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Superintendents face the new realities of water quantity and quality

BY JOHN WALSH

Water usage: It's a serious national issue, that's for sure. It's a lot more serious for some than others, but no matter the irrigation situation at the 16,000 or so of golf courses throughout the country, the majority of superintendents are striving to use less water more efficiently. And they're becoming better managers because of it.

It's a popular topic now, but water – both quality and quantity

– has been an important subject in the industry for years. It's been reported that perhaps as many as 1,000 golf courses in the country are irrigating with effluent water now.

"I'd say 95 percent of superintendents are definitely concerned about the quantity of water use," says Dennis Fitzwater, golf course superintendent at the private, 18-hole Corning Country Club in New York. "Today's super-

intendents are more educated about water use. We look at water quality differently than even five years ago. We can treat water or add amendments or surfactants to the soil to adjust pH, lower bicarbonate levels and help water do its job better."

DEALING WITH SALT

Mark Clark is no stranger to the water issues facing superintendents. He's been growing grass

with poor-quality water for years, and it's not getting better. Clark is the golf course superintendent at the 21-year-old Troon Country Club (a private facility not related to the management company). He has been a superintendent for 27 years and has been at the 18-hole club in Scottsdale, Ariz., for 10 of those. He maintains 419 Bermudagrass on the fairways and tees and SR 1020 bentgrass on the greens. He overseeds with

perennial ryegrass, working within a \$1.4-million maintenance budget as he tends to the 65 acres of highly maintained turfgrass (11 acres are part of a driving range). Clark's irrigation source has been city effluent water for eight years. Before that, it was Colorado River water and, before that, potable well water.

In Arizona, water restrictions started in the state's larger cities in 1980, resulting from a groundwater protection act. Currently, Clark estimates that 40 to 45 percent of the golf courses in the state use effluent water for irrigation.

"I have a limited amount of water to use to irrigate the golf course, but I have a 40-percent increase for leaching," he says.

Twenty-three golf facilities are on the same water line as Troon. The effluent water is treated off site at a water treatment plant, pumped to a water distribution system where it's stored until the golf courses need it, and then pumped to the golf courses' storage ponds.

The golf courses in the area paid for the city-maintained water distribution system, which is basically a storage facility. Each golf course on the water line negotiated with the city to pay an extra \$100,000 to have access to cleaner water. Not every course wanted it, but the decision was based on what the majority wanted.

"The cost could put some golf courses out of business," Clark says.

Clark pays \$1.16 per 1,000 gallons of water, spending a little less than \$200,000 annually for water, which doesn't include the electricity needed to pump it.

As a result of effluent water use, Clark has seen a decrease in the

quality of turf because of sodium build up.

"The grass can wilt, look salty, lose color and even die," he says. "It's difficult to establish ryegrass because it's more susceptible to salt than Bermudagrass. The members don't like it, but they understand the water situation."

To improve turfgrass health, Clark leaches greens once a week, but he doesn't leach the fairways because it's too expensive and time consuming. Instead, he relies on aeration, rain and topdressing.

Applying flushing-type wetting agents and topdressing fairways with sand are two popular ways superintendents deal with high salinity, says Clark, who spends \$1,700 an acre to offset the salt in the turf.

Many courses could switch to the usual salt- and drought-tolerant turfgrass, but a bigger problem is establishing cool-season grass when overseeding, Clark says. So, researchers are developing salt-tolerant ryegrass.

"Some breeders are finding positive results," he says. "We're still three to four years away from having something, but once we have that, we'll be ahead of the game."

A DELICATE BALANCE

Lee Bladen's water-use situation is different than that of most golf course superintendents. The superintendent at the 22-hole Old Palm Golf Club in Palm Beach Gardens,

Fla., has two water sources, potable and effluent, both coming from the same utility.

The 3-year-old, Ray Floyd-designed course, which features Seadwarf paspalum wall to wall, sits on a utility company's potable well field. Because of that, the golf course was designed around 18 wells. The majority of the water used to irrigate the course is reclaimed, but potable water is used within 75 feet of every well because the wells can't be contaminated with reclaimed water.

