

Annual Review 2001
Coachella Valley Water District





LEGEND

- SOUTHERN PACIFIC RAILROAD
- CITY BOUNDARY
- COUNTY BOUNDARIES
- STATE HIGHWAY
- INTERSTATE
- RAILROAD

District service...by the numbers *(As of Dec. 31, 2001)*

General information

Local government agency formed — 1918, stormwater unit, 1915.

Governing board — 5 directors elected to 4-year terms.

Fields of service — Importation and distribution of domestic water; wastewater collection, reclamation and redistribution; regional flood protection; importation and distribution of irrigation water; irrigation drainage collection, groundwater management and water conservation.

Service area — 637,634 acres, 375,658 acres in stormwater unit, lying mainly in Riverside County with territory in Imperial County and a small portion of San Diego County.

Property valuation — Properties within CVWD had a total combined full value in 2001 of \$24,721,628,881 as fixed by Riverside and Imperial County assessors and state officials in charge of utility properties.

Irrigation water service

Colorado River water use in acre-feet

Total irrigable area, acres	78,553
Active accounts	1,385
Total sales	272,169
Average daily consumption	745
Maximum daily demand	1,279
Avg. use/crop-acre (multiple crops)	3.76

System

Reservoirs	2
Storage capacity, acre-feet	1,301
Distribution system, miles	485
Pumping plants	20
Canal, miles	122

Domestic water service

Water use in gallons

Population served	211,000
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Water jargon

Acre-Foot: 325,851 gallons, enough water to cover one acre of land (about the size of a football field) one foot deep. In the Coachella Valley an acre of developed land (houses, agriculture, golf courses, lakes, etc.) typically uses an estimated six acre-feet per year.

Parts Per Billion (ppb): A measurement used by water quality professionals to determine the level of a constituent in drinking water. A reading of 1 ppb is equivalent to one teaspoon of sugar dissolved in 1,297,000 gallons—enough water for a typical Coachella Valley family for six years.

Active meter services	84,400
Average <i>home</i> use, per person/day	246
Summer, per person/day	316
Sales, billion gallons	37
Sales, acre-feet	112,587

System

Active wells	89
Reservoirs	65
Storage, million gallons	107.5
Distribution lines, miles	1,680
Fire hydrants	11,896

Urban conservation in acre-feet

Reclaimed from sewage	13,281
Imported supply since 1973	1,750,210

Water reclamation (sanitation)

Wastewater reclamation plants	6
Daily capacity, million gallons	28.58
Collector system, miles	992
Active services	74,385
Average population served	185,963
Average daily flow, million gallons	15.2
Annual flow, billion gallons	5.57
Annual flow, acre-feet	17,078

Regional stormwater protection, miles

Whitewater River Channel	24
Coachella Valley Channel	24.5
Eastside Dike	25.5
Detention Channel 1	3.25
Detention Channel 2	2.25
Detention Channel 3	1.75
Westside Dike	4.5
Avenue 64 Evacuation Channel	6.75
La Quinta Evacuation Channel	4.5
Bear Creek Channel	3.5
La Quinta Channel	1.75
Deep Canyon facilities	6
Dead Indian Canyon facilities	2.75
Palm Valley Channel	6
East Magnesia Canyon Channel	1.75
West Magnesia Canyon Channel	1.25
Thunderbird Channel	1
Villas Stormwater Channel	.75
Peterson Stormwater Channel	.5
Sky Mountain Channels	1.75
Rancho Mirage Drain system	3
Portola Avenue Drain system	5
North Portola Avenue Storm Drain	1.3

Agricultural drainage

On-farm lines added, miles	3
Total on-farm drains, miles	2,298
District open drains, miles	21
District pipe drains, miles	166
Acreage with farm drains	37,545

September 11 took the complacency out of all of us concerning security issues. Actually, I'm proud to say there never has been much room for complacency when it comes to delivering water to meet the needs of Coachella Valley users.

Routinely dealing with natural disasters such as earthquakes and flooding makes us well prepared to

Safety, quality, availability issues face water users

respond to emergencies. An anthrax scare initiated by a perverted individual several years ago in a cove area department store had the benefit of causing us to look very closely at the security of our domestic water systems and implement safeguards to protect water users.

Of course, turmoil following 9-11 led us to revisit those safeguards and expand on them, as necessary, to protect all of our facilities and personnel. While it would defeat their purpose to publicize what those efforts include, we have spent a significant amount on them so far and you can rest assured your water supply is as safe as cutting edge technology allows.

* * * *

Even though domestic water served by Coachella Valley Water District generally is extremely healthful even in an untreated state, we continue to monitor quality diligently in the district laboratory or by sending samples to outside labs for tests requiring extremely expensive specialized equipment. We also are active contributing funds and loaning specialists to research possible harmful effects and removal techniques of water constituents currently under scrutiny by environmental and health communities.

This year we immediately took a well out of production when the state lowered an advisory action level for perchlorate, a rocket fuel, which occurred in the well in

Safety issues—Cliff Larson, left, CVWD trades and support superintendent, and Gerald Shoaf, CVWD counsel, discuss safety improvements underway at district headquarters. Since Sept. 11, the district has installed more than a half million dollars worth of additional protective measures to secure Coachella Valley's water supplies.

such insignificant amounts it wouldn't have even been measurable a few years ago.

Similarly, the regulatory level for the amount of arsenic acceptable in drinking water is being lowered to the point where it effects some of our east valley wells. A panel of experts, including CVWD's water quality specialist Steve Bigley, was assembled by the federal Environmental Protection Agency to determine the economic impacts of reducing allowable arsenic to various levels. Currently, the district is working with a developer planning a major housing project in the east valley. A dual plumbing system is under consideration where water for household use would undergo expensive arsenic removal and Colorado River water from the Coachella Canal would be piped to the homes for landscape irrigation. In Coachella Valley about 80 percent of domestic water is used outside the home for landscaping and other non-potable purposes.

An update of actions this past year concerning constituents facing government review and a complete domestic water quality report are in this publication.

* * * *

As important as the healthfulness of the water we drink in the desert is the quantity of water available. Most people, rightfully, assume water flowing from their taps is healthful. The same people often ask, "Are we running out of water?" and "If not, why, with all these golf courses?"

The answer to the first question is a deceptively simple, "no". The answer to the second is complex but





Discussing settlement—Congresswoman Mary Bono discusses the settlement of flooding of Torres-Martinez Indian reservation land by the Salton Sea. She addresses participants at a ceremony at tribal headquarters to celebrate the settlement. CVWD, Imperial Irrigation District and the federal government were named in the suit, which was settled in April 2002.

boils down to this—even the valley’s earliest settlers recognized the value of water in a land of no significant rainfall and have worked to conserve it and seek supplemental supplies.

When this district was formed in 1918 the voters throughout the valley mandated that it conserve, protect and supplement the valley’s water supplies. Working with other agencies with similar mandates throughout California and the West, the district brought in water from the Colorado River to irrigate land in the eastern portion of the valley and contracted with the state for water from Northern California to help meet the demand created by the developing recreational industry in the western valley.

Besides importation of supplemental supplies, water leaders determined that extraordinary conservation and reuse measures would have to be imple-

mented to ensure that every drop of water was used to its fullest. More than a half century ago the district’s entire irrigation distribution system and most of its drainage system was built underground with pipelines to reduce water loss. Even today, water is delivered to farms in open ditches in most other agricultural areas.

In the late 1960s the district expanded its fledgling urban water system to include wastewater reclamation and the first reclamation plant the district acquired was recycling cleansed water for golf course irrigation. Today, almost all water is reclaimed from sewage generated in the cove communities and returned for golf course and greenbelt irrigation and other beneficial uses. Most sewage from most urban areas throughout the rest of the United States is still simply treated and dumped into the ocean or a river for disposal.

Coachella Valley’s professional water users—farmers and golf course managers—have long recognized that water efficiency made economic sense and have become world leaders in developing water efficient irrigation and landscaping techniques.

Still, as the population of the West expands, more is needed and we continue to work with other agencies to stretch available Colorado River supplies and better manage Coachella Valley’s water needs.

* * * *

Another issue of concern to all California residents is skyrocketing costs of electricity. CVWD is not exempt

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Cover photos: *The Canyons at Bighorn, a Palm Desert country club, is featured on the front cover, and The Gardens on El Paseo, a Palm Desert shopping complex, on the back cover, show efficient water use landscaping doesn’t have to mean ugly. A Coachella Valley crop of sunflowers is shown on the inside back cover.*



Signing Settlement—
From left, Cindy Parks prepares to notarize the signatures of Gale Norton, Secretary of the Interior, and Tom Levy, CVWD general manager-chief engineer, at a settlement ceremony ending a Salton Sea flooding suit brought by the Torres-Martinez Indians. Bob Johnson, Bureau of Reclamation Lower Colorado River regional director, is on the right.

from energy rate hikes, but our board approved a flexible surcharge—not one arbitrary fixed—to ensure that our customers are not overcharged. This surcharge is adjusted monthly to reflect only those energy costs directly associated with pumping groundwater.

Thus, although district energy costs went up about \$2 million in a single fiscal year, surcharges increased only 1 to 2 cents per 100 cubic feet in areas where electricity is provided by Imperial Irrigation District, and an average of less than 4 cents in most areas served by Southern California Edison. So an average water bill has gone up by as little as 25 cents (IID), and as much as 91 to 92 cents (most SCE areas).

* * * *

Sometimes it is not a lack of water that concerns us but damage caused by too much. Even with an average rainfall of only three inches a year, Coachella Valley faces constant threats of flash floods caused by downpours in surrounding mountains. CVWD serves as the regional flood control agency for much of the valley and has, as funds are available, provided extensive protection for most of the area. Two significant exceptions—where local property owners have been unable to generate the substantial funding required to build flood control facilities—are the Thousand Palms and Oasis areas. With federal and state help, we are nearing construction of works in Thousand Palms and continue to seek solutions to the Oasis problems.

Concerning a flood issue of a different sort, we were thrilled to settle a 20-year-old federal lawsuit with

the Torres-Martinez Indians in March 2002. Ironically, flooding that led to the suit occurred a dozen years before the district was formed; even before the land was given to the tribe for part of its reservation.

