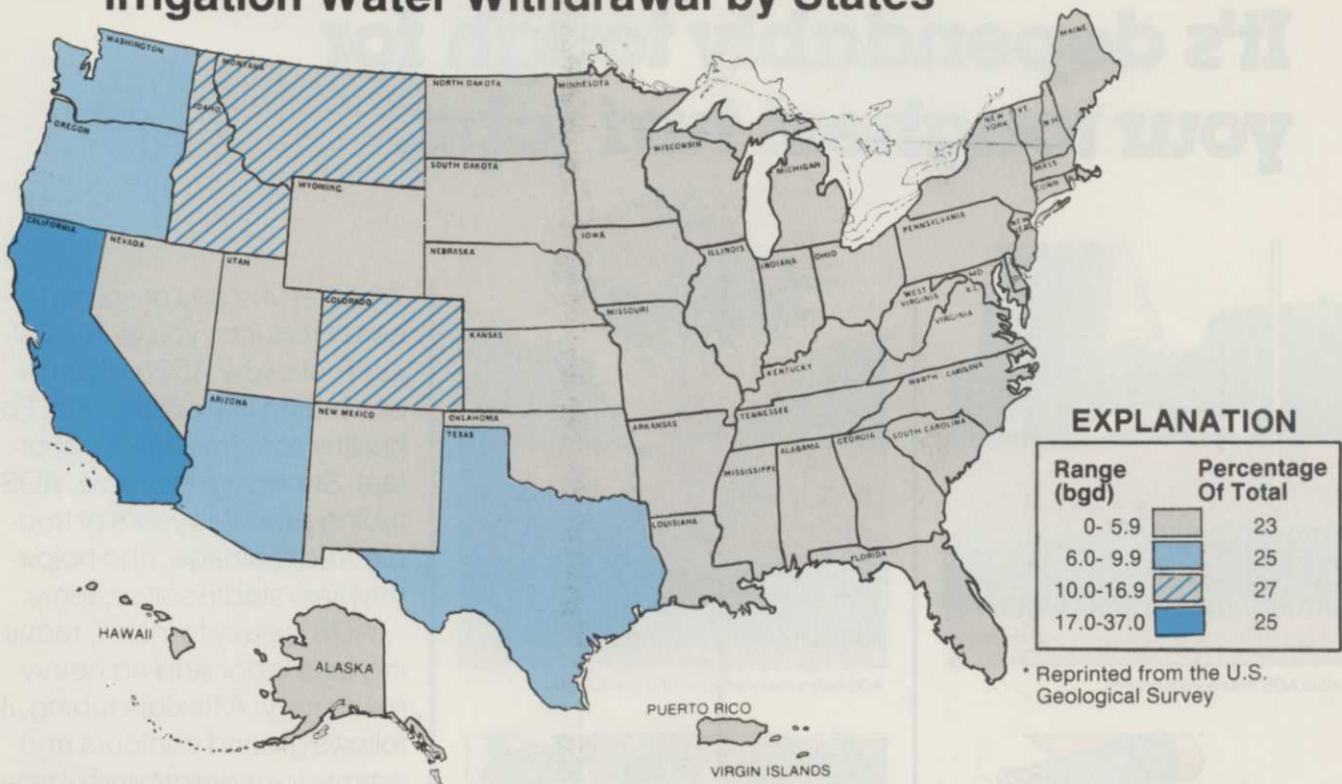


## Irrigation Water Withdrawal by States\*



### TEXAS

# Salt and supply make water problems as big as the state itself

**T**exas is another Pandora's box of water problems.

More pressing is the issue of having enough water. Some suggestions for bridging that problem have been a little grandiose—such as building a canal from the Mississippi River to the high plains of Texas, or pumping water from Canada to replenish dwindling Texas aquifers. Sodium problems are also at the top of the list, especially in the El Paso, Midland, Odessa and Lubbock areas.

Texas has also had to bear a phenomenal increase in growth over the past 10 years, adding another burden to an overtaxed water supply.

One barometer of that growth is the 18,000-acre Dallas/Ft. Worth Airport, the sixth busiest airport in the world.

Jim Dalby is the utilities service coordinator for DFW airport.

"We're doing everything we can to

save water," says Dalby, sitting in his office in the utilities building, a sort of "mission control center" for the airport water operations.

Not far from his office is the central utility plant computer console which keeps tabs on every drop of the nine to 10 million gallons of water used a day by the different functions of the airport. The monster computer terminal can even monitor the depth and flow of the 320-acre-foot Trigg Lake, the airport's major runoff collection reservoir.

