

# GOLF 'SCAPING

## Retrofitting for effluent irrigation

**Though a test of patience, this process has its positive long-term gains in the amount you pay for water and in its environmental compatibility.**

■ Mike Huck didn't fully appreciate how frustrating a golf course superintendent's life can become.

That was until he oversaw the retrofitting of an irrigation system to use reclaimed wastewater at Mission Viejo Country Club just south of Los Angeles. This, he readily admits, turned out to be a major undertaking, in spite of the fact that the course had used treated effluent previously. But when the local water reclamation plant closed down to upgrade its treatment capabilities, Mission Viejo had to switch to potable water for a while.

Huck had been hired as its 13th superintendent about a year before this all began happening.

"You start to wonder if it's all worth it just to grow, green healthy grass," he says half seriously.

Huck says that while his course was waiting for the reclamation plant to reopen and again supply it with treated wastewater, a host of new regulations had blossomed.

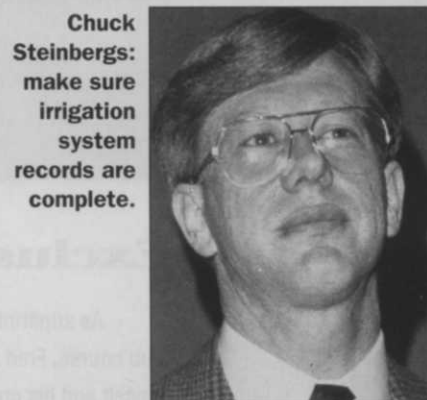
Adding to the frustration, the water reclamation (treatment) plant is located just across the street from the course!

"Our prior permit just wasn't good enough anymore," he says. What followed, in short order, was a seemingly endless scramble to fulfill regulations and inspections.

"When we got ready to ask for the reclaimed water, they wouldn't deliver it to us," says Huck. Not, at least, until the course satisfied every requirement, many of them directed at insuring that the



**Mike Huck:** says don't underestimate complications when retrofitting an irrigation system.



**Chuck Steinbergs:** make sure irrigation system records are complete.

course's potable and reclaimed water are separate. Regulations require strict failsafe measures to guarantee that they stay that way too.

Eventually Huck's irrigation plans had to be filed with the health department, the water district and the state water quality control board.

Chuck Steinbergs, an engineer with the Orange County (Calif.) Water District, in fact, concurs that retrofitting an irrigation system to use reclaimed water can be a lengthy process. It often takes anywhere from six months to a year, he says.

"Don't rush into this project because you'll have to live with it when it's done," he says.

His suggestions:

**1) Confer with a retrofit design consultant.** "You need someone who has gone through the process with regulators, with

the nuts and bolts of design, working with other golf course superintendents," he says.

**2) Keep meticulous records** concerning your irrigation system. "The fewer records we have, the more costly it is to do the retrofit, and the more guesswork there is," he says.

**3) Bring health regulators into the process early.** "It gives you the opportunity to negotiate with the regulators about how things can be mitigated," says Steinbergs.

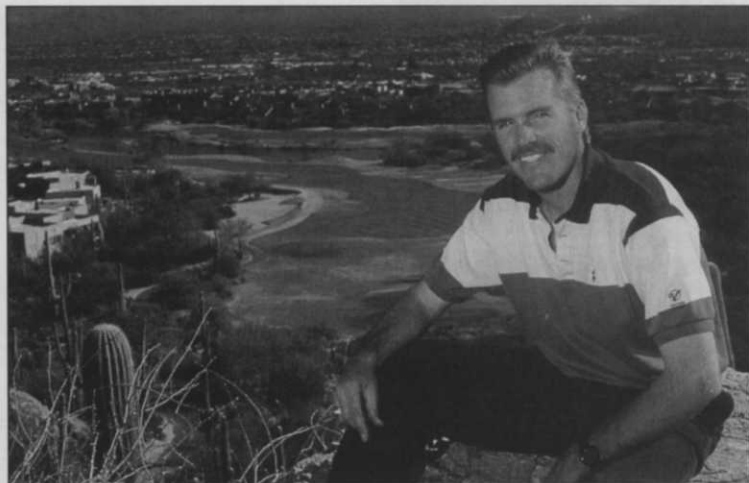
"People here don't need too much convincing about the value of using recycled water, but nonetheless when you get down to an individual user who has economics and a budget to keep, we realize we have to work out something that both he and we can live with," adds Steinbergs.

As it turned out, the cost of reclaimed water, which jumped from \$200 to \$328 per acre-foot from 1992 to 1993, didn't turn out to be one of the more pressing concerns at Huck's Mission Viejo course. Using potable water, which isn't allowed anyway, would have cost \$500 per acre-foot.

