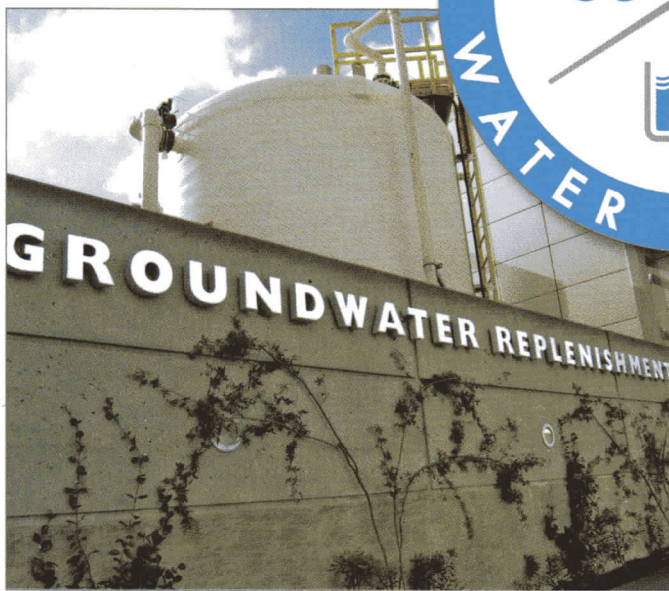
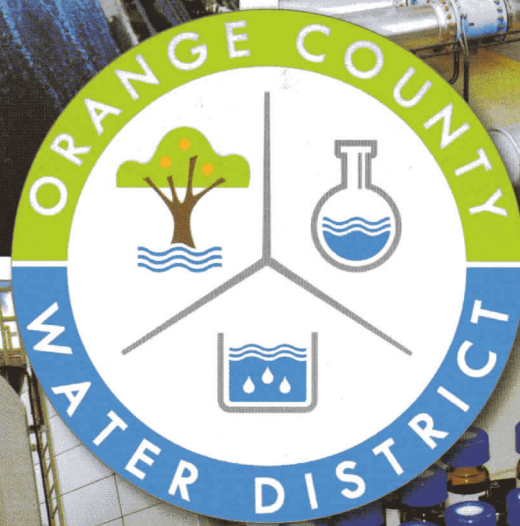


ORANGE COUNTY WATER DISTRICT

1933-2008



MISSION STATEMENT

The mission of the Orange County Water District is to provide local water retailers with a reliable, adequate, high quality water supply at the lowest reasonable cost in an environmentally responsible manner.

MESSAGE FROM THE GENERAL MANAGER



*Michael R. Markus, P.E.
OCWD General Manager*

Seventy-five years ago, a special legislative act established the Orange County Water District (OCWD) to manage and protect the Orange County groundwater basin in northern and central Orange County, including Orange County's rights to flows of the Santa Ana River.

Since 1933, many things have changed, but the importance of properly managing and replenishing the groundwater basin has remained preeminent. Through the years, our innovative staff and Board of Directors have established critical programs and projects that have put the District at the

"Through the years, our innovative staff and Board of Directors have established important programs and projects that have put the District at the forefront of groundwater storage, water reclamation and water quality."

forefront of groundwater storage, water reclamation and water quality. In fact, with years of sound planning and investment, OCWD has more than doubled its output of groundwater. The basin recently helped Orange County weather a five-year drought. It also provides an emergency back-up supply of water for citizens living in south Orange County.

In OCWD's 75th anniversary year, we also celebrate the debut of the Groundwater Replenishment (GWR) System, which is now producing near-distilled quality water to meet the needs of more than 500,000 Orange County residents. Continuing where OCWD's previous state-of-the-art water reclamation project—Water Factory 21—left off, the GWR System is keeping seawater out of the basin and providing a new source of high quality water for northern and central Orange County.

In the following pages, you will take a trip through time: from Father Junipero Serra discovering the Santa Ana River to 2008's historic unveiling of the GWR System—and there are many remarkable events in between! We hope you enjoy taking a look at how far OCWD has come, yet how the District has stayed true to its mission.

