

# DECADES OF EFFORTS PAY OFF IN SUCCESSFUL GROUNDWATER MANAGEMENT

- Recycled water & Colorado River water reduce demand on aquifer (page 4)
- A steadfast commitment to saving the desert's most precious resource (page 5)
- Bay Delta Plan modernizes California's water system (page 7)

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Coachella Valley Water District  
& Desert Water Agency



[www.cvwd.org](http://www.cvwd.org)

DESERT WATER



[www.dwa.org](http://www.dwa.org)

Collaborative efforts by Coachella Valley Water District (CVWD) and Desert Water Agency (DWA) have resulted in more than 3.1 million acre-feet (1 trillion gallons) of imported water being replenished into the aquifer since 1973, making the program the most significant tool the agencies have in the ongoing battle against aquifer overdraft.



# Nearly 100 years of groundwater management

**W**hen CVWD was formed in 1918, one of its first actions was to build ponds at Whitewater to capture natural run-off from nearby mountains to help replenish the aquifer. Although there was an abundant supply of water back then, the valley's water leaders showed visionary foresight in managing the aquifer for future generations. Several decades later, in 1961, DWA was formed with the specific goal of increasing imported water to the western Coachella Valley to combat overdraft and ensure a reliable water supply.

That same forward thinking was demonstrated when DWA and CVWD recognized a need to supplement natural replenishment with imported water. The agencies expanded the Whitewater facility and became two of the original 29 State Water Project Contractors to bring imported water from the Sierra Nevada snowpack to jointly replenish the aquifer in the west valley. It wasn't until later that these agencies took on domestic water service. Addressing overdraft took precedent.

"We were actually created to address aquifer overdraft," said DWA Board President Craig Ewing. "Groundwater levels have always been a priority for both DWA and CVWD."

## Imported water supplies

As State Water Project Contractors, the agencies started with a combined 61,200 acre-feet entitlement per year. Additional purchases were made over the years to balance the growing demand on the aquifer. Today, the agencies have a joint entitlement of 194,100 acre-feet per year.

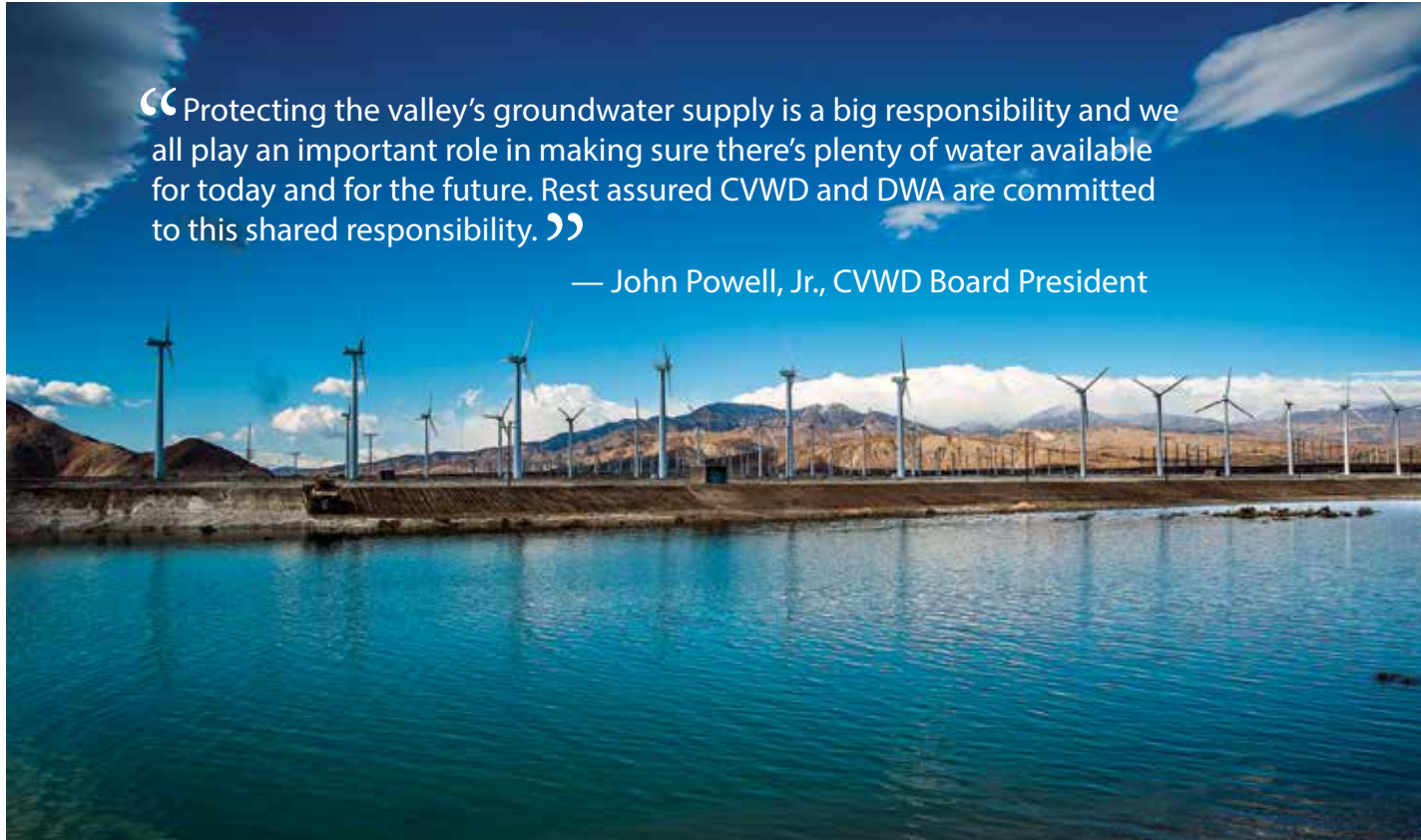
Statewide drought and legal decisions often restrict the amount of entitlement that is actually received. The Department of Water Resources is preliminarily estimating only 5% of allocations will be delivered in 2014, although that estimate may decrease depending on drought conditions. Gov. Jerry Brown officially declared a statewide drought on Jan. 17, urging everyone to increase their conservation efforts.