"With all the new construction here, we're looking for new ways to impound water with the help of the U.S. Geological Survey," he said.

There are currently five runways with a sixth under construction.

Currently, the Department of Water Resources allows the airport to impound 108 to 120 million gallons of water. With the increasing water de-

mands, the department is petitioning the DWR to impound more because all the concrete in the airport makes the runoff rate much higher.

The runoff water that is collected in Trigg Lake provides the one million gallons a day need to irrigate Bearcreek Golf Course at the Amfac Hotel at the airport's south end. The north end of the airport is slated to get a lake for impounding, but currently uses potable water for irrigation. That water is supplied from Dallas and Ft. Worth.

Dalby and his associates have also been seriously looking at using effluent from industrial waste.

"The more we can reuse, take from the ground and use from Mother Nature, the cheaper it will be for the cities," Dalby said.

In his 11 years with the airport, Dalby has seen "amazing changes."

*continued on page 56*

## Wheat from chaff

Texas has one of the most advanced irrigation licensing laws of its kind in the country.

In 1973, the law, a joint effort of the Texas Turf Irrigation Association and the Texas Board of Landscape Irrigators and under the Department of Water Resources, went into effect. It deals solely with landscape irrigation, and according to Charles Putnam, president-elect of the Irrigation Association, protects the consumer and supply of potable water.

Part of the licensing procedure involves taking a test; part of the test is designing an irrigation system which is graded. The licensing board is aware of water conserving aspects and looks for them on the systems being graded.

Putnam reports that about half of the 900 who take the test a year, pass.

John Heidman, president of Irritech Corp., one of the largest irrigation consulting companies in the country and past president of the Texas Turf Irrigation Association, says half of his fees as an irrigation consultant are in compensation for suggesting a water source for his clients.

"It's important to get water that has not gone through an expensive purification process," said Heidman.

With that in mind, Heidman is working on getting a grant to document a situation he sees repeatedly in Dallas.

There is a 26-story office building in downtown Dallas, one of the hundreds of monolithic goliath's vying for

the city's water and energy supplies. It uses 100,000 gallons of water per day for its 2,600 tons of air conditioning. Evaporation takes 60,000 gallons. The other 40,000 gallons, because it has gone through the air-conditioning system, has been chemically treated and not suitable for reintegration into the city water supply.

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**And then there's the wind. It blows so hard at times, it kicks up enough dust to cause motorists to drive with their lights on in the middle of the day, just to get through the mirky brown/red shroud.**

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"The city water supply bears the brunt of getting the chemicals out of the water," says Heidman. "What we need is a system for recouping water from high rise buildings and processing it, say, at smaller sewage treatment plants to take the burden, and cost, away from the city."

## El Paso problems

El Paso, a southwest Texas city of a half million people, sits in the desert in the shadow of the Franklin Mountains and on the border of Mexico.

Two problems haunt El Paso — salt and the wind.

Eighty percent of the city's water comes from underground aquifers, the other 20 percent from the Rio Grande River. Aquifer recharge is slow because of the high demands put on them. The salinity content of the water is 1/2 that of seawater. Municipal water contains the least, 400 parts per million.

In the summer, 2.8 times more water is used than in the winter. As the water is used up, lower quality water is left. The annual precipitation rate is only seven inches.

And then there's the wind.

It blows so hard at times it kicks up enough dust to cause motorists to drive with their lights on in the middle of the day just to get through the mirky brown/red shroud. It also boosts the evaporation rate up to as much as two inches a week and erodes soil.

The city, though, if nature cooperates, is getting by. The Water Utilities Public Service Board is also trying to ensure its water supply.

Hugh Hickerson, general manager of the WUPSB, said the city is involved in litigation with New Mexico to try to get more groundwater from that state.

"They (New Mexico) have seven to 10 times the amount of good water El Paso has," Hickerson explained, "but because of a New Mexico state statute, we cannot use any."

The board is also building a \$30 million purification plant that, according to Hickerson, will get effluent to "drinking water quality." By the time the plant is completed in early 1985, the residents of El Paso will be drinking treated sewage water.

The Water Utilities Board has also instituted a program among homeowners for using low-water use, native plant materials. Currently 15,000 single family homes are using this type of plant material.