Floods in 1905-07 created the Salton Sea. During and after the sea's creation the tribe was given land beneath its waters with the belief eventually it would evaporate. Instead, the sea was maintained by irrigation drainage from Mexicali, Imperial and Coachella valleys. Even though CVWD was named along with IID and the Department of the Interior in the suit, we have worked closely with tribal leaders and the federal government for many years to reach this settlement.

This Review comes to you to keep you informed about issues that affect your water supply. Remember, you have a chance to influence decisions about your water at the polls and open meetings of the board of directors, which are at 9 a.m. on the second and fourth Tuesdays each month at district headquarters, Avenue 52 and Highway 111 in Coachella.

To keep up-to-date on water issues, you also might find it worthwhile occasionally to check our web site: www.cvwd.org

Yours very truly,

Tom Levy
General Manager-Chief Engineer

As the Coachella Valley's urban population continues to grow, so do the demands on CVWD wastewater reclamation facilities. Highlights of expansion in this area during the past year include:

At the water reclamation plant near Sun City, the district doubled the facility's secondary treatment capacity from 2.5 million gallons a day (mgd) to five

Reclamation increases with demand

mgd. This is being accomplished, for nearly \$5 million, by building a 285-foot-by-60-foot concrete chamber that is 20 feet deep. Work began last August and should be completed by October of this year.

During 2001 there were \$12.2 million in improvements to the Palm Desert water reclamation plant, including a tertiary (three-stage) filter system with 15-mgd capacity, a 50-percent increase. Additional improvements include a five-million-gallon storage basin and a chlorine contact chamber sufficient to disinfect up to 20 mgd of effluent. A new recycled-water pump station to deliver reclaimed water for golf course and greenbelt irrigation was installed. It replaces a previous facility that remains available as a backup.

By inserting plastic lining into the existing, iron pipes, 290 feet of sewer line at Monterey Avenue

Checking quality—From the left, Johnnie Woods, wastewater utility worker; Louis Galvan, wastewater reclamation plant operator; and Leon Holiday, sanitation superintendent, check samples at

and Interstate 10 in Palm Desert were refurbished in March 2001. This anti-corrosion process was used on 400 feet of sewer main running along the Whitewater River Stormwater Channel at Frank Sinatra Drive.

Work was completed on a force main line at the Palm Desert plant on Cook Street, a project that will enhance the effectiveness of the district's ability to

extract the maximum amount of reclaimed water possible. Water travels from that plant through the 12-inch line to

another, smaller Palm Desert treatment facility at Fred Waring Drive and Elkhorn Trail. Sludge removed in this process ends up at the mid-valley water reclamation plant in Thermal. This \$3.9 million project began in October 1999 and was completed in January 2001.

Beginning last September and finishing up in February this year, about 3.5 miles of gravity sewer main, ranging in diameter from 12 inches to 33, was installed between Madison Street and Avenue 50, at a cost of \$3,019,100.

As part of cooperative efforts between the district and private ventures, Synagro, Inc., will remove and transport 30,000 tons of biosolids from water reclamation plants in Palm Desert and Thermal after signing a two-year, \$2.37 million contract with CVWD last October.

the end of the wastewater reclamation process. Reclaimed water is delivered for reuse through a purple system to distinguish it from potable water for domestic use.



An important step in reducing California's reliance on Colorado River water has been reached, with Coachella Valley Water District (CVWD) moving forward with its plans to line the still-earthen portions of the Coachella Canal.

Although the district already has highly efficient

Canal lining part of plan to reduce Colorado River use

water delivery systems, and most of its farmers use drip irrigation and other water-saving procedures, CVWD is dedicated to water conservation whenever and wherever possible.

The CVWD board of directors in April awarded an engineering contract for the Coachella Canal lining.

The contract for the actual lining of the canal will be awarded later this year, with about two years of construction expected to begin this December or next January.

Total costs associated with lining the canal are estimated at \$70 million, funded by the State of California, with completion tentatively scheduled for December 2004.

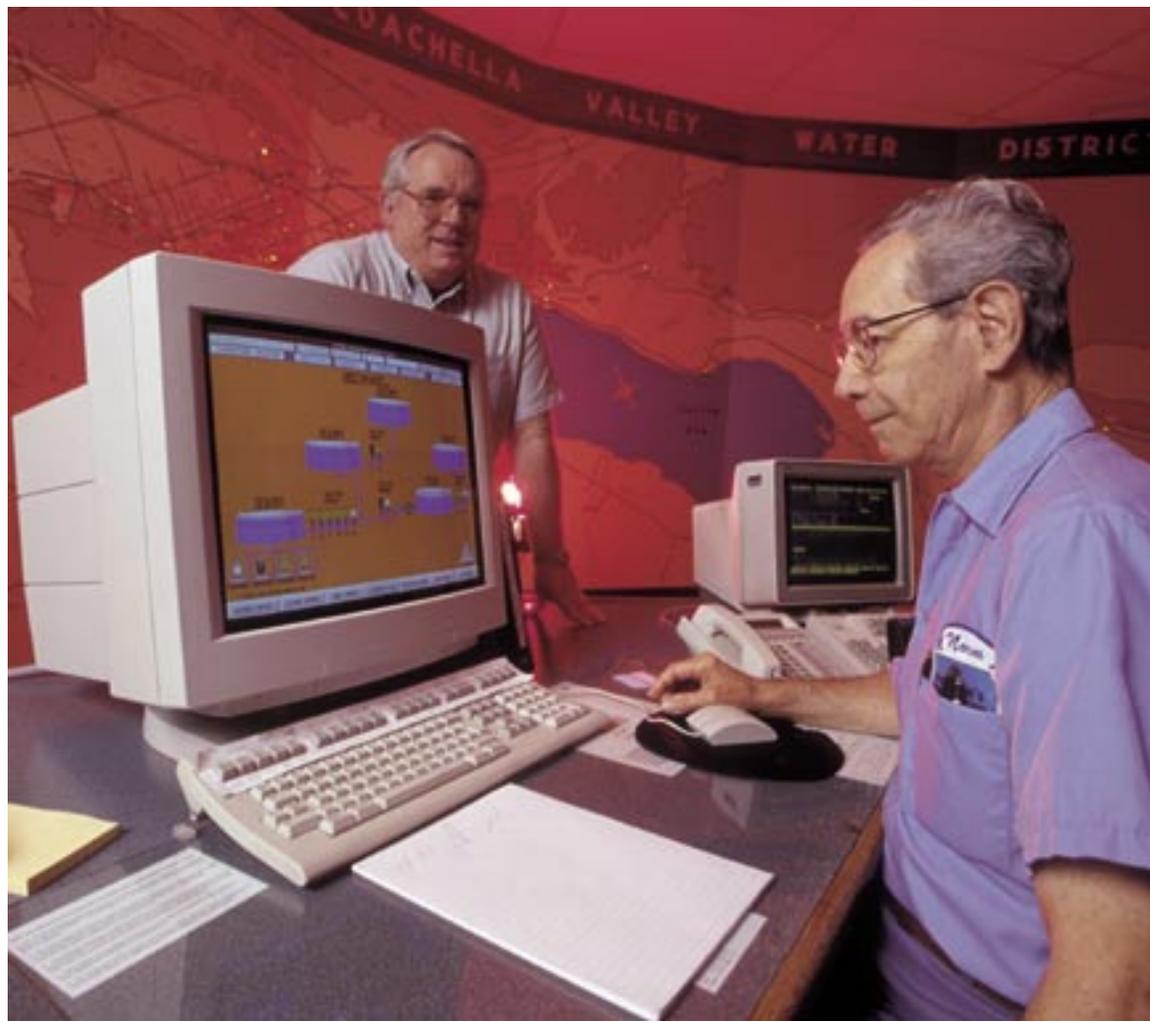
Lining the canal will conserve an estimated 30,850 acre-feet of water annually, most of which will, instead of being diverted into the canal, remain at Lake Havasu for transfer elsewhere in Southern California through Metropolitan Water District's (MWD's) Colorado River Aqueduct.

Water saved by lining 33.2 miles of currently earthen canal is the first of several aggressive conservation measures within Southern California to meet federal requirements that the state eliminate its dependency on excess Colorado River water—as much as 800,000 acre-feet per year—within the next 15 years. Plans call for finding ways to make significant amounts of irrigation water available for urban use.

California's legal entitlement is 4.4 million acre-feet of Colorado River water per year but the state has been using an average of 5.2 million acre-feet annually.

This has been possible because other Colorado River basin states have not been using their full entitlements. Nevada and Arizona, the other two lower basin states, are now using all of their Colorado River water. The upper basin states (Wyoming, Utah, New Mexico and Colorado) that use Colorado River water are not, but their officials want assurances that water from the river will be available to them when needed.

Checking availability—
Scott Coulson, left, service department director, and Norm Ahlefeld, water operations technician, review available domestic water storage from CVWD's control room at district headquarters.





Environmental check—Prior to the concrete lining of the still-earthen portions of the Coachella Canal, biologists from the U.S. Bureau of Reclamation prepare to check to determine which species of fishes have made it their home.

The Secretary of the Interior can make excess water in the river available to California but, in the third year of drought in the Rockies, there is no excess water in the river. Still, the other basin states have agreed that the secretary can continue to declare a surplus for California for 15 years. In exchange, California must meet a tight time schedule for ratcheting down its use of Colorado River water to reach its 4.4 million acre-feet basic entitlement at the end of that period.

In response to these concerns—and the threat that the Secretary of the Interior will cutoff the state’s access to excess if it doesn’t demonstrate genuine progress—the California Colorado River Water Use Plan has been developed.

One aspect of that plan is the Quantification Settlement Agreement (QSA), which as the name indicates, quantifies, or spells out, the exact minimum amounts of Colorado River water to which CVWD is entitled, and the maximum amount entitled to the Imperial Irrigation District (IID).

This quantification helps establish safeguards to ensure agricultural water supplies are not jeopardized by conservation methods elsewhere, which are designed to minimize reliance of Colorado River water.

CVWD’s minimum entitlement will be established at 330,000 acre-feet per year, less the amount of water saved by lining the Coachella Canal. The QSA also provides for the annual transfer of additional, conserved water from IID to CVWD, beginning in 2005 at 2,500

acre-feet and increasing to a maximum of 100,000 acre-feet per year.