**Photos on the cover and on pages 2-3:** Water from the Colorado River is diverted into the Whitewater Groundwater Replenishment Facility to replenish the aquifer. CVWD & DWA's groundwater replenishment program is a key component to combating overdraft of the aquifer. The average annual amount of water naturally replenished by rain or snow melt in the Coachella Valley is only 62,000 acre-feet. In 2012, the total groundwater used in the Coachella Valley was 317,247 acre-feet. CVWD & DWA have replenished more than 3.1 million acre-feet at four facilities since 1973.

“Protecting the valley’s groundwater supply is a big responsibility and we all play an important role in making sure there’s plenty of water available for today and for the future. Rest assured CVWD and DWA are committed to this shared responsibility.”

— John Powell, Jr., CVWD Board President



Because there is no physical connection from the State Water Project to the Coachella Valley, the water is traded with Metropolitan Water District of Southern California for an equal amount of Colorado River water delivered from MWD’s Colorado Aqueduct.

To date, the agencies have replenished more than 3.1 million acre-feet (1 trillion gallons) of imported water at the Whitewater facility and a second, smaller facility near Desert Hot Springs. CVWD also operates a separate replenishment facility in the east valley.

#### Long-term water management plan

The Coachella Valley’s future water supply requires a multi-pronged strategy to reduce water use and increase the amount being replenished. These strategies and possible future actions are detailed in the Coachella Valley Water Management Plan (available for review online at [www.cvwd.org](http://www.cvwd.org)). They include:

- 💧 Increase the amount of imported water used for groundwater replenishment. This increase in the use of imported water adds to replenishment efforts that began in 1918 to use natural inflows to replenish groundwater.
- 💧 Continue to provide alternative water sources, such as Colorado River water and recycled water, to large irrigation users, including farms and golf courses.
- 💧 Continue to promote wise water use and conservation through such methods as landscape rebates and other conservation programs.

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Imported water for groundwater replenishment	
Deliveries measured in acre-feet. One acre-foot equals 325,851 gallons.	
Year	Deliveries
1973	7,475
1974	15,396
1975	20,126
1976	13,206
1977, 78	0
1979	25,192
1980	26,341
1981	35,251
1982	27,020
1983	53,732
1984	83,708
1985	251,994
1986	298,201
1987	104,334
1988	1,096
1989	12,478
1990	31,721
1991	14
1992	40,870
1993	60,153
1994	36,736
1995	61,318
1996	138,266
1997	114,092
1998	133,819
1999	93,403
2000	74,263
2001	4,279
2002	40,528
2003	2,632
2004	22,258
2005	195,020
2006	121,508
2007	22,795
2008	15,984
2009	82,849
2010	298,941
2011	290,869
2012	313,839
<b>Total</b>	<b>3,171,734</b>
<b>Yearly Average</b>	<b>79,293</b>



# Coachella Canal reduces demand on aquifer

When Coachella Valley Water District was formed in 1918, approximately 8,000 acres in the valley were being farmed, producing crop values in excess of \$1 million. Farmers irrigated from wells which pulled water from the aquifer, causing the groundwater level to drop. Recognizing the need for an imported water supply, water district leaders embarked on an exhaustive 30-year quest to bring Colorado River water to the valley.