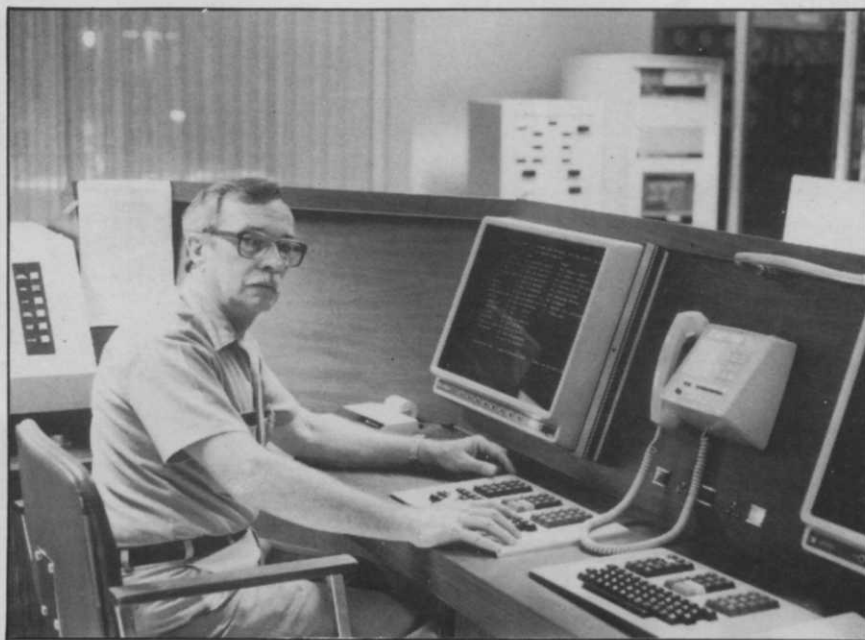
## Desalting an institution

Pat Berger has another type of problem—sodium; not on his lawn, but on the 79-year-old El Paso Country Club.

Rings of salt left from well water dot areas of the course and deposit themselves on the sides of creek beds. The 31-year-old superintendent has his hands full with the 120-acre course. He taps his foot with nervous energy against his metal desk in the maintenance office as he talks about beginning a \$1.2 million renovation program, scheduled to be completed in 1986 or '87.

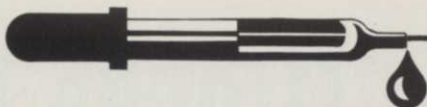
## A unique situation

Having worked in Arkansas and New York, Berger characterizes the El Paso area as, "like no other place I've been.



Jim Dalby, utilities service coordinator for the Dallas-Ft. Worth airport.





What doesn't get watered here doesn't grow."

"Our temperatures can fluctuate 40 degrees between evening and morning," he says. "But sodium is our biggest problem."

There's also a heavy amount of calcium build-up effecting the rate of change of the soil's Ph factor, according to Berger. The Ph range is high (8 to 9).

Berger has a systematic plan for the renovation which includes getting the grass developed first — greens, tees and fairways. His course is predominantly bermudagrass with bentgrass greens.

Another priority is installing a new, \$650,000 irrigation system which will pump 781,000 gallons a night. His water supply is stored in four storage lakes.

"We waste no energy getting water," he said. "We pump right into the system."

Currently, Berger has a quick-coupler system with water supplied from the Rio Grande and the city water sys-

**Salt deposited** along the sides of a trench at El Paso Country Club.

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tem. The club's water allocation from the Rio Grande lasts about seven months. It is quality water, but some weed seeds do filter in. The sodium, level, however, is acceptable. In the winter, he uses well water which contains more salt. The Rio Grande supply depends on the Colorado and New Mexico snowpack melt.

"If Mother Nature is good to us, we get a bountiful supply."

Berger said his present irrigation system is more like a homeowner system. "Our new one will be solid state," he explained. "It will eliminate 90 percent of our current irrigation problems."

Another 20-acre foot lake will be built to increase storage capacity because water is not always available when you may need it. It is being built close to the pump house to be more energy efficient. Another lake will be doubled in size. Berger plans on taking out half of some large cottonwood trees planted by one of his predecessors along one of the lake's edge.

"We'll save about 250 gallons of water per tree. The golfers will still have a canopy and I'll be able to develop specimen trees and get the added water benefit."

There's not much Berger can do

about eliminating the wind.

"From mid-February to mid-May we have very windy weather. We built three greens in-house and the first day we seeded, we had 70 mph Santa Ana winds. It was terrible."

With the wind, as much as 1/32nd of the soil surface can be lost.