Here's to another 75 years of providing high quality groundwater to Orange County.

Michael R. Markus, P.E.
General Manager
Orange County Water District

1750 - 1900

The Early Years of Orange County – Before it was Orange County

Before California was even a state and before Orange County was known as “The OC,” it was a desert where settlers were fighting over rights to the Santa Ana River. Orange County is essentially a desert, but a river runs through it—the River of Saint Anne.

Late 1700s Father Junipero Serra makes his way north, camping in the Santa Ana Valley on July 28, 1769, and naming it in honor of Saint Anne. The river of Saint Anne—now known as the Santa Ana River—ran through the valley. At this time, there is enough water for those who are hardy and brave enough to claim it.

1810 Jose Antonio Yorba, who originally traveled with Father Serra, returns to the Santa Ana Valley to develop irrigation using Santa Ana River water for the first time, establishing a riparian water right—or a water right resulting from land ownership—that is confirmed by the U.S. District Court in 1860 and in one form or another still exists to this day.

Early 1880s Landowners north of the Santa Ana River file suit against water users on the south side. The southern interests claim one-half the flow of the river, while the north claim predominant rights to the water. An initial court ruling favors the northern claim, but a year later the California Supreme Court reverses the ruling. The court suggests that both northern and southern users divide the water and devote the money to the proper development and use of the main water supply.



*Landscape After 1938
Santa Ana River Flood*

Beginning in the late 1800s, the realization that groundwater existed in Orange County made it a very precious commodity. The great number of river diversions, however, reduced the natural seepage necessary to replenish the groundwater basin. The upper basin's use of water through spreading programs also caused concern regarding supplies in the lower basin. Eventually, litigation and the formation of the Orange County Water District ensued.

1893 Well water for household use is obtained from the groundwater basin at an average depth of 35 feet. Groundwater, in fact, is so close to the surface in areas of Orange County that uncapped wells sometimes flood the land. Fountain Valley, the location of OCWD's headquarters, is known as “Gospel Swamp” because of the hundreds of artesian wells that dot the landscape.

Late 1800s Winter storms are the only source of groundwater basin replenishment—and most of the storm flows are lost to the ocean before they can be captured.

Early 1900s Representatives from Orange, Riverside and San Bernardino counties organize the Water Conservation Association to increase and restore groundwater resources by building surface storage reservoirs to capture storm water runoff.

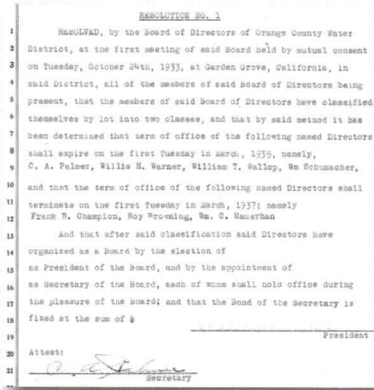
1750

1900

1910

1930 - 1950

"When the well is dry, we know the worth of water." — BENJAMIN FRANKLIN



OCWD's Resolution No. 1

1932 The Irvine Company files suit against water users in the upper basin, claiming that upstream actions endanger the company's riparian rights and also threaten the replenishment of a number of wells that supply its water.

1933 The California Legislature forms the Orange County Water District to protect and manage the county's groundwater basin. Senate Bill 1201 specifically mandates the District to provide importation of water, prevent waste of water, provide for reclamation of water for beneficial use and provide for conservation and control of storm water and flood water flowing into the District.

June 4, 1933 The District Act is approved.