By the 1930s, efforts to build a canal intensified. In 1934, CVWD executed a contract with the United States Bureau of Reclamation to participate in the Boulder Canyon Project, which included the construction of Boulder Dam (now Hoover Dam), All-American Canal and the Coachella Branch of the All-American.

Progress was uncertain, with canal construction halted during World War II, but Colorado River water began flowing onto farmland via the Coachella Canal in 1949. Today, more than 65,500 acres of farmland, up to 75 percent of which is irrigated with imported water, produce crop values in excess of \$575 million.

“Without the canal, the Coachella Valley wouldn’t be what it is today,” said CVWD Board President John Powell Jr. “Dropping groundwater levels would have hurt agriculture and would have prevented the area from becoming a world-class tourist and resort destination.”

Since the first deliveries of Colorado River water in the late 1940s, almost 18.5



million acre-feet of imported water has flowed through the canal into the Coachella Valley. This is equal to almost half of the aquifer’s estimated 39 million acre-feet of storage.

Thanks to the Quantification Settlement Agreement in 2003 between CVWD, the federal government and other water agencies, the amount of imported canal water has increased and will continue to increase for many years. CVWD continues to be a major player in the management and operation of the multi-state Colorado River system and is a member of the Colorado River Board of California, helping to ensure the Coachella Valley’s future Colorado River rights are protected for generations.

This increasing supply will be used to irrigate more crops with canal water instead of groundwater, will provide as many as 30 east valley and 50 mid-valley golf courses with viable alternatives to pumping from the aquifer to keep turf green, and will make it possible for new housing developments to use Colorado River water for landscape irrigation.

In 2011, CVWD celebrated an irrigation distribution system expansion that allowed four agricultural customers to start irrigating their combined 753 acres of land with Colorado River water in lieu of groundwater. The project is saving approximately 3,840 acre-feet of groundwater annually.

Plans for a larger expansion project are currently underway to bring Colorado River water to several customers in the Oasis area. When completed, this project will save more than 30,000 acre-feet of groundwater annually.



# Recycled, Colorado River water used to protect groundwater supplies

Throughout the Coachella Valley, 51 golf courses use recycled or imported water for irrigation, significantly reducing demand on the aquifer.

CVWD first started delivering recycled water in 1968 when it purchased a small wastewater plant at Palm Desert Country Club. Today, CVWD treats wastewater for golf course use at three different plants.

DWA began its recycled water program with the opening of the wastewater reclamation plant in 1988. Today, every public course in DWA’s service area is on recycled water.

Combined, the two agencies deliver recycled water, imported Colorado River water and a blend of the two sources to 51 golf courses, two high schools and a number of parks, medians and homeowner associations.

“Recycling wastewater has been a part of the Desert Water Agency’s mission since 1988,” said DWA Board President Craig Ewing. “By recycling wastewater, we protect the quality of the aquifer and provide an alternative supply to our major landscape customers, such as golf courses and public parks.”

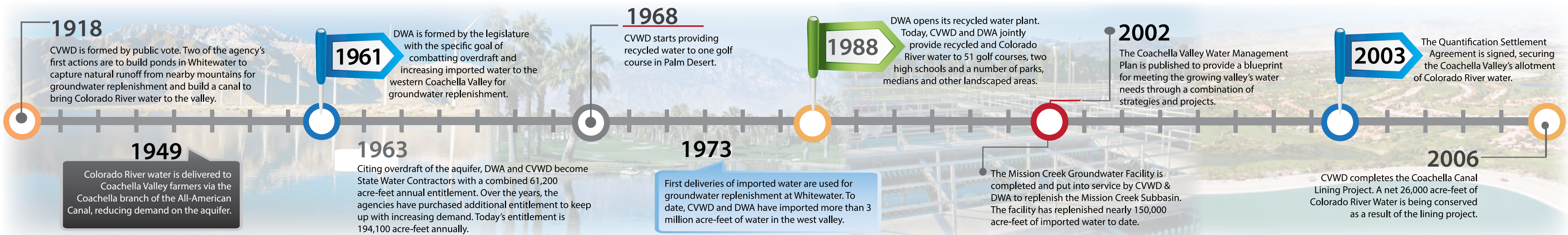
Expansion of the current recycled water program is tricky, as the supply of wastewater, and ultimately the supply of recycled water, is determined by the population. However, supplementing the recycled supply with Colorado River water in the past few years has significantly increased the amount of nonpotable water available.