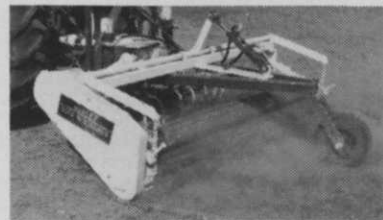
Because of the wind, Berger said having a more natural golf course to save water needed by trees and turf is impossible.

"The sand blowing would cause golfers to have to wear goggles," he claims. "It would become an unplayable situation." **WT&T**

**Next month: Part II—Thirsting for Answers...the Solutions.** The water situation can be turned around with increased research into low water use turfgrasses and ornamentals, Green Industry Association involvement and more efficient equipment from irrigation companies. Next month, WEEDS TREES & TURF will explore those areas in the second and final part of "Thirsting for Answers."

*(Editor's note: Special thanks to Ed Portmann, Portmann Communications, Inc., Irvine, CA; Cindy Martin, City of Boca Raton, FL; and Dr. Ricks Pluenneke, The Plant Pro, Ft. Worth, TX.*

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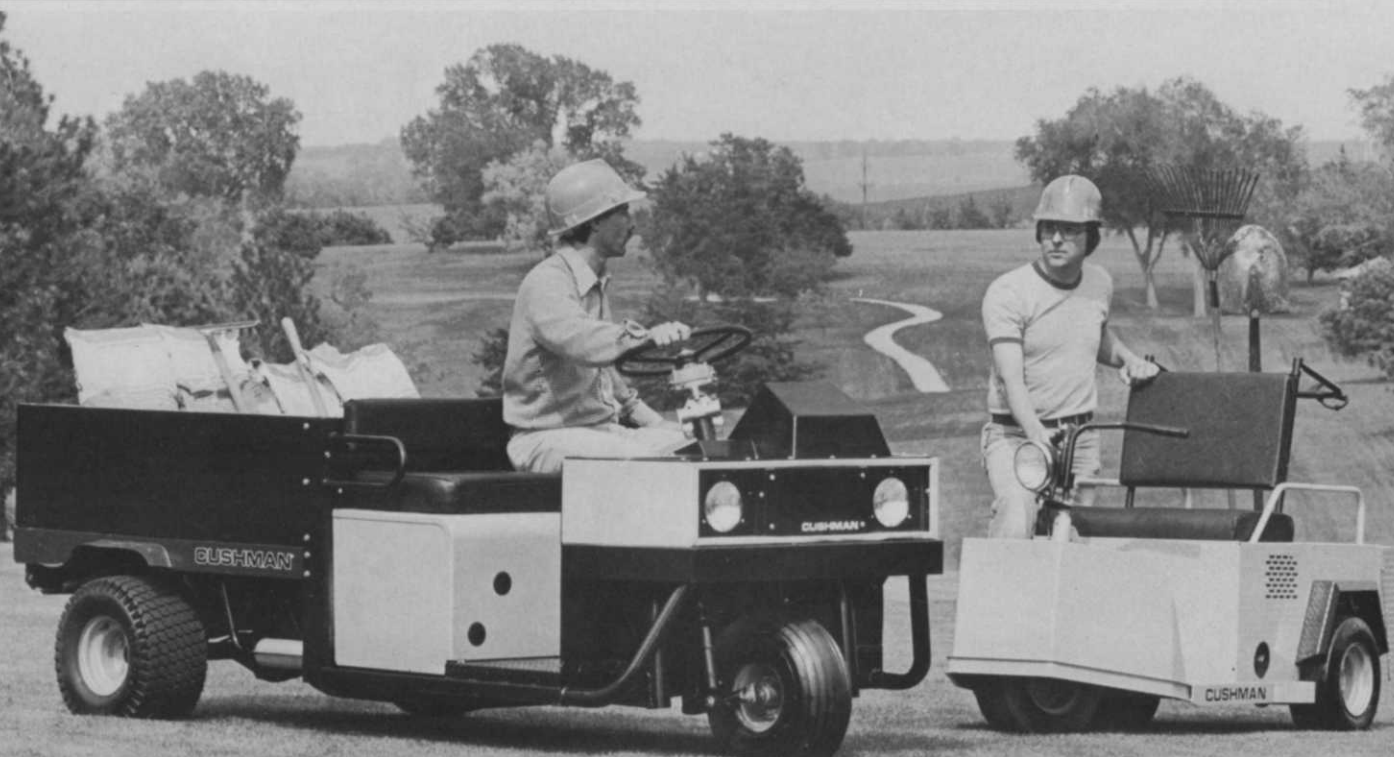
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