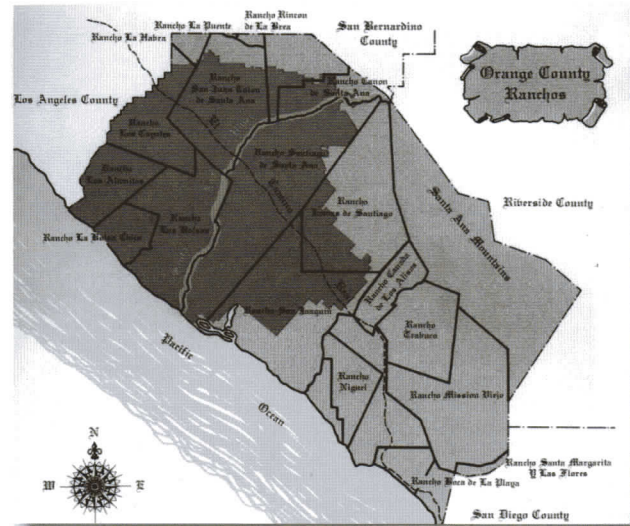
Once the Orange County Water District was formed by the District Act in 1933, it began to make historic improvements to Orange County's water supply. In subsequent years, the District provided revisions to the District Act and hired its first formal secretary-manager.

1934 The Orange County Water District Board of Directors goes on record "in favor of sewage reclamation" and states its intent to donate \$100 from the General Fund when funds are available to be used as an experimental plant for reclamation.

1949 For the first time, Orange County Water District purchases imported water from the Metropolitan Water District of Southern California to supplement local runoff for groundwater recharge.

1952 The Orange County Water Basin Conservation Committee is created to protect groundwater from saltwater intrusion and replenish both the annual and long-term groundwater depletion—known as overdraft—through imported water if necessary. The committee of twelve decides to not adjudicate the basin's water because it would lead to a "philosophy of scarcity" and decides that equitable financing for importing water to replenish the basin was the most practical water solution for landholders and inhabitants alike. The group also makes several recommendations that lead to a revision of the OCWD District Act.

1953 Howard Crooke is hired as the first secretary-manager of OCWD. While not an engineer by profession, Crooke is known as a "rough and ready" personality who implements amendments, convinces retailers, also known as Producers, to support the concept of pooled resources and is a gentle diplomat and organizer who works well with water Producers and helps them to understand new regulations.



OCWD's Boundaries Denoted in Dark Grey

1954 Changes are made to the District Act that set up a two-tier system: an ad valorem tax to cover OCWD's expenses in setting up the new system and to pay for enough water to slow the seawater intrusion, and a replenishment assessment (RA) fee, based on each pumper's yearly extraction to pay for water to replace the estimated future annual overdraft. The first RA is \$3.50 per acre-foot.

1920

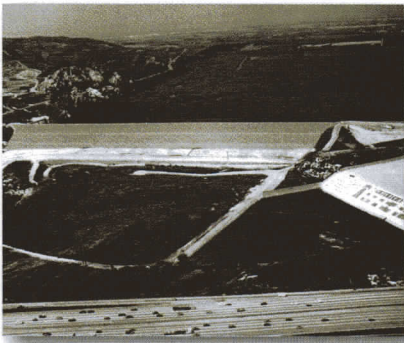
1930

1940

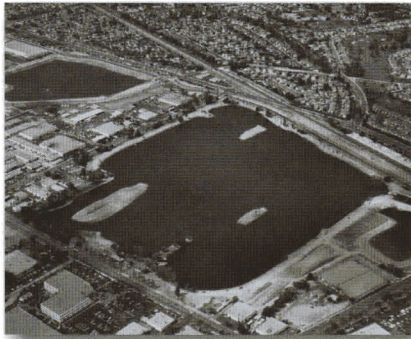
1960 - 1990

"What makes the desert beautiful is that somewhere it hides a well." — ANTOINE DE SAINT-EXUPERY

In the 1960s, most water planners felt that there might not be surplus water for Southern California beyond the next 20 years. In 1956, the groundwater basin dropped to 40 feet below sea level and seawater intruded five miles inland. OCWD's policy during the 1960s was to fill the basin to keep out seawater and ensure an adequate supply of fresh water.