An additional 50 courses have been identified as future nonpotable water users,



once infrastructure is in place. Recognizing the importance of the golf industry to the local economy, the water agencies are working closely with them to ensure this expansion occurs in a timely manner.

“The golf courses have been very receptive to using recycled water or Colorado River water for irrigation because they understand the need to protect our most precious resource,” said CVWD Board President John Powell, Jr.





# DWA and CVWD lead the way in water conservation

Local agencies offer rebates and other incentives to save the desert's most precious resource

California is on track for one of the driest years on record, making water conservation essential for all Californians. Gov. Jerry Brown officially declared a statewide drought on Jan. 17, urging everyone to increase our conservation efforts.

In the Coachella Valley, we are all too familiar with limited rainfall. We get an average of just three to four inches of rainfall a year. So we must rely on imported water, recycled water and conservation measures to meet water needs of the Valley's more than 400,000 people, its many businesses, golf courses and agricultural operations.

DWA and CVWD encourage customers to conserve this precious resource, and they are leading the way through incentive programs, demonstrations and recycling water (see page 4).

Additionally, both agencies remain committed to conservation education, teaching both adults and children how to reduce their water usage at community events, various speaking engagements and in-school programs.

"In a recent survey, 94% of Coachella Valley residents said they believe water



conservation is important, and almost two-thirds of them thought they could do more to save water," said CVWD Board President John Powell Jr. "Our goal is to provide our customers the information they need to save water and to seek other innovative solutions to ensure we have the water we need to continue to thrive."

Both agencies offer a wide range of tools and information to help their customers reduce their water usage. For instance, DWA and CVWD offer \$100 rebates to homeowners who replace older, less efficient toilets. Both promote the use of smart irrigation controllers, which automatically adjust the watering time based on the weather, in addition to offering free comprehensive irrigation system water audits to large water users to help identify ways to reduce water usage. And both provide water-saving tips on their websites, along with ideas on planting native plants that require less water. DWA and CVWD also have demonstration gardens at agency offices and in the community so customers can come and see first hand how they can save water by using water-wise landscaping.

"We are committed to encouraging conservation by water users – both large and small – to ensure the Coachella Valley will continue to have a safe, affordable and reliable water supply," said DWA Board President Craig Ewing.





# What can you do to reduce your water usage?

Most of the water used in the Coachella Valley is used outdoors. Make sure that you're doing what you can in the yard to stop water waste.

## Outdoor tips



Find and fix irrigation & pool leaks quickly

Water your lawn in the early morning or evening when temperatures are cooler and there is less wind

Check sprinkler heads to assure they are spraying properly

Set your lawn mower to a higher setting; longer grass keeps the soil moist

Weed your lawn and garden regularly



Use a broom instead of a hose to clean your driveway & sidewalks

Turn off your sprinklers when it rains

Use drip irrigation on trees & shrubs

Use desert-friendly plants

Make a difference

Together we can



Change your irrigation controller with the seasons. Grass and plants don't require as much water during the cooler months. Or, make things easier on yourself by installing a smart irrigation controller that automatically adjusts with the weather.

Changing your behavior around the house can save on monthly water bills and help protect our precious resource.



Run the dishwasher and washing machine only when full

Install aerators on household faucets



Find and fix household leaks quickly. Leaks can account for more than 200 gallons of water wasted per day



Thaw food in the refrigerator rather than under running water

Fill the bathtub half full while bathing

Shorten your shower and install an aerator



Don't throw unused water down the drain. Use it for plants and trees



## Indoor tips



To take advantage of the conservation programs offered by your water agency and get more information, please visit:

DWA: [dwa.org/conservation](http://dwa.org/conservation)

CVWD: [cvwd.org/conservation/residential.php](http://cvwd.org/conservation/residential.php)

Other: [www.cvwatercounts.com](http://www.cvwatercounts.com)

### 2008

The Coachella Valley's five public water agencies form the Coachella Valley Regional Water Management Group, to coordinate water resource management efforts on a regional basis. To date, the CVRWMG has secured more than \$10 million in grants/grant recommendations.

### 2009

CVWD opened the valley's third full-scale replenishment facility in south La Quinta with a capacity of replenishing 40,000 acre-feet annually.

