Water District's "Failsafe" pipeline to Encina for disposal into the ocean. Currently, the Meadowlark basin produces 0.6 mgd for recycling and the remaining wastewater is pumped from the Encina basin.

Meadowlark does not have the capability to treat solids. All solid material is sent to Encina Water Pollution Control Facility via Vallecitos Water District's land outfall.

The District also has just completed a new sewer lift station in the Southeast portion of the District, which includes 3 pumps. This station is scheduled to come on line in the spring of 2006.

#### ***8.1.2 Encina Water Pollution Control Facility:***

This facility, which was built in the mid-1960s, is located on the coast in Carlsbad and is a regional facility owned jointly by six public agencies: Vallecitos Water District, the cities of Carlsbad and Vista, the Buena Sanitation District, the Leucadia County Water District and the Encinitas Sanitary District. Vallecitos owns about 21 percent of the facility and has the ability to send up to 7.54 million gallons a day of wastewater to the Encina Water Pollution Control Facility.

The facility provides wastewater treatment services to approximately 300,000 North San Diego County residents. The Encina Water Pollution Control Facility has a 36 mgd activated sludge treatment facility. Treated wastewater from Encina Water Pollution Control Facility is sent through an ocean outfall extended along the ocean floor and transported about 1½ miles into the ocean on the coast in Carlsbad at about a depth of 150 feet.

#### ***8.1.3 Participation in a Regional Recycled Water Plan***

As mentioned above, Vallecitos Water District is a member of the regional Encina Water Pollution Control Facility, which produces a small amount of recycled

water. Meanwhile, Meadowlark Water Reclamation Facility sells its entire supply of recycled water under contract to the City of Carlsbad. The VWD facility is currently under construction to be upgraded to increase output capacity.

#### **8.1.4 WaterReuse Association Membership**

Vallecitos Water Districts is an active member of the California WaterReuse Association, which helps implement water recycling in California.

### **8.2 WASTEWATER DISPOSAL AND RECYCLED WATER USES**

#### **California Law**

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

*10633 (a) A description of the [...] methods of wastewater disposal.*

*10633 (b) A description of the recycled water currently being used in the supplier's service area, including but not limited to, the type, place and quantity of use.*

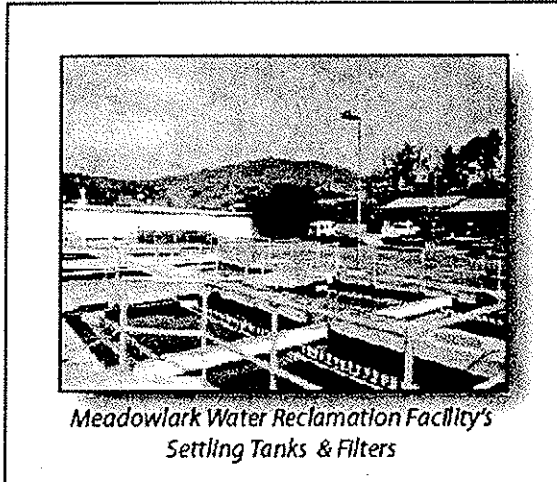
*10633 (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*

*10633 (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.*

### ***8.2.1 Recycled Water Currently Being Used***

All of the recycled water produced at the Vallecitos Water District's Meadowlark Water Reclamation Facility is sold under contract to the City of Carlsbad.

Meadowlark is Carlsbad's primary source of recycled water, receiving about 2



million gallons per day. Carlsbad receives another 0.75 million gallons per day from the Leucadia County Water District.

The City of Carlsbad has about 26 miles of recycled distribution pipeline, which supplies 65 recycled-use sites. The sites served by recycled water include La Costa Resort and Spa, Four Seasons Resort at Aviara, LEGOLAND California,

Grand Palisades Hotel, Karl Strauss Brewery and the world renowned Flower Fields. Recycled water also irrigates parks, median strips, shopping areas, freeway landscaping and the common areas of many homeowners associations.

With the exception of the irrigation done on-site at the Meadowlark Water Reclamation Facility, Vallecitos Water District currently does not sell its recycled water to customers within the water district. The recycled water flows to Carlsbad by gravity. At this time, it is not cost-effective to "pump" the water to areas that could use it within Vallecitos Water District's service area.

### ***8.2.2 Potential Uses of Recycled Water***

Since all of Vallecitos Water District's recycled water is sold under contract to the City of Carlsbad, it is mainly Carlsbad's responsibility to encourage and develop uses of recycled water. Vallecitos Water District has purchased and/or produced brochures, video and other educational materials to inform people on the uses and benefits of recycled water. Information is also posted on Vallecitos Water District's website.

Meanwhile, Carlsbad encourages and optimizes its recycled water use via a combination of financial incentives, city policies, staff assistance and training opportunities.

**Table 8-1: Vallecitos Water District Wastewater Generation Projections (mgd)**

**Vallecitos Water District Wastewater Flow Projections (MGD) <sup>1</sup>**

Treatment Plant Name	2001	2006	2020	Ultimate Flow
Northern <sup>2</sup>	-	-	0.17	0.57
Encina	5.11	6.18	7.28	10.06
Meadowlark	0.90	1.14	2.36	3.21
Total Excluding Northern	6.01	7.32	9.64	13.27
<b>DISTRICT TOTAL</b>	<b>6.01</b>	<b>7.32</b>	<b>9.81</b>	<b>13.84</b>

1) Source Vallecitos Water District's 2002 Master Plan Update

2) All Northern area wastewater flows are disposed of through individual septic systems

**Figure 8-1 Sewer service area map**