Imperial Irrigation District has negotiated with the San Diego County Water Authority (SDCWA) to transfer a portion of its Colorado River entitlement—water it proposes to conserve through various projects and programs—to SDCWA for domestic use in exchange for funds IID will use to finance conservation efforts.

CVWD initially opposed the IID-SDCWA water transfer because of concerns the agreement could jeopardize the supply of Colorado River water into the district; but now supports the transfer provided that the QSA also is approved.

One aspect of the QSA is that it sets IID’s maximum annual Colorado River water entitlement at 3,100,000 acre-feet, less water saved through the lining of the All American Canal.

Everyone associated with the QSA, IID-SDCWA water transfer and scores of other agreements are burning the midnight oil in an attempt to have everything completed and approved by the end of 2002.

The conservation of irrigation water makes it available for urban use, reducing the total number of acre-feet needed from the Colorado River. When all aspects of the QSA are in place, 393,700 acre-feet of water will be transferred from agricultural to urban use.

The Coachella Canal lining is the first actual construction project related to the QSA.

The 122-mile Coachella Canal annually brings about 330,000 acre-feet of Colorado River water into

CVWD's boundaries for use on more than 78,500 acres.

Although the Coachella Valley is experiencing tremendous residential growth, the amount of land used for farm production is not diminishing.

Because 33.2 miles of the canal are not lined with concrete, however, there is an average annual loss of water of 32,350 acre-feet. Actual annual losses range from about 27,000 to 43,000 acre-feet. Even with canal lining, there will be an annual loss of 1,500 acre-feet.

Of the remaining 30,850 acre-feet saved through canal lining, an estimated 4,500 acre-feet will be needed by CVWD to mitigate various environmental concerns created by the canal lining.

This leaves 26,350 acre-feet that can be distributed in Southern California to meet present water demands and assist the state in meeting the goals of the Colorado River Water Use Plan.

The canal officially went into operation in 1949, although it saw some use the previous year, bringing Colorado River water into the Coachella Valley from a turnout from the All-American Canal near California's international border with Mexico.

When the Coachella Canal was built the last (most northwestern) 37 miles were lined with concrete and the entire distribution system to valley farms was through pipelines instead of the more common open ditches.

Later, concerns about higher than acceptable seepage in the first (most southeastern) 49 miles of the canal led to construction of a parallel, concrete canal to replace earthen facilities in 1980. This was a water conservation step tied to Title I of the

Colorado River Basin Salinity Control Act. The federal government continues to use the saved water to meet delivery commitments to Mexico and continues to make the annual repayment cost of the project, which was funded over a 40-year period.

Seepage in the remaining (middle) 34.6 miles of earthen canal was lessened by the presence of clay in the soil, especially the first 15 miles.

An experimental process was used in 1991 to line 1.4 miles with polyvinylchloride (PVC) impervious plastic liner on the bottom of the canal, held in place by a three-inch layer of concrete.

This left about 9 miles northwest of the process and slightly more than 24 miles to the southeast in the original, earthen canal condition.

Work on the Coachella Canal lining was authorized by Congress and signed into law by President Ronald Reagan in 1988, but no federal funding was authorized. Instead, that responsibility rested with California.

Three alternatives for lining the rest of the canal were considered and none could allow for an interruption of irrigation water to Coachella Valley farmers.

The most conventional method was selected, and pipes will be used to divert water around each portion of the canal as it is being lined.

Construction of a parallel canal similar to work done in 1980 was considered, at \$79.1 million, as was the lining of the canal bottom with PVC, estimated to cost nearly \$104 million. But a parallel canal had a greater negative impact on the environment and the PVC process was deemed as too expensive.

Feeding the world—Carrots and other crops harvested in Coachella Valley help feed the nation and the world. Here, some of the nearly 65,000 tons of carrots grown on more than 2,800 acres of Coachella Valley farmland are harvested. Last year the carrot crop added nearly \$15.8 million to the local economy.



Comparative condensed balance sheet

Assets	June 30, 2000	June 30, 2001
Current assets		
Cash in bank	\$2,665,689	\$4,334,352
Accounts receivable, inventory & prepaid expenses	14,732,648	15,497,036
	17,398,337	19,831,388
Deposits & other assets	3,872,287	3,802,694
Property, plant & equipment		
All American Canal & distribution system (participating equity)	\$ 34,874,502	\$ 34,874,502
State Water Plan (participating equity)	74,505,793	84,167,388
Land, facilities and equipment	602,075,579	624,527,376
	711,455,874	743,569,266
Less accumulated amortization & depreciation	(160,763,907)	(174,452,148)
	550,691,967	569,117,118
Construction work in progress	35,676,804	53,171,480
	586,368,771	622,288,598
Investments & other long-term assets		
Assets restricted for development & other purposes	\$224,937,274	246,746,489
Notes & contracts receivable unrestricted	72,741	26,148
	225,010,015	246,772,637
Total assets	<u>\$832,649,410</u>	<u>892,695,317</u>
Liabilities & equities		
Current liabilities		
Accounts payable	\$ 5,700,735	5,989,001
Customers' advances & deposits	15,279,530	13,062,483
Accrued salaries, interest, other expenses, & deferrals	18,044,783	16,716,194
	39,025,048	35,767,678
Long-term liabilities		
Notes payable	\$ 0	\$ 0
Water & sanitation systems acquired	2,340,216	2,048,459
Refunding agreements (construction costs advanced)	113,030	104,820
State Water Plan	10,816,896	14,738,884
	13,270,142	16,892,163
Bonds payable and certificates of participation	42,810,000	39,735,000
	56,080,142	56,627,163
Total liabilities	95,105,190	92,394,841
Taxpayers' equity in assets*	737,544,220	800,300,476
Total liabilities and taxpayer equity	<u>\$832,649,410</u>	<u>\$892,695,317</u>

*Includes the taxpayers' equity in canal and irrigation distribution facilities, pipelines, wells and reservoirs, treatment plants and stormwater facilities. This value includes facilities paid for by others and donated to the district. The value has been reduced by any outstanding debt (liabilities).

Condensed statement of revenues & expenditures

Fiscal year ended June 30, 2001

	Irrigation	Domestic	Sanitation	Stormwater	General	Total
Revenues						
Water sales	\$4,124,086	\$37,025,167	\$ 0	\$ 0	\$ 0	\$41,149,253
Service charges	1,014,458	2,008,695	13,903,466	0	0	16,926,619
Availability charges	887,553	747,020	117,199	0	0	1,751,772
Taxes	496,314	96,717	4,388,628	5,894,802	10,027,759	20,904,220
Interest	815,389	5,010,493	4,076,128	1,739,425	1,723,764	13,365,199
Other revenues	120,004	217,895	584,938	890,096	9,815,117 ⁽¹⁾	11,628,050
Total revenues	\$7,457,084	\$45,105,987	\$23,070,359	\$8,524,323	\$21,566,640	\$105,725,113
Expenditures						
Operation & maintenance	\$3,413,915	\$19,589,590	\$ 8,631,616	\$ 898,695	\$ 0	\$32,533,816
Engineering, administration & general	3,233,604	11,108,451	4,871,650	2,867,411	8,444,160	30,525,276
Contract & bond payments	418	169,265	3,555,465	1,754,526	12,769,866 ⁽²⁾	18,249,540
New construction	613,780	6,329,446	4,930,514	160,119	734,825	12,768,684
Reserves	196,087	7,909,235	1,081,114	2,843,572	(382,211) ⁽²⁾	11,647,797
Total expenditures	\$7,457,804	\$45,105,987	\$23,070,359	\$8,524,323	\$21,566,640	\$105,725,113

⁽¹⁾Most is groundwater replenishment assessment fees—well owners' proportionate shares of the cost of importing water to replenish the groundwater basin. ⁽²⁾Purchase of 7,512 acre feet of additional State Water Project water received in fiscal year 2000-01 funded from reserves.



Improving system—From left, Edward Rivas, domestic production crew chief; Heidi Keeran, human resources director; and Javier Miranda, domestic superintendent, discuss improvements to the system serving Eisenhower Medical Center.

Residents of Coachella Valley have much more in common, water-wise, with their agricultural neighbors than just being inside the boundaries of the Coachella Valley Water District (CVWD).

Everyone within CVWD's 637,634 acres is affected by the water-use actions of others in the district and all

vation efforts are underway, being implemented or in the planning stages?

The answer: groundwater.

Area farmers are being asked to use water from the canal—and the QSA includes provisions that will increase CVWD's annual entitlement, eventually by nearly 33 percent, from the Colorado River—instead of drawing water from local wells.

Were it not for the vast aquifer of sand and gravel located under the surface, the Coachella Valley would remain virtually unchanged from how it appeared one or two centuries ago. Without adequate storage capabilities, it is doubtful even sparse populations of Indians could have survived on the limited amount of surface water available in certain

years from rain and runoff from nearby mountains.

The aquifer creates a tremendous water bank, however, taking in and storing decades of surplus water from the Whitewater River and other sources in wet seasons, making it available during the dry ones.

Agriculture initially was able to take hold in Coachella Valley because of the aquifer's tremendous supplies, accessed through well drilling, but it was not long before farmers noticed the groundwater table was dropping.

This led to creation of CVWD and efforts to protect local water supplies from outside purveyors. The district has been in the conservation business ever since.

Bringing Colorado River water to the valley led to a dramatic increase in groundwater tables, starting in about 1950, but they have been dropping, with a few exceptions, almost every year since the 1970s. Several

Management plan has ag, urban users conserving to make every drop count

will play at least a small, but important, role in CVWD's implementation of a 35-year water management plan.

This plan is designed to identify ways to conserve water—such as getting local governments to adopt a model landscaping ordinance custom-tailored for the desert—domestically, agriculturally and on existing golf courses, while also enhancing CVWD's ability in the future to import water reliably, efficiently and cost-effectively.

There is, for example, a tremendous effort to reduce California's dependency on Colorado River water through complex arrangements such as the implementation of the Colorado River Quantification Settlement Agreement (QSA), yet CVWD continues its efforts to encourage farmers to use this imported source for irrigation.

Why, someone might ask, are farmers being asked to draw more water from the Coachella Canal, which brings about 330,000 acre-feet of Colorado River water into the valley annually, at a time when massive conser-

factors are contributing to this, including residential growth in La Quinta, Indio and other areas of the lower valley, and geological difficulties associated with replenishing the aquifer in the valley's southeast.