Prado Dam



Anaheim Lake and Basins

- 1963** OCWD files an action seeking to adjudicate the water rights of several water users in the area near Prado Dam in the Santa Ana Watershed.
- 1964** Purchases of imported water for recharge reach 200,000 acre-feet per year.
- 1965** Imported water is injected into the Alamitos Barrier for the first time. The barrier, located near the Orange County and Los Angeles County boundaries, helps protect the groundwater basin from seawater intrusion due to a geologic gap in the area.
- 1968** Settlement in the Santa Ana River adjudication suit is reached. The court allows OCWD to have freedom to conserve water in the Prado reservoir and guarantees OCWD 42,000 acre-feet of water per year. As a result of the litigation, the Santa Ana Watershed Project Authority (SAWPA) is formed to conduct water quality management planning and is jointly empowered by OCWD and other involved water agencies.

1972 Construction of Water Factory 21, the first water reuse project of its kind, begins. Supplies from the State Water Project become available for the first time.

1974 A pipeline for diverting Santa Ana River water to Anaheim Lake for water recharge is completed.

1975 Water Factory 21, a showcase for wastewater reuse, comes online. It reduces water discharged to the ocean and the District's dependency on imported water and helps lower the cost of water. The system wins international acclaim for its 21st century technology, which includes the world's largest operating reverse osmosis plant. Visitors from around the globe flock to OCWD to learn about the technology. The Talbert Barrier begins injecting water that in part has been produced by Water Factory 21 to prevent seawater intrusion.

1976 OCWD acquires Kraemer Basin, 45 acres of former agricultural land, for water conservation and percolation. OCWD acquires Burris Pit, a former sand and gravel site, for additional storm flow storage and percolation.

1950

1960

1970

1990 - 2000

"All the water that will ever be, is right now." — NATIONAL GEOGRAPHIC, OCTOBER 1993

In the 1990s and into the new millennium, the Orange County Water District has grown alongside Orange County's population boom. In 1999, OCWD established a management policy that recharges the basin and protects it from careless overdraft. Over the last 75 years, the District has continued to fulfill its mission. As the District looks forward, its technologies and programs will continue to advance, but its core mission remains.

1990 The \$25 million Santiago Creek recharge project is completed, adding 25,000 acre-feet of annual recharge capacity.

1991 Water Factory 21 receives the first permit ever issued for direct injection of unblended recycled water. The Green Acres Project also goes online, providing recycled water for watering golf courses, parks and greenbelts.

1992 OCWD's state-certified lab processes almost 20,000 samples a year, performing about 145,000 analyses and exceeding state and federal testing requirements.

The OCWD administrative building becomes the first single-story public building to use recycled water for flushing toilets and urinals by using Green Acres Project water.

1993 Santiago Creek recharge facility overflows due to heavy flooding in the creek during storms in 1993. The Santiago Creek Basin has a capacity of 14,000 acre-feet and its percolation rate can reach 300 acre-feet per day.

1995 The Prado Wetlands are expanded to naturally remove nitrates from the Santa Ana River flows at one-fifteenth the cost of conventional, man-made treatment plants. Other efforts at Prado include bringing back the endangered least Bell's vireo songbird from 19 pairs in 1986 to more than 400 breeding pairs in 2008.

1996 The first Children's Water Education Festival, sponsored by OCWD's Groundwater Guardian Team, is held for thousands of Orange County elementary school students and teachers, educating them about the water cycle and how to conserve water.