CVWD's Mid-Valley Pipeline was completed, carrying Colorado River water to the wastewater recycling plant in Palm Desert to allow the expansion of nonpotable water for golf course irrigation.

The Coachella Valley Water Management Plan Update is published to reflect increased water needs of the growing population.

### 2010

### 2013

CVWD and DWA complete Whitewater Groundwater Replenishment Improvement Project to increase facility's capacity by 100 cubic feet per second – or 66 million gallons per day.

CVWD Board approves design/engineering for an expansion of the Coachella Canal distribution system, which will allow more farmers to convert to Colorado River water and save approximately 30,000 acre-feet of groundwater annually.

# The Bay Delta Conservation Plan modernizes California's water system

*Protecting people, the economy and the environment*

By John Laird  
Secretary, California Natural Resources Agency



contaminate the fresh water supplies for two-thirds of Californians.

**T**hough hundreds of miles away, the Sierra Nevada and the Sacramento-San Joaquin Delta play a vital role in the lives of more than 400,000 Coachella Valley residents.

The Sierra Nevada is home to California's water bank, the Sierra snow pack. As snow melts, it flows into the Delta – the largest estuary on the West Coast and the hub of the state's water delivery system. A portion of this melted snow is captured and transported throughout the state by the State Water Project.

The Coachella Valley depends on the Delta water supply, even without a direct connection to the State Water Project. The Desert Water Agency and Coachella Valley Water District use an allocation of State Water Project water to exchange for an equal amount of Colorado River water that is used to replenish the Coachella Valley aquifer, the lifeline of this region. The future of the Delta and Coachella Valley aquifer are inextricably linked.

The Delta is in crisis – both in the infrastructure that supports water supply and a challenged ecosystem. Currently, the Delta is only protected by 100-year-old dirt levees, vulnerable to a natural disaster that could disrupt this water supply for weeks, months, or years. U.S. Geological Survey seismic experts predict a 63 percent chance of a magnitude 6.7 or larger earthquake in the Bay Area in the next 30 years, potentially causing Delta levees to fail, allowing saltwater to rush in and

With so much at stake, we have a responsibility to modernize this system to protect the public, economy and environment. Making the investment now helps ensure a reliable water supply far into the future, while also preventing the risk of paying for a costly emergency solution after a disaster has already occurred.

The BDCP would utilize today's technology to build two tunnels that could withstand a major earthquake or natural disaster, safely routing water under the Delta, rather than through it.

The project would allow more reliable water deliveries in wet years, enabling regions to store excess water for use in dry years, like we are experiencing now. This plan is not about taking more water; it's about ensuring the existing supply is protected and stable.

The BDCP would not solve all of California's water supply problems. With drought a part of life, water agencies, cities and counties must continue to invest in local water supply development – the same type of investment that has allowed Southern California to grow by millions in recent decades, while still using the same amount of water. Securing the reliability of this water source provides

the foundation needed for other solutions such as conservation, recycling, and storing water from wet seasons to help get through dry ones.

After seven years in the making, the state launched formal public review of the BDCP and its accompanying environmental analysis in December. We encourage all Californians to explore the details of the plan and submit comments, because it is a vital part of the state's water future and a sound investment for current and future generations.

Through this process, we are moving closer to a plan that meets the co-equal goals of the Delta Reform Act of 2009 to provide reliable water supplies to the people of California while protecting the environmental health of the Delta. Please learn more by visiting [www.baydeltaconservationplan.com](http://www.baydeltaconservationplan.com).

## What is the Bay Delta Conservation Plan?

The Bay Delta Conservation Plan (BDCP) is a comprehensive, long term strategy to secure water supply reliability for Californians, preserve and enhance the environment through habitat restoration and restore the health of the Sacramento-San Joaquin River Delta. Coachella Valley residents would benefit from the plan's improved reliability of imported water, which is used to replenish the local groundwater supply.

### WATER SUPPLY RELIABILITY

**25 MILLION PEOPLE**

from the Bay Area to San Diego rely on water from the Delta

California Department of Water Resources

### ECOSYSTEM RESTORATION

**MORE THAN 3 MILLION ACRES OF FARMLAND** rely on water from the Delta

**DELTA FISH AND WILDLIFE** depend upon a healthy Delta ecosystem

### CLIMATE RISK ADAPTATION

**LEVEE FAILURES**

**RIISING SEA LEVELS**

**EARTHQUAKES**

**NATURAL RISKS AND CLIMATE CHANGE**

threaten the reliability of the existing system