In the upper valley, recharging ponds near Windy Point west of Palm Springs are utilized to supplement natural flows of water. Imported water discharged into the ponds soaks into the ground and into the aquifer. Significant development in the upper valley has led to overdraft of the aquifer there, a condition where more water is drawn out of the ground than what goes in.

In recent years, however, annual overdraft in the lower valley has been three times that in the upper. Some of this can be attributed to increased agricultural use, but the lower valley's groundwater table also is harder to recharge because of an impervious layer of clay that blocks water flow to and from the aquifer.

Water poured into the ground in the lower valley cannot soak into the aquifer because of the clay.

Increased agricultural use of canal water reduces demands in the lower valley for groundwater. CVWD also plans to use a portion of additional Colorado River water obtained through the QSA to recharge this lower valley aquifer, and is operating pilot projects to address

replenishment problems created by the 100- to 200-foot layer of clay.

Coachella Valley is not in any immediate danger of having inadequate groundwater supplies, but drilling deeper and deeper wells is expensive and as the groundwater table diminishes, the danger that a condition known as subsidence increases.

Subsidence is the lowering of land elevation, brought about by a variety of factors, including compaction of an aquifer when its groundwater is absent. If groundwater is replenished quickly, land can recover from subsidence. The prolonged absence of groundwater, however, makes subsidence permanent.

In addition to permanent reducing groundwater storage capacity, subsidence can disrupt surface drainage, create fissures in the earth and damage wells, utilities, roads and buildings. Subsidence in this area has mostly been too slight to have such dramatic consequences, and seems to occur at times when wells historically are at their lowest groundwater levels. Subsidence appears to be more pronounced in the lower valley.

The best way to prevent subsidence is to replenish groundwater supplies quickly and reduce overdraft through conservation. Approval of the QSA is expected to help significantly by making water available for recharging within the boundaries of the improvement district for agricultural irrigation. Use of Colorado River water is restricted to this area except through special agreements between CVWD and other water agencies such as the Metropolitan Water District (MWD).

The two agencies already have a "bucket-for-bucket" agreement allowing CVWD to swap State Water Project water for Colorado River water, which is used to recharge the upper valley's aquifer.

The QSA is expected to make more water available for this purpose, and reduce CVWD's need to shop for "surplus" water from other purveyors. As California tightens its belt with respect to Colorado River water, such surpluses are expected to be less frequent, less reliable and more expensive.

This is among the reasons CVWD is adopting a Water Management Plan, which will go far toward addressing the needs for better water conservation and enhanced importation in the next 35 years.

No one aspect of the plan is monumental in scope but collectively represents CVWD's dedication to



Harvesting artichokes—A relatively new crop to Coachella Valley, 800 acres of artichokes produced more than 7,000 tons of produce and contributed \$4.5 million to the valley's economy last year. See the crop table on the last page.



Golf conservation—The “lush and efficient” landscaping of Desert Willow, Palm Desert’s municipal golf course, demonstrates the beauty that can be attained with low water-use native landscaping. Only the playing surface is grass.

Environmental reports associated with the plan are expected soon. Without the QSA, CVWD may face serious threats to Colorado River water entitlement and ability to import water.

The plan to limit California’s annual allocation of Colorado River water to 4.4 million acre-feet includes large restrictions on its availability for urban use, but agencies such as MWD (and the San Diego County Water Authority, a member of MWD) are working on separate agreements that will allow the transfer of previously designated agricultural water for domestic use.

If the state’s use of Colorado River water is restricted and these accords are not in place, purveyors such as CVWD could face a tough time importing water. MWD is entitled to up to 50 percent of State Water Project water, currently at capacity at 2.2 million acre-feet per year. MWD annually is using about 600,000 acre-feet at present, but shortages in Colorado River water could increase that to 1.1 million acre-feet.

This would mean that 500,000 acre-feet of water now available to other agencies no longer would be accessible, making whatever surplus water that is available potentially much more difficult to locate, and more than likely much more expensive.

ensuring that adequate supplies of high quality water continue to be available. Much of the plan focuses on reducing groundwater overdraft and replenishing the aquifer. Persuading farmers to use canal water instead of well water is one example of conservation efforts.

CVWD continues to work with golf courses to increase their use of recycled water or water from the Coachella Canal for irrigation and ornamental purposes. A reducing of seven percent in agricultural use is called for in the plan, as is a five percent reduction for existing golf courses.

Another goal of the plan is to reduce urban water use by 10 percent.

CVWD continues efforts to get local governments to adopt a model landscape ordinance based on the use of vegetation most appropriate for the area—trees, shrubs, groundcover and other plants that are attractive yet use very little water. The state-adopted model landscape ordinance is based on California’s coastal communities and inappropriate for an arid desert region such as the Coachella Valley.

Key Elements of the CVWD Water Management Plan:

Conservation

A 10-percent reduction in urban (domestic) use by 2010

A 5-percent reduction in golf course use by 2010

A 7-percent reduction in agricultural water use by 2015

Groundwater Recharge

Dike #4 Recharge Facilities

Martinez Canyon (Pilot) Recharge Program

Source Substitution

Conversion of lower valley agricultural use from groundwater to canal water

Conversion of Oasis area agricultural use from groundwater to canal water

Conversion of Lower Valley golf courses from groundwater to canal water

Conversion of Upper Valley irrigation systems to recycled water

Municipal (urban) use of canal water

First-time visitors to the Coachella Valley marvel at the almost endless variety of trees, shrubs, flowers, groundcover and other vegetation that seems to be in abundance just about everywhere they look.

Granted, there are large expanses of inhospitable-looking sand and dirt, decorated only with grayish

Lush & Efficient landscaping book now available from CVWD

scrub brush and an odd collection of brown rocks; this is, after all, a desert.

Yet, one need not travel far in any direction to discover oasis after oasis of explosive color and variety in vegetation.

Approximately 80 percent of the average homeowner's water use is in landscaping as many new residents attempt to make plants native to far wetter and cooler climates survive through Coachella Valley summers. Unfortunately, these non-natives make up a high percentage of the inventory of chain nurseries.

Those who live in Coachella Valley year-round know the important cooling aspect of lush vegetation and know that rocks and gravel, attractive in March, can make an oven out of a backyard in August.

To help people reduce water consumption without sacrificing the cooling effects of plant materials, Coachella Valley Water District has prepared a guide for local gardeners.

Most of the guesswork associated with desert gardening has been eliminated with the publication of *Lush & Efficient, Gardening in the Coachella Valley*. This 160-page book is published by the Coachella Valley Water District and features more than 250 color photographs, graphs, charts and illustrations.

The material first was published by the water district in 1988 as a 38-page booklet, and was written by Eric A. Johnson, an expert horticulturist and landscape designer (the "Landscape

Beauty of conservation—Dennis Mahr, CVWD communications and legislative director, and Bernardine Sutton, CVWD secretary of the board of directors, discuss the beauty of conservation at the district's landscaping exhibit at the National Date Festival.

Guru" of Coachella Valley), and David Harbison, an urban water management specialist for CVWD for more than 14 years.

The new version of *Lush & Efficient* has been enhanced dramatically by Johnson and Harbison and was republished by the district last year as a book.

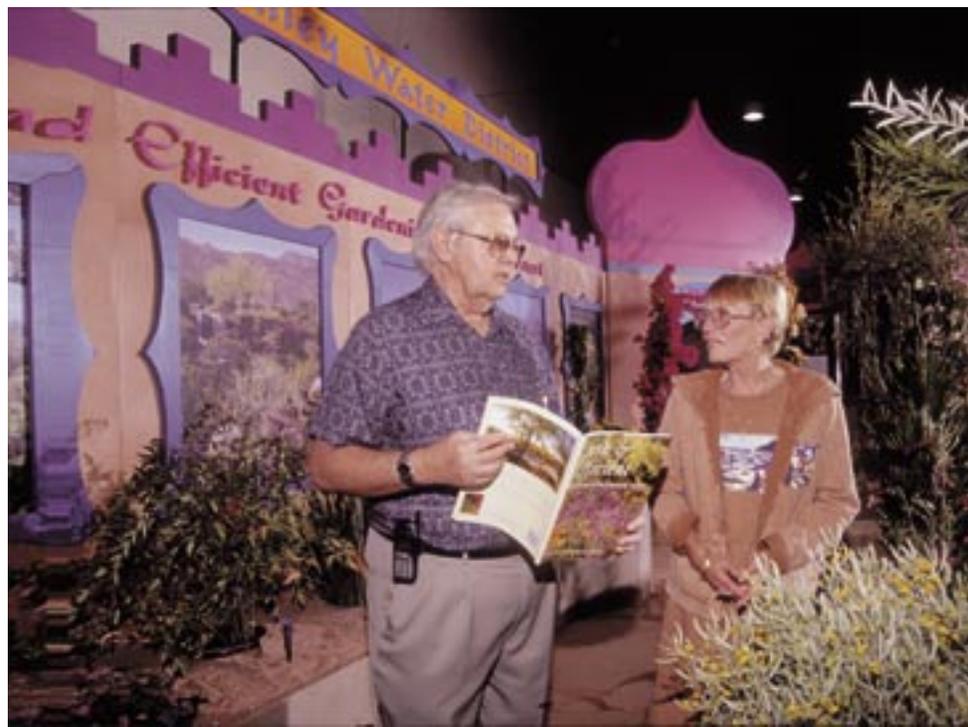
Copies are available from the district for \$10. The postcard in this *Annual Review* features a convenient way to order. Much of the material in the book also is available on-line at CVWD's web site: <http://www.cvwd.org>.

The printed and computer versions of *Lush & Efficient* provide experienced and novice home gardeners with everything they need to know to create and maintain beautiful, landscaped outdoor areas of their homes, in a fashion that conserves water and addresses the often harsh weather conditions of the desert summer.

In one section, there are more than 300 individual plant listings with brief descriptions and guidelines for the amount of sun and water each needs. In another, special gardens and their unique features and requirements are featured.

A significant portion of the book outlines the most efficient ways to irrigate trees, lawns and gardens, including mini oases and containers. A month-by-month calendar gives the gardener an ideal outline of what needs to be done and when.

The CVWD is working closely with communities within the Coachella Valley to adopt model landscaping regulations based on the *Lush & Efficient* approach to gardening. Golf courses, housing developments, public agencies and others often seek the district's assistance when creating new gardens and landscaping or refurbishing existing ones.