Santa Ana River Recharge



Water Factory 21



Children's Water Education Festival

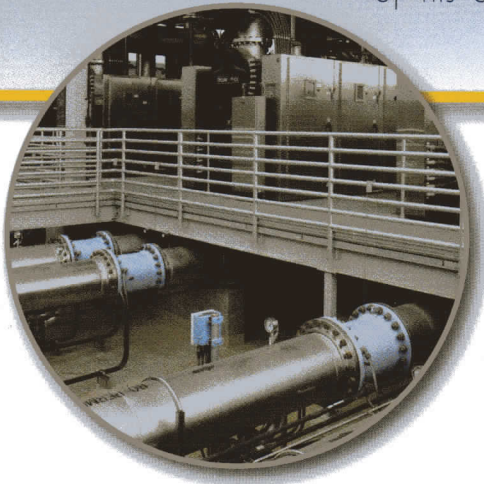
1980

1990

2000

2000 - 2008

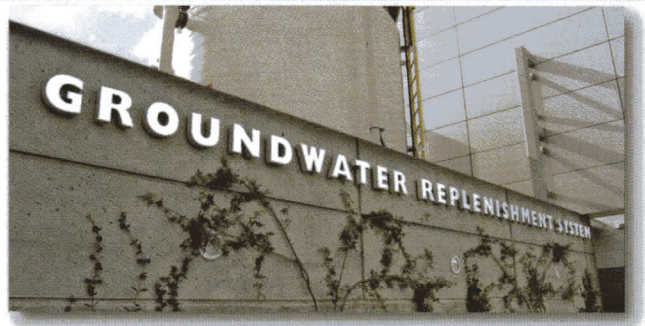
"You could write the story of man's growth in terms of his epic concerns with water." — BERNARD FRANK



Ultraviolet Light System



Microfiltration System



2004 Water Factory 21 stops producing water and is demolished to make room for construction of the Groundwater Replenishment System.

2007 OCWD begins construction of a new Advanced Water Quality Assurance Laboratory. The 39,000 square-foot, \$26 million laboratory will house chemists, lab technicians, water quality monitoring personnel and equipment necessary to analyze the 18,000 water samples taken each year by District staff to ensure that Orange County's groundwater meets or exceeds all drinking water standards. The lab is scheduled for completion in 2009.

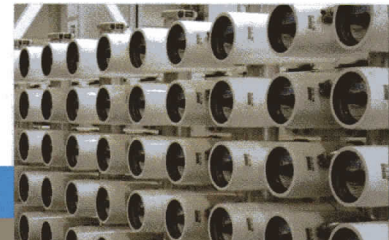
Jan. 10, 2008 The Groundwater Replenishment System becomes operational. The GWR System, a joint project with the Orange County Sanitation District, takes highly treated sewer water and purifies it to levels that meet state and federal drinking water standards. The GWR System provides 70 million gallons of water per day, enough to meet the needs of more than 500,000 Orange County residents. It uses a three-step process that includes reverse osmosis, which is used by manufacturers of bottled water, as well as microfiltration and ultraviolet light with hydrogen peroxide. The water is used to protect the groundwater basin from seawater intrusion, percolating into deep aquifers, where it eventually becomes part of the natural drinking water supply.