Most headaches, he says, were unexpected. For instance, the course's irrigation storage pond had to be drained for a bulldozer to remove 3 1/2 feet of muck from its bottom. In the process Huck said the pond was deepened to 10 feet to hold a three-day charge of recycled water. That work added \$60,000 to the cost of the retrofit.

—Ron Hall

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**Scott Miller, CGCS, Ventana Canyon, is satisfied with quality of irrigation water.**

## Reclaimed water makes gem sparkle

■ Scott Miller is one of the caretakers of an emerald in the mountains overlooking Tucson, Ariz.

He's superintendent of the Ventana Canyon Golf and Racquet Club's two golf courses which are irrigated solely with treated wastewater. This is not a requirement in Tucson. Nevertheless, more and more courses across the country are, like Ventana, irrigating with reclaimed water to stretch limited freshwater reserves, particularly finite groundwater supplies.

Actually neither of Ventana's courses are emerald-green year-round. The bermudagrass tees and fairways go dormant each fall: they turn brown. The bentgrass greens, however, remain green in any season in stark contrast to the surrounding desert.

The two 10-year-old, 18-hole courses split about 80,000 rounds annually, with the semi-private "Mountain" course receiving most play from October to May.

Miller, 33, a Chicago-area native and Texas A&M graduate, can't imagine keeping either course playable (never mind rated among the best resort courses in the nation) without an adequate supply of irrigation-quality water.

But recycled water comes with a price tag.

Miller says his water costs \$400 an acre-foot. By comparison, the costs for potable water in the Tucson area vary widely depending on whether you pump your own or receive it from a water plant at a premium price of \$900 per acre-foot.

(An acre-foot of water is about 325,000 gallons. This is enough to fill 19 average-

sized swimming pools. Flush 63,600 toilets. Supply the needs of a family of five for about one year.)

"In Tucson we have a very high quality wastewater," says Dr. Charles Mancino, of the University of Arizona, pointing to a relative lack of industrial contamination in the area. Also, in Tucson, the reclaimed water is small but significant amounts of nutrients like nitrogen and phosphorus are in it.

This is not the case everywhere. In fact, reclaimed water, which is often also known as recycled water, varies greatly in quality, cost and availability across the country.

—Ron Hall

## Golf courses are water 'recyclers'

■ Tom Benefield, CGCS, says the 600-acre, 54-hole golf course complex he supervises provides a remarkable but virtually unrecognized service for his small corner of southeast Florida.

It helps recycle the area's public water supply.

"We're putting the community's wastewater back into the ground, recharging the local aquifer so everyone can use it," claims Benefield.

That's because turfgrass at the Ballen Island Country Club in Palm Beach County is irrigated with effluent water. Benefield's courses often receive and use four to five million gallons of effluent daily. It would otherwise be whisked out into the ocean or deposited in deep wells.

Even so, water utilities sometimes see waste water as a commodity, says Benefield.

Rather than risk political fallout by boosting rates to those who produce the

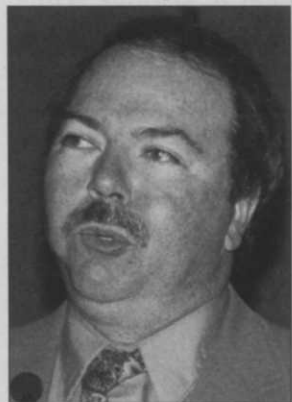
waste water, utilities charge those who reuse it. Prices vary greatly, even within Florida. By Southern California standards, however, effluent at Florida's high end price of even 60 cents per 1,000 gallons would seem to be a bargain.

This is, in part, a function of climate.

South Florida receiving its 50-plus inches of rain annually—more than three times the amount received in Southern California—seems an unlikely area for water shortages. But they occur. That's because most of this rain never reaches public water supplies. It cascades off tile roofs of homes. It gurgles over acres of concrete parking lots and pavement. Finally, it rushes into storm canals to be delivered to the ocean.

"We've lost large amounts of retention, detention and recharge areas to the urban environment. What once used to be large collection basins are now large concrete jungles," claims Benefield.

So, in August 1990 when the South Florida Water Management District (SFWMD) considered a rule requiring golf courses to irrigate with wastewater effluent or face 80 percent water reductions,



**Benefield: Golf courses help recharge water supplies.**

the Florida Golf Course Superintendent's Association (FGCSA) responded.

The result: Benefield ended up on the SFWMD Peer Review Committee, along with representatives from agriculture and industry.

On that committee, he's maintained that golf courses shouldn't shoulder all the responsibility and costs associated with the delivery and reuse of effluent.

"I think our price has already been paid," argues Benefield. "We offer, in south Florida alone, over a billion dollars worth of land to dispose of this material on our golf courses. We offer hundreds of millions of dollars of infrastructure, piping, irrigation heads, pumping facilities to dispose of this water."

—Ron Hall