Within the Coachella Valley Water District, there has been nearly a 40 percent increase in the number of domestic water users (total meters) in less than a decade. Keeping pace is a never-ending challenge. Projects this past year included:

In Rancho Mirage, \$2.7 million in water and sewer

Domestic water system continues to grow with valley

facility work began in January 2001 and ended a year later within the Cove Participation Assessment District.

Construction involved laying 33,000 feet of 6- to 12-inch cast-iron water pipe, in an area located between East Magnesia Falls and West Magnesia Falls, from Highway 111 south to the top of the cove.

In an assessment district in La Quinta, 11,000 feet of domestic water pipe was installed at a cost of \$1.1 million. Work there also began in January 2001, finished in October and covers two locations, from Calle Estada to Calle Cadiz and in the Westward Ho area.

In Cathedral City, Shifting Sands, Whispering Palms and Sky Blue Water Trails benefited from the installation of 7,000 feet of 6-inch water main by district employees and contract workers. This \$700,000 project began in February 2001 and was completed six months later.

In the lower Coachella Valley, between and including North Shore and Bombay Beach, CVWD initiated a \$150,000 cathodic protection project that will use negatively-charged electrodes to protect 23 miles of 12- to 16-inch steel pipe from rust-induced corrosion.

When this pipe began to corrode, it was found that cathodic protection had not been properly installed in 1966 and an attempt to repair it in 1981 wasn't completely effective. New work began in June 2001 and is near completion.

On Nancy and Carroll drives in the Thousand Palms area, 4,000 feet of 6-inch water main replacement began in May 2001 and was completed, using district and contract workers, within three months at a cost of \$250,000.

Growing to meet demand—CVWD engineers plan a distribution system from new reservoir site. They are, from left, Todd Jorgenson, domestic water engineer; Dan Parks, director of engineering; and Amer Hassouneh, domestic water engineer.

Seven new wells were added to CVWD's system in 2001. One, in Thousand Palms actually was the redrilling of an existing well that had ceased to be productive. This \$250,000 project began in June 2000 and was finished in August 2001.

Work on another well, in Palm Desert on Frank Sinatra Drive, adjacent to Palm Desert Greens in the Shadow Ridge development, was completed after nine months last July and will serve the Sky Mountain area. The site also features a backup generator capable of providing emergency power.

On Desert Stream Road in North La Quinta, work on a \$559,000 well, serving the lower La Quinta pressure zone, began in January 2000 and was completed the following June. Also serving lower La Quinta is a new well at Avenue 48 and Dune Palms Road. Drilling began in July 2000 and was completed in June 2001 at a cost of \$650,000.

The Cahuilla pressure zone near PGA West is served by a new well on the corner of Airport Boulevard and Madison Avenue. This \$650,000 project was started in June 2000 with completion expected this May.

To help handle the additional water drawn from these new wells, four new reservoirs have been added to the CVWD system. A 1 million gallon facility in Palm Desert, near Highway 74 in the Canyons of the Bighorn development, and a 1.5 million gallon facility will serve the upper Palm Desert Cove area. Work on the reservoirs, each costing \$500,000, began in January 2000 and were completed in May 2001.

Another \$500,000, 1 million gallon reservoir in the Rancho Mirage Cove, located near West Magnesia Falls Road, serves nearby commercial users along Highway 111. Work began in May 2001 and finished last January.



Meter installation—Top left, Mike Seems, domestic superintendent, and Ted Fasano, equipment operator, discuss the next step as Jesse McDaniel, construction and maintenance worker, prepares a connection for a new water meter.

Enhancing stormwater protection facilities continues to be a top priority of the CVWD.

A crucial concern for more than 35 years has been Thousand Palms, subject to alluvial fan flooding from rainfall in and around Indio Hills and the Little San Bernardino Mountains. FEMA (the Federal Emergency Management Agency) has mapped the area with potential flood depths ranging from one to three feet.

A CVWD-funded study in 1964 concluded that flood protection for Thousand Palms would cost \$8.5 million, deemed at the time as too cost-prohibitive. A tropical storm (Doreen) in 1977 wreaked havoc on the area and subsequent studies estimated costs at \$70 million in the late 1970s. The need to address the proximity of the preserve for an endangered species, the Coachella Valley fringe-toed lizard, upped the ante in 1989 to an estimated \$170 million for mitigation.

Alternative plans were considered and some federal financial assistance became available in 2000 when President Bill Clinton signed the Water Resources Development Act, which fully authorized the Whitewater River Basin project.

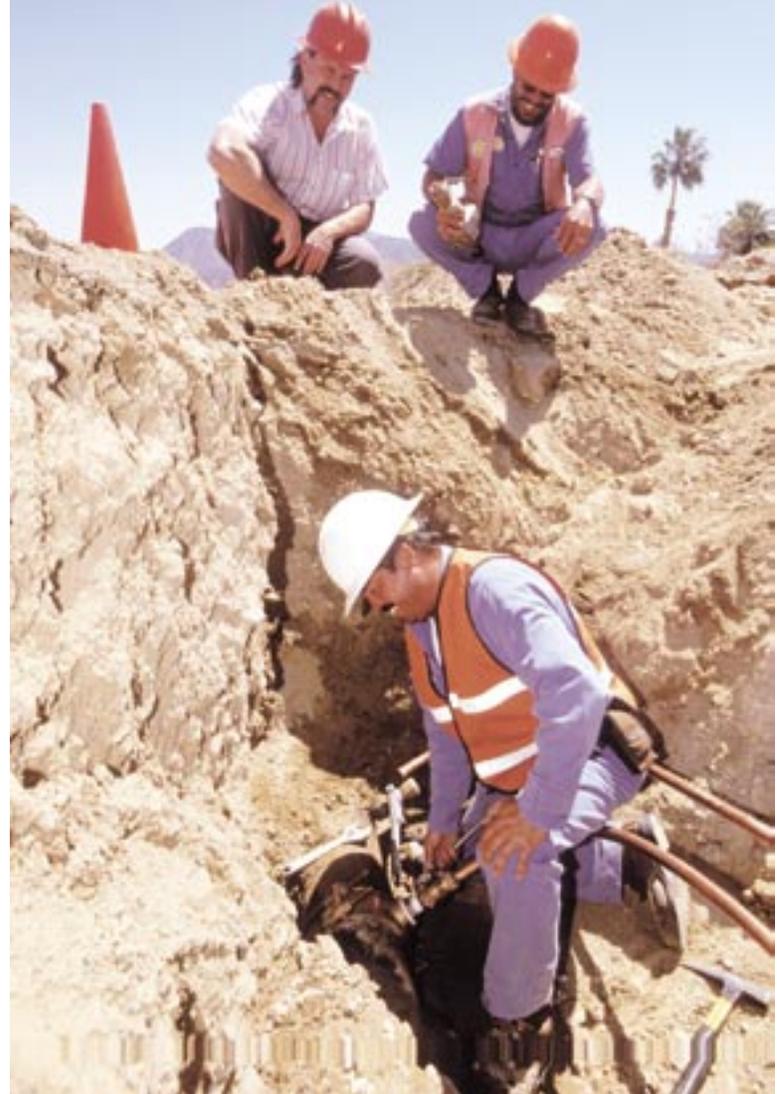
Thousand Palms flood control closer, other areas studied

The \$28.9 million project by the United States Army Corps of Engineers, will protect much of Thousand Palms from flooding. It includes less acreage than originally considered by CVWD, but most of the development in the area is located within the 2,800 acres.

Cooperation between numerous federal, state and local agencies is crucial to the success of flood control efforts, and United States Representative Mary Bono and State Senator Jim Battin played key roles in ensuring that the Thousand Palms project will become a reality.

Four levees and a 550-acre floodway are key components of the project, although the possibility of using channels in lieu of some levees was being considered as this publication was going to press.

The design ensures that the supply of sand that the dunes within the lizard preserve are dependent upon is not interrupted.



CVWD is working to ensure that the amount paid by property owners for the project is less than their annual flood insurance premiums. Sixty-five percent of the project is federally funded, and a state flood control subventions program will pay half of the local, \$10.1 million share.

Redevelopment monies (\$500,000) and developer fees (\$1.5 million) could drop this responsibility to \$3.05 million, which if financed for 20 years at seven percent would be \$103 per acre per year.

Design on the Whitewater River Basin Thousand Palms Flood Control Project is underway, and the actual project could be finished in five years.

A portion of total funding needed is likely to be available on an annual basis.

Too much water in too short a time also is a concern in the Oasis area, near the Salton Sea, which is subject to flash floods from the Santa Rosa Mountains. The most recent significant flooding there was in August 2000 and July 2001.

Existing stormwater facilities there were built more than 50 years ago and were not designed for current conditions. A study found that a regional flood control

system could cost up to \$27 million. Those most likely to be affected decided that the potential expense of a regional system far outweighed possible benefits.

Instead, in an effort to provide financial help to some residents, CVWD contracted for a study outlining in detail the risk of flooding in the Oasis area, and the preparation of FEMA flood-zone maps.

Maps identifying at-risk property are expected to allow those landowners whose property is located outside probable flood zones to become eligible for more affordable insurance.

Meanwhile, CVWD is spending more than \$575,000 to repair drainage channels damaged last year and continues to look for outside sources for infrastructure improvements in the area.

Mecca has an adequate regional stormwater collection system, but heavy clay prevents surface water from soaking into the ground. Standing water creates a myriad of problems and drainage disposal is a serious concern for new housing developments.

As part of a matching-funds agreement with the Riverside County Redevelopment Agency, CVWD

authorized \$100,000 to create a master plan for a stormwater drainage system in Mecca.

To protect existing homes and businesses in an area of Coachella, CVWD will build slope protection on the west bank of the Coachella Valley Stormwater Channel, from Avenue 50 to about 1,300 feet south of Avenue 52. The City of Coachella is paying for the cost of slope protection adjacent to its business park development, south of Avenue 52.

CVWD also continues its negotiations with Cathedral City and The Union Pacific Railroad to alleviate problems in the Morongo Creek area, which is south of Interstate 10 and east of Gene Autry Trail.