AWQA Lab Rendering



Water Quality Lab



Reverse Osmosis System

2000

2008

THE OCWD TEAM

Chris Alvarez, Tyler Anderson, Jesse J. Aragon, Glen Arrieta, Talula Barbee, John Baumdraher, Brice Bettinghausen, Richard M. Bold, David P. Bolin, John Bonsangue, Daniel C. Bott, Michelle Boyd, William Bradberry, Scott Brandon, John A. Bruns, Matt T. Buis, Ramon Camacho, Adrienne Campbell, Adam Canfield, Andre Casasola, Nicole Caudell, John Caughlin, James L. Caver, Alex Cervantes, Flora M. Chang, Howard W. Chang, Frank Chavez, Janice H. Cheon, Darla Cirillo, Steven M. Clark, Thomas Cleghorn, Daniel Cohen, Jason Dadakis, Scott Davidson, Jeremy M. Davis, Rodger DeNecochea, Gina DePinto, Shivaji S. Deshmukh, Pete Doplito, Bruce Dosier, Stephanie Dosier, Frank Duarte, David D. Dubry, William R. Dunivin, Janice M. Durant, Randy S. English, Jill Everhart, Michael Ewing, Darlene Fagan, Aaron Felix, Ruben Felix, Joaquin Ferreyra, David M. Field, Steve Fitzsimmons, Joseph Flint, Eric Freckleton, Betty Freeman, Chris Friberg, Christina Fuller, Eric Gautier, Stephanie Giraud, Joanne Goco, Kevin Greene, Mark Greening, Don Hafke, Jim Hammersmith, Philip E. Harrington, Dave Henry, Josue Hernandez, Roy L. Herndon, Melissa Hill, Rita Hintlian, Scott Hollender, Donald Houlihan, Bonnie Howard, Adam Hutchinson, Ken Ishida, Don Jackson, Lorenzo Jackson, John E. Johnson, Jay Kalinowski, Judy-Rae Karlsen, John C. Kennedy, Jeff Kind, Jeffrey Kirkwood, Thomas Knoell, Linda Koki, Janice Kovacevic, Rae A. Krause, Jim Kutzle, Leticia Lagos, Phuong Lam, Julio Langerica, Brian Lattimer, Anny Lau, Menu Leddy, Patrick A. Lewis, Laura Liang, Benjamin Lockhart, Boyd Lypka, Bruce G. Macomber, Derrick Mansell, Dave Mark, Michael R. Markus, Kimberly Martinez, Chris McConaughy, Lynn E. McConnell, John McGuire, Justin A. McKeever, David McMichael, Craig D. Miller, Jack Miyamoto, Laura Moore, Kaukaba M. Naggarr, Bonnie Nash, Tyson Neely, Anh-Tu Le Nguyen, Derek Nguyen, Nic Nguyen, Tam Nguyen, Thong K. Nguyen, Vickie T. Nguyen, Naomi Nungaray, Ted M. O'Rourke, Kevin O'Toole, Brian M. Okey, Chris Olsen, Michael Olson, Prem Parmar, Mehul Patel, Craig Patterson, Renee L. Patterson, James W. Penella, Ben Peralta, Cesar Perez-Chavez, John Pham, Robert Phillips, Donald W. Phipps, Donna R. Pike, Gina Pineda, Richard Plescia, Robert Raley, Michael J. Riopka, Grisel G. Rodriguez, Benjamin L. Rodriguez, Heinz R. Roehler, Michael L. Ross, Jana Safarik, Michael J. Samples, Lily V. Sanchez, Michael Saunders, Sandy Scott-Roberts, Vishav R. Sharma, Gwen M. Sharp, Catherine Skousen, John L. Souza, Timothy J. Sovich, Charles M. Spade, Esmeralda Steffen, Chuck Steinbergs, Thomas J. Stevens, Timothy Stevens, Donald Supernaw, Russell Sutton, Dianne Swanson, Arthur H. Tabata, Lo Tan, Alexis Tate, Eleanor Torres, Luis Torres, Cheryl Umeda, Valerie E. Vadkerti, Noe Valdez, Ritchie Valdez, Sterling Vamvas, John Vandenberg, Louis Velasco, Patrick Versluis, Alex Vue, Jeff Waller, Karen Warren, Marc Wedge, Sumedha Weertunga, Michael P. Wehner, Marsha Westropp, Gregory M. Wietki, Rose Wilke, Christopher Wilson, Patti Wimmerstedt, Greg Woodside, Judith A. Wooton, Wei Xu, Nira J. Yamachika, Mark Yamamoto, Lee J. Yoo, Gary Yoshiba, Jeannie Young, David Youngblood, Dick Zembal.

2008 OCWD BOARD OF DIRECTORS

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DIVISION 2	Denis R. Bilodeau, P.E. Second Vice President
DIVISION 3	Roger C. Yoh, P.E.
DIVISION 4	Philip L. Anthony
DIVISION 5	Stephen R. Sheldon President
DIVISION 6	Wes Bannister First Vice President
DIVISION 7	Jan Debay
DIVISION 8	Claudia C. Alvarez, Esq.
DIVISION 9	Irv Pickler
DIVISION 10	Shawn Nelson, Esq.

OCWD SECRETARY/GENERAL MANAGERS

1933-1939:	C.A. Palmer, Director
1939-1942:	WM. C. Mauerhan, Director
1942-1945:	W.W. Hoy, Staff
1949-1953:	Dion R. Gardner, Secretary-Engineer
1953-1968:	Howard W. Crooke, Secretary-Manager
1968-1973:	Langdon W. Owen, Secretary-Manager
1973-1986:	Neil M. Cline, Secretary-Manager
1987-2002:	William R. Mills, P.E., General Manager
2002-2007:	Virginia Grebbien, P.E., General Manager
2007-Present:	Michael R. Markus, P.E., General Manager



**ORANGE COUNTY
WATER DISTRICT**

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