In the late 1970s the railroad replaced bridges with a culvert over the creek and Whitewater River, which are dry desert washes except during heavy rainfall. But the culvert installed to replace the bridges was found by FEMA to be entirely inadequate to keep floodwaters from inundating a portion of northern Cathedral City. A new railroad bridge and flood control channel is planned for the area, but discussions between the agencies and utilities involved continue.

CVWD's board of directors and staff are dedicated to ensuring that new water quality standards are

Protecting public health is constantly changing science

implemented, or existing ones modified, as quickly as possible to protect public health.

The annual water quality report appears elsewhere in this publication and shows what constituents were found in water supplies in each of the district's service areas. This past year there were significant changes associated with some of these chemicals that continue to make headlines throughout the country.

Chromium 6

Good, sound science scored a minor victory this past year with respect to chromium.

Chromium primarily exists in two versions—chromium 3 and chromium 6, also known as hexavalent chromium. Chromium 3 is a vital element in the human body, which normally converts chromium 6 to chromium 3 rapidly when it is ingested (acids in the stomach and other parts of the digestive system routinely make the conversion) or absorbed through the skin.

When extremely high levels of chromium 6 are inhaled, however, the chemical is a known carcinogen.

There is no good, solid scientific evidence establishing a correlation between the presence of chromium 6, at levels below 100 parts per billion (ppb), in groundwater and health-related problems.

State and federal agencies set a maximum allowable amount for total chromium—chromium 3 and chromium 6—not just one or the other.

Tests show that most of Coachella Valley Water District's 90 domestic water wells, along with wells in Myoma Dunes, Indio and Coachella, contain traces of chromium 6, all at levels far below the federal and state standards for chromium 3/chromium 6.

Similar testing performed throughout California shows that chromium 6 occurs naturally in many groundwater supplies.

The federal maximum total chromium contaminant level is 100 ppb and the state maximum is 50 ppb.

Recently completed tests specific to chromium 6 show CVWD wells ranging from none detected—to a detection level possible at 1 ppb—to 22 ppb. Three out of every four wells produced less than 10 ppb.

CVWD long has monitored for total chromium but voluntarily, before the state mandated it, used improved technology to look specifically for chromium 6.

Two years ago the California Office of Environmental Health Hazard Assessment (OEHHA) used an

isolated German study involving rodents being fed extremely large doses of the chemical to establish a public health goal of 2.5 ppb for total chromium.

Such goals are not mandatory, but often influence how government agencies establish acceptable levels and set the table for future regulations.

The OEHHA goal did not have the support of the federal Environmental Protection Agency (EPA) and was questioned by its own California Department of Health Services. Those agencies establish maximum contaminant levels.

A University of California panel studied the chromium 6 issue and concluded that data used by OEHHA in setting its goal was seriously flawed.

OEHHA rescinded its public health goal for total chromium and announced its intentions to conduct the research necessary to establish a public health goal for hexavalent chromium only.

Consequently, CVWD operates with the knowledge that its drinking water has chromium 6 levels significantly below what EPA and the state health department deem unhealthy.

Arsenic

Most people have known about arsenic for a long time and realize it is poisonous, certainly lethal, in large amounts. The presence of arsenic in only four CVWD wells—along with significant residential development plans and other circumstances in one area of the valley— will require a unique plan of action by CVWD to address soon-to-be-implemented tougher standards.

Arsenic is a naturally occurring and common constituent of groundwater throughout the world. In some areas wells have recorded natural arsenic levels of several hundred ppb.

For many years the maximum contaminant level for arsenic, at both the state and federal level, was 50 ppb.

Millions in trillions—Lab technician Mike Stenzel, left, explains to Tom O'Reilly, finance director, why it costs so much to search for contaminants so tiny in the water.

The highest amount of arsenic found in any CVWD domestic well was less than half that amount and is not even detectable in most wells.

Debate regarding just how much arsenic is harmful when present in drinking water— especially since there are no good, solid scientific studies to determine whether long-term ingestion of drinking water with less than 50 ppb of the chemical cause health problems—has gone on for years.

EPA, on Halloween Day, 2001, confirmed a future federal maximum contaminant level of 10 ppb.

The EPA will not fully implement the requirement until January 2006, however, and Congress has allocated \$20 million to the federal agency's budget for researching and developing new technologies for removing arsenic from drinking water.

Water purveyors such as CVWD are in a regulatory holding pattern, however, since the California OEHHA has targeted December 31 of this year for a public health goal for arsenic, with the state standard expected in June 2004, which could end up allowing only 18 months for water districts to meet both federal and state requirements, which often are tougher (lower maximum contaminants allowed).

CVWD has seven wells that had detectable (greater than 2 ppb) arsenic—all in the Mecca, Thermal and Valerie Jean areas. One of these is out of service for mechanical reasons, leaving four (three in Mecca, one in Valerie Jean) that likely will reach or exceed the 10-ppb level.

There are at present nearly 1,625 service connections served by the affected wells. A major development is proposed for the area. The district also has a



water service request from Coachella Valley Unified School District for a large school and CVWD is studying ways to provide service to residents now being served by private wells, because of health concerns.

The solution—at least for the major development—may come from the installation of a dual plumbing system. Under consideration for the Kohl Ranch project is a dual plumbing system with canal water available for the outside purposes and a separate, smaller line used to deliver treated groundwater that meets drinking water standards to be used inside the homes.

This will mean that less water will have to come from affected wells, but those facilities that continue at or near 10 ppb of arsenic will need to be shut down, replaced or given the equipment necessary to remove the chemical from the water before it is delivered to domestic customers. If tougher state requirements are adopted, the costs would increase beyond the estimated, annualized cost of \$2 million.

Perchlorate

A Henderson, Nev., industrial site is the suspected culprit in introducing an inorganic chemical, perchlorate, into Lake Mead, the primary Lower Basin storage reservoir for the Colorado River, Southern California's primary water supply.

There is evidence of perchlorate in water tested all along the river below Lake Mead.

Perchlorate has a variety of uses but is best known as a solid rocket propellant. It also is used in fireworks, explosives and some fertilizers. No federal or state maximum contaminant levels are in effect for perchlorate, but in January this year the California Department of Health Services (DHS) lowered its advisory action level for the chemical from 18 ppb to 4 ppb. DHS recommends that wells with 10 times (40 ppb) the action level or more be taken out of service.

On the same day DHS lowered its action level, the Coachella Valley Water District took out of service a well at the southeast intersection of Avenue 54 and Jefferson Street in La Quinta that had recorded perchlorate levels between 5 and 6 ppb.

CVWD also notified the County of Riverside and the city of La Quinta about the chemical and the well closure, which was in the Cahuilla pressure zone within the PGA West development, and one of three wells serving 3,000 homes in the area.

The well site is located within a reasonable proximity to the Coachella Canal, which annually brings more than 330,000 acre-feet of Colorado River water to the Coachella Valley for irrigation use by agricultural interests. Surplus from the canal is stored in soil-and-cement-lined Lake Cahuilla, which is located to the southwest of Coachella and southeast of La Quinta.

The district also recharges its groundwater supplies with water from the Colorado River Aqueduct in a unique exchange agreement with the Metropolitan Water District (MWD). CVWD is entitled to a share of State Water Project water, but does not have the infrastructure necessary to import the water to the district from the California Aqueduct. Instead, it receives a like amount of Colorado River water via the Colorado River Aqueduct, from MWD, which in turn receives CVWD's State Water Project entitlement.

Previous CVWD tests of Colorado River water entering the valley for groundwater recharge for perchlorate have shown 6 ppb as Colorado River water is released into the Whitewater River, but none had been detected at the district's recharge facilities or anywhere in the valley's groundwater.

The state health department took action following a report by EPA reviewing the health risk posed by the presence of perchlorate in drinking water. DHS intends to adopt a perchlorate maximum contaminant level standard for drinking water by 2004, and the California OEHHA released a draft public health goal of 6 ppb. Concerns also are being raised about the impact that the chemical may have on irrigation water, so CVWD officials are monitoring federal and state activity associated with this issue closely.

Radon

The most significant news about radon this past year was that the federal General Accounting Office (GAO) issued a report that recommends that the EPA amend its cost analysis associated with a proposed maximum contaminant level of 300 picoCuries per liter (pCi/L) in water.

Radon is a naturally occurring gas that has been identified as a carcinogen when inhaled. In some areas high concentrations of the gas are located underground, where it finds its way into people's homes by seeping into basements and through the floors. Without the benefit of adequate ventilation, radon accumulates indoors into levels that pose serious health risks.

There is, however, little evidence that radon is a threat through ingestion. Where pockets of radon do exist near groundwater supplies, the gas can hitchhike on well water, then be released into the air through showerheads and other faucets. This results in an almost insignificant contribution to airborne radon levels, so much so that the National Academy of Sciences found that radon in domestic water is not a significant source of the gas in indoor air.

Nonetheless, those same 1996 amendments to the Safe Drinking Water Act that stirred up controversy about arsenic also required EPA to adopt a stan-

standard for the radon by August 2000. As was the case with arsenic, that deadline was not met.

The EPA's proposed standard, under review by the current administration, sets the maximum contaminant level of 300 pCi/L or, if indoor air radon mitigation programs are in place, 4,000 pCi/L, which is equivalent to the surrounding outdoor air radon level.

There are no known significant pockets of radon gas in the Coachella Valley. Radon ranges from 80 to 360 pCi/L in CVWD wells, with the average being about 200 pCi/L. On any given day about a third of the district's wells could exceed 300 pCi/L.

Bringing those wells into compliance with regulations that are not based on good, solid science would double the water bills of the people served by them.

EPA is proposing to offer water purveyors the option of paying mitigation costs instead, funds that would be used to address the presence of radon gas in the air, but it remains unclear what those fees would be for wells registering between 300 and 4,000 pCi/L; and funds collected in Coachella Valley could be used elsewhere, in a radon "hot spot" in another part of the country, retrofitting homes to reduce indoor air radon levels.

CVWD has joined other water purveyors in seeking a maximum contaminant level of 4,000 pCi/L, the same as outdoor air, for well water. All CVWD wells easily would comply with this requirement.

MTBE

MTBE (methyl tertiary butyl ether) is a synthetic chemical added to gasoline to reduce automotive

emissions, thus improving air quality. Because of numerous leaks from service station tanks and other fuel storage facilities, MTBE has become a significant groundwater contaminant throughout California.

MTBE has not yet been found in any CVWD wells, although it is known that the chemical has leaked into the ground at about 40 service stations in the Coachella Valley.

The health effects of drinking MTBE-contaminated waters are still uncertain—it is categorized as a "suspected" carcinogen—but its unpleasant taste can be detected at only a few parts per billion.

The California Department of Health Services has set a secondary standard (one where the presence of MTBE must be reported but no action taken), based on taste and odor, of 5 ppb and a health-based primary standard of 13 ppb. The federal EPA has issued a health advisory on MTBE at 20 to 40 ppb.

Even when older storage tanks are replaced by those with double-linings, there are growing reports that because of other faulty equipment MTBE still finds its way into the ground where it contaminates water supplies.

Eliminating MTBE as an additive seems to be the only solution to contamination problems, but California Governor Gray Davis in March gave state refineries at least another 12 months to replace it—Federal law requires that some form of oxygenate be used in gasoline—with something environmentally safer. Grain-producing states are lobbying for the use of ethanol as a gasoline additive.

This annual water quality report is published to document that extremely high quality and healthful

Coachella Valley residents tap high quality, healthful water

water is served to all constituents of the Coachella Valley Water District.

Data summarized here come from CVWD's most recent monitoring, completed between 1998-2001. The state allows the monitoring for some contaminants less than once a year because their concentrations do not change frequently.

All domestic water served by the Coachella Valley Water District is obtained locally, from wells drilled into the Coachella Valley's vast groundwater basin.

The Coachella Valley Water District is governed by a locally-elected board of directors, who normally meet in public session at 9 a.m. on the second and fourth Tuesdays of each month at district headquarters, Avenue 52 & Highway 111, Coachella.

Most water quality testing is done in the district's state-certified laboratory. A few highly specialized tests must be sent to other laboratories, which have the very expensive equipment necessary to find minuscule amounts of some constituents.

In addition to the detected constituents listed in the tables on the following pages, CVWD's water quality staff of biologists, chemists, engineers and technicians monitor for more than 100 other regulated and unregulated chemicals. All of these are below detection levels in CVWD's domestic water.

“Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline 1-800-426-4791.”
 —California Department of Health Services

“Este informe contiene información muy importante. Tradúscalo ó hable con alguien que lo entienda bien.” —CDHS

While your drinking water meets the current standard for arsenic, it does contain low levels of this constituent. In some wells in the Thermal and Valerie Jean service areas, arsenic in excess of five parts per billion (ppb) and up to 10 ppb have been found. The stan-

dard for arsenic balances the current understanding of the chemical’s possible health effects against the costs of removing the constituent from drinking water. The California Department of Health Services continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations, and is linked to other health effects such as skin damage and circulatory problems.

With respect to the presence of arsenic in drinking water in excess of 10 ppb but less than 50 ppb—which is the case with three wells in CVWD’s Improvement District #10 service area: Mecca and the Eastern Coast of the Salton Sea—the state Department of Health Services warns that some people who drink water containing arsenic in excess of the maximum contaminant level (MCL) during many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

Northern Valley & Western Salton Sea Communities & La Quinta Polo Estates

Detected parameter	MCLG or (PHG)	Water quality standards primary or (secondary) MCL	Indio Hills, Sky Valley & Desert Hot Springs area	Desert Shores, Salton Sea Beach & Salton City	La Quinta Polo Estates	Typical sources
Chloride, mg/L	None	(500)	14-21, (17)	140-231, (184)	14	Erosion of natural deposits.
Chlorine (free), mg/L	None	None	0.1-0.4, (0.2)	ND-0.7, (0.3)	0.1-0.4, (0.2)	Byproduct of drinking water chlorination.
Chromium, ug/L	100	50	12-18, (15)	ND-10, (ND)	ND	Erosion of natural deposits.
Chromium VI, ug/L ⁽¹⁾	None	None	9.1-19, (15)	ND	8.0	Erosion of natural deposits.
Color, units	None	(15)	ND-3, (1.3)	ND-3, (1)	ND	Erosion of natural deposits.
Copper, mg/L ⁽²⁾	(0.17)	RAL=1.3	0.12	0.23	0.11	Corrosion of household plumbing;
Homes tested			11	11	5	erosion of natural deposits.
Fluoride, mg/L	(1)	2	0.5-0.7, (0.6)	0.4-1.7, (1.1)	0.5	Erosion of natural deposits.
Gross alpha, pCi/L	None	15	2.3-10, (5.9)	2.2-6.3, (4.0)	1.9	Erosion of natural deposits.
Hardness (CaCO ₃), mg/L	None	None	120-188, (164)	120-206, (171)	84	Erosion of natural deposits.
Iron, ug/L	None	(300)	ND	ND-130, (ND)	ND	Erosion of natural deposits.
Nitrate (as nitrogen), mg/L	(10)	10	ND-2.0, (0.9)	0.7-1.9, (1.4)	0.5	Leaching of fertilizer, animal wastes and natural deposits
Odor threshold, units	None	(3)	ND-1, (ND)	ND	ND	Erosion of natural deposits.
Selenium, ug/L	50	50	ND	ND-5.9, (ND)	ND	Erosion of natural deposits.
Sodium, mg/L	None	None	58-77, (67)	170-208, (195)	32	Erosion of natural deposits.
Sulfate, mg/L	None	(500)	144-200, (164)	170-265, (210)	36	Erosion of natural deposits.
Total Dissolved solids, mg/L	None	(1,000)	354-496, (410)	650-863, (770)	198	Erosion of natural deposits.
Turbidity, NTUs	None	(5)	ND-1.3, (0.4)	0.1-0.6, (0.3)	0.1	Erosion of natural deposits.
Uranium, pCi/L	(0.5)	20	ND-8.8, (5.1)	ND-7.0, (5.2)	2.0	Erosion of natural deposits.
Vanadium, ug/L ⁽¹⁾	None	None	6.6-20, (12)	20-24, (21)	15	Erosion of natural deposits.

*This table provides the range and average level for detected parameters in CVWD’s water systems. A comma separates the range and average in each field. The highest detected level at any sampling point is in **bold** and the average level is listed in (parentheses).⁽¹⁾Unregulated contaminants are those for which EPA and the California Department of Health Services have not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist both regulatory agencies in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.⁽²⁾Reported values are 90th percentile levels for samples collected from faucets in water user homes. No sample exceeded the regulatory action level.*

Cove Communities

(Rancho Mirage, Thousand Palms, Palm Desert, Indian Wells, La Quinta and portions of Bermuda Dunes, Cathedral City and Riverside County adjacent to these communities.)

Detected parameter	MCLG or (PHG)	Water quality standards, primary or (secondary) MCL	Cove system	Typical sources
Aluminum, mg/L	(0.6)	1.0, (0.2)	ND-0.1, (ND)	Erosion of natural deposits.
Chlorate, ug/L	None	None	ND-44, (ND)	Byproduct of drinking water chlorination.
Chloride, mg/L	None	(500)	5.0-110, (14)	Erosion of natural deposits.
Chlorine (free), mg/L	None	None	ND-0.9, (0.3)	Byproduct of drinking water chlorination.
Chromium, ug/L	100	50	ND-20, (ND)	Erosion of natural deposits.
Chromium VI, ug/L ⁽¹⁾	None	None	1.5-17, (7.1)	Erosion of natural deposits.
Color, units	None	(15)	ND-5, (ND)	Erosion of natural deposits.
Copper, mg/L ⁽²⁾ Homes tested	(0.17)	RAL=1.3	0.13 54	Corrosion of household plumbing; erosion of natural deposits.
Fluoride, mg/L	(1)	2	0.2-0.9, (0.6)	Erosion of natural deposits.
Gross Alpha, pCi/L	None	15	1.0-12, (4.2)	Erosion of natural deposits.
Hardness (CaCO ₃), mg/L	None	None	29-290, (120)	Erosion of natural deposits.
Iron, ug/L	None	(300)	ND-300, (ND)	Erosion of natural deposits.
Nitrate (as nitrogen), mg/L	(10)	10	ND-7.9, (1.5)	Leaching of fertilizer, animal wastes and natural deposits.
Odor threshold, units	None	(3)	ND-3, (ND)	Erosion of natural deposits.
Perchlorate, ug/L ⁽¹⁾	None	None	ND-5.4, (ND)	Erosion of natural deposits.
Selenium, ug/L	50	50	ND-6, (ND)	Discharge of rocket fuel or lubricants.
Sodium, mg/L	None	None	17-100, (26)	Erosion of natural deposits.
Sulfate, mg/L	None	(500)	12-270, (36)	Erosion of natural deposits.
Tetrachloroethylene (PCE), ug/L	(0.06)	5	ND-0.6, (ND)	Discharge from dry cleaners and auto shops.
Total Coliform bacteria, % positive ⁽³⁾	0	5% tests positive	ND-0.8%, (ND)	Naturally present in the environment.
Total DCPA mono & diacid degradate, ug/L ⁽¹⁾	None	None	ND-0.9, (ND)	Leaching of herbicide used on grasses and weeds
Total dissolved solids, mg/L	None	(1,000)	140-730, (222)	Erosion of natural deposits.
Total trihalomethanes, ug/L	None	100	ND-6.5, (1.5)	Byproduct of drinking water chlorination.
Turbidity, NTUs	None	(5)	ND-2.2, (0.3)	Erosion of natural deposits.
Uranium, pCi/L	(0.5)	20	ND-15, (3.7)	Erosion of natural deposits.
Vanadium, ug/L ⁽¹⁾	None	None	4.8-32, (11)	Erosion of natural deposits.

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Radon is a naturally occurring, radioactive gas—a byproduct of uranium—that originates underground but is found in the air. Radon moves from the ground into homes primarily through cracks and holes in their foundations. While most radon enters the home through soil, radon from tap water typically is less than two percent of the radon in indoor air.

The federal Environmental Protection Agency (EPA) has determined that breathing radon gas increases an individual's chances of developing lung cancer, and has proposed a maximum contaminant level of 300 picoCuries per liter (pCi/L) for radon in drinking water. This proposed standard is far less than

the 4,000 pCi/L in water that is equivalent to the radon level found in outdoor air. CVWD tests show the radon level in district wells ranges from 80 to 360 pCi/L which is far less radon than that in outdoor air.

Nitrate in drinking water at levels above 45 milligram per liter (mg/L) is a health risk for infants who are younger than six months old. High nitrate levels in drinking water can interfere with the capacity of the infant's blood to carry oxygen, resulting in serious illness; symptoms include shortness of breath and blueness of skin. If you are caring for an infant you can be assured that your drinking water meets the standards for nitrate. Groundwater nitrate is the most

Thermal, Valerie Jean & Eastern Salton Sea Communities

Detected parameter	MCLG or (PHG)	Water quality standards primary or (secondary) MCL	Mecca, Bombay Beach, North Shore & Hot Mineral Spa	Valerie Jean	Thermal	Typical sources
Arsenic, ug/L	None	50	13- 26 , (18)	8.4	2.4- 3.8 , (3.1)	Erosion of natural deposits.
Chloride, mg/L	None	(500)	6.0-8.4 , (7.6)	9	7.9-11 , (9.5)	Erosion of natural deposits.
Chlorine (free), mg/L	None	None	ND- 0.5 , (0.2)	0.2- 0.7 , (0.3)	0.1- 0.6 , (0.2)	Byproduct of drinking water chlorination.
Chromium, ug/L	100	50	ND	20	17-22 , (20)	Erosion of natural deposits.
Chromium VI, ug/L ⁽¹⁾	None	None	ND- 6.7 , (2.2)	18	21-22 , (22)	Erosion of natural deposits.
Color, units	None	(15)	ND	ND	ND- 1 , (ND)	Erosion of natural deposits.
Fluoride, mg/L	(1)	2	0.8- 1.0 , (0.9)	0.6	0.6- 0.8 , (0.7)	Erosion of natural deposits.
Gross alpha, pCi/L	None	15	1.5-3.6 , (2.2)	1.7	2.4- 2.8 , (2.6)	Erosion of natural deposits.
Hardness (CaCO ₃), mg/L	None	None	13- 21 , (17)	10	41- 43 , (42)	Erosion of natural deposits.
Iron, ug/L	None	(300)	ND	ND	ND- 205 , (103)	Erosion of natural deposits.
Nitrate (as nitrogen), mg/L	(10)	10	ND	0.5	0.5- 0.7 , (0.6)	Leaching of fertilizer, animal wastes and natural deposits
Odor threshold, units	None	(3)	ND	ND	ND- 1 , (ND)	Erosion of natural deposits.
Sodium, mg/L	None	None	37- 46 (43)	43	38- 39 , (39)	Erosion of natural deposits.
Sulfate, mg/L	None	(500)	25-36 , (31)	22	23-25 , (24)	Erosion of natural deposits.
Total Dissolved solids, mg/L	None	(1,000)	120- 153 , (142)	140	152- 162 , (157)	Erosion of natural deposits.
Turbidity, NTUs	None	(5)	0.1- 0.5 , (0.3)	0.1	0.1- 0.2 , (0.2)	Erosion of natural deposits.
Uranium, pCi/L	(0.5)	20	ND- 2.6 , ND	ND	3.0- 3.1 (3.1)	Erosion of natural deposits.
Vanadium, ug/L ⁽¹⁾	None	None	3.3- 28 , (12)	40	23-26 , (25)	Erosion of natural deposits.

This table provides the range and average level for detected parameters in CVWD's water systems. A comma separates the range and average in each field. The highest detected level at any sampling point is in **bold** and the average level is listed in (parentheses).⁽¹⁾ Unregulated contaminants are those for which EPA and the California Department of Health Services have not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist both regulatory agencies in determining the occurrence of unregulated contaminants in drinking water and whether future regulation is warranted.

closely monitored chemical in drinking water and nitrate levels do not change quickly in the district's deep wells, used to supply drinking water. If the nitrate level in a well begins to climb, the district increases its monitoring frequency and, if necessary, wells are taken out of service before they become unsafe.

As noted, all drinking water served by CVWD comes from wells. The California Department of Health Services requires water agencies to state, however, "sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

"Contaminants that may be present in source water include:

–"Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.

–"Inorganic contaminants, such as salts and metals, that can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

–"Pesticides and herbicides, that may come from a variety of sources such as agriculture, urban stormwater runoff and residential uses.

–"Organic chemical contaminants, including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff, agricultural application and septic systems.

–"Radioactive contaminants, that can be naturally-occurring or be the result of oil and gas production and mining activities.

"In order to ensure that tap water is safe to drink, USEPA and the State Department of Health Services (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

"Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (800-426-4791)."

For additional information about CVWD's water, additional water quality data or clarification, readers are encouraged to call the district's water quality specialist, Steve Bigley, at (760) 398-2651, extension 286.

Definitions And Abbreviations

MCL—Maximum Contaminant Level — The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to public health goals or maximum contaminant level goals as economically and technologically feasible. Secondary MCLs are set to protect the odor, taste and appearance of drinking water.

MCLG—Maximum Contaminant Level Goal — Level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the federal EPA.

mg/L — Milligrams per liter (parts per million).

ND — None detected.

NTU — Nephelometric turbidity units (measurement of suspended material).

pCi/L — picoCuries per liter.

PHG—Public Health Goal — Level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California EPA.

Primary Drinking Water Standard — Primary maximum contaminant levels for contaminants that affect health, along with monitoring and reporting requirements.

RAI—Regulatory Action Level — The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Secondary Drinking Water Standard — Based on aesthetics, these secondary maximum contaminant levels have monitoring and reporting requirements specified in regulations.

ug/L—Micrograms per liter (parts per billion).

Agriculture continues to be an integral part of the Coachella Valley, with the Coachella Valley Water District providing irrigation water to more than 1,350 users

Irrigation improvements, replacements continue

across nearly 80,000 acres. Projects this past year to ensure that irrigation water is provided without interruption include:

A reinforced concrete pipe, 60 inches in diameter, was installed in the Oasis area, with construction on the \$625,000 project completed in January. Work began last August and was needed to relocate and

lower existing water lines that had become exposed because of surface erosion.

In the lower valley, 18,500 feet of pipe, ranging from 16 to 36 inches, was installed in a \$700,000 project completed in January. This is the latest phase in CVWD's ongoing irrigation pipe replacement program, which began four years ago.

Included in this project is replacement of 6,270 feet of deteriorated concrete pipe, replaced by 30-inch polyvinyl chloride (PVC) pipe, along Pierce Street between Avenue 60 and Avenue 62; 5,280 feet of PVC pipe also replaced obsolete concrete pipe along Tyler Street between Avenue 48 and Avenue 50.

Canal maintenance—From left, John Burrow, claims and purchasing supervisor, and Steve Robbins, assistant general manager, check progress of maintenance of the Coachella Canal as it flows through Landmark Golf Club.



2001 farm production totals

Calendar year figures for Coachella Valley land irrigated with Colorado River water

Value of year's production \$ 648,240,412

Total acreage irrigated (includes double cropping) 72,335

Average gross value per acre \$8,962

Crop	Acreage	Yield in tons	Value per acre ¹	Total value
Fruit	33,155	289,478.4	\$7,032	\$233,156,912
Cantaloupes	1,059	11,543.1	3,150	3,335,956
Dates	6,723	27,631.5	9,371	62,999,888
Figs	98	123.5	2,568	251,683
Grapes (table)	12,912	93,870.2	7,742	99,971,806
Grapefruit	2,103	26,180.2	4,561	9,592,443
Honeydew melons	69	679.0	3,062	211,303
Lemons and limes	4,391	53,093.8	7,040	30,911,197
Mangos	39	49.1	2,568	100,160
Olives	93	117.2	2,568	238,842
Oranges and tangerines	3,758	30,182.4	4,332	16,280,374
Peaches	35	88.6	1,725	60,376
Tomatoes	552	6,624.0	6,600	3,643,200
Strawberries	148	6,395.8	7,200	1,065,544
Watermelons	1,175	32,900.0	3,825	4,494,140
Vegetables	25,625	362,353.0	\$12,021	\$306,324,784
Artichokes	805	7,041.3	5,624	4,527,578
Basil	256	1,724.4	3,689	944,360
Bell peppers	3,907	106,725.6	51,322	200,515,992
Bok choy	165	1,111.5	3,689	608,670
Broccoli	1,893	13,686.4	3,397	6,429,866
Cabbage	153	1,832.2	2,884	441,188
Carrots	2,845	64,560.2	5,569	15,843,064
Cauliflower	949	8,912.1	5,736	5,443,486
Celery	367	10,273.8	7,452	2,734,885
Chili peppers	156	4,261.4	51,322	8,006,269
Corn (sweet)	3,202	23,870.9	1,804	5,776,760
Cucumbers	58	215.3	4,924	285,573
Eggplant	345	4,115.9	7,277	2,510,669
Green beans	711	3,614.7	6,014	4,276,218
Kale	59	397.5	3,689	217,646
Lettuce	4,650	45,070.1	4,877	22,679,287
Okra	491	2,175.1	4,758	2,336,090
Onions (dry)	480	10,872.0	4,974	2,387,491
Parsley	38	256.0	3,689	140,178
Peas	9	33.4	4,924	44,313
Potatoes	1,158	20,844.0	4,334	5,019,235
Radishes	350	2,357.8	3,689	1,291,118
Spices	591	3,981.3	3,689	2,180,144
Spinach	1,209	17,481.5	6,857	8,289,744
Squash	739	6,675.8	4,399	3,251,093
Turnips	39	262.7	3,689	143,867
Nuts (Pecans)	24	1.3	\$2,568	\$61,641
Forage	3,697	16,715.2	\$420	\$1,553,873
Alfalfa hay	1,704	13,768.3	673	1,147,176
Sudan hay	627	2,946.9	400	250,487
Pasture (irrigated)	1,366	15,435.8 animal units/ month	114	156,210
Cereals (Barley)	176	910.0	\$445	\$78,485
Nursery	1,104	—	\$18,913	\$30,207,591
Duck Ponds	59	182.3	\$15,203	\$896,965
Fish Farms	1,361	4,205.8	\$15,203	\$20,691,011
Golf Courses	5,137	—	\$7,747	\$39,797,816
Polo Fields	371	—	\$7,747	\$2,874,244
Turf Grass	1,626	110,763.6	\$7,747	\$12,597,090

¹Rounded off to the nearest dollar.



Coachella Valley Water District
P.O. Box 1058, Coachella, CA 92236

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