The effluent water lines and potable water lines at Old Palm are spaced 3 feet apart. All the lakes (58 acres) are lined because they hold reclaimed water. There are six irrigation pumps – five for reclaimed and one for potable.

Bladen negotiated a contract with the utility to pay about \$30,000 a quarter, which allows the course to use 1 million gallons of reclaimed water a day. Through another contract, Old Palm has rights to an additional 600,000 gallons at a fee of about \$4,000 a month, which is just

for the right to access the 600,000 gallons. If Bladen uses any of the 600,000 gallons, he pays about 25 cents per 1,000 gallons. In total, Bladen spends about \$200,000 a year for reclaimed water and about \$15,000 a year for potable water. His maintenance budget is more than \$2 million.

Golf courses within a mile of Old Palm use reclaimed water through the same utility, but each has a different agreement, Bladen says. Bladen is allowed to use potable water twice a week, and there's not really any restriction on the amount of reclaimed water he uses, although his usage is driven by cost.

Currently, Old Palm, which has a 33-acre practice facility, is in a drought condition, a modified phase three, Bladen says. Water use reduction is based on formulas that include soil type. The original phase three was to cut back 35 percent of a facility's water use. The grass at Old Palm isn't brown as it was when water use was limited to greens, tees and fairways.



At Troon Country Club in Arizona, superintendent Mark Clark spends \$1,700 an acre to offset salt in the turf. Photo: Troon Country Club

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WATER MANAGEMENT

Lee Bladen, superintendent at Old Palm Golf Club in Florida, negotiated a contract with a local utility to access an additional 600,000 gallons of reclaimed water to irrigate the course if needed. Photo: Old Palm Golf Club



"Last year, it got dangerously low to where we almost couldn't pump," Bladen says. "It was rough. I fought like hell to get more water. Now we're locked into an agreement. I have to make the best use of water, or I'm fighting a losing battle. Even though we're not restricted by the South Florida Water Management District, I still need to impose self restrictions."

At Old Palm, which is owned and managed by WCI Communities, the landscaping around the property is irrigated with a half million gallons of reclaimed water a day, and the golf course is irrigated with the same amount. Bladen's maximum a day is 1.6 million gallons, though he doesn't use it all.

"I'm drying up in some areas," he says. "I send out a newsletter to members to let them know what's going on. Everyone's well educated about the water issue. There are some golf courses on the other coast that are only allowed to pump 150,000 gallons a day. It's ugly. Last year, before I was able to get an extra 600,000 gallons, I was pumping 375,000 gallons a day for 110 acres."

Bladen also is looking at reducing the amount of highly maintained acres on the golf course, a practice that is part of the Audubon Signature Gold Program.

More recently, Bladen installed subsurface moisture sensors, which he can track on the computer, to help use water more efficiently. They determine when and what to water.

"I'm working all the time to reduce water use," he says.

LOOKING AHEAD

Because the water situation in Scottsdale is so serious, the city agreed never to build another golf course in the city limits, Clark says. If a course was built before 1985 and had access to well water, it has been allowed to keep using the well water to irrigate because of a grandfather clause that's part of the new water regulations. But that

right will be lost in the future, Clark says.

"They will fight hard, but politics will make them give it up despite the water law," he says.

Despite water-use concerns, the amount of groundwater in the Scottsdale area has actually increased because the city is taking renewable water and is putting it back into the ground, Clark says.

"It's all about how quickly we can turn water around," he says. "If you speed up the use cycle from tap back to tap, we'll have more water."

It's no question water is the No. 1 issue facing superintendents in Arizona – everything else is secondary, Clark says.

"More people are going to demand clean water, which is why the cost of water will increase," he says. "Water is the cheapest commodity in the U.S., yet it's considered a rare resource. I don't get it. We're going to see more of that, even in the places that have water, because effluent water is a commodity people can sell."

When it comes to water use and conservation, Arizona is ahead of the curve because it started regulation in 1980, Clark says.

"We've learned to manage," he says. We don't have 120-acres of turf on our golf courses. But I worry whether water will restrict golf course development in the future. That will be a difficult trend to overcome in a lot of parts of the country."

In the end, water use will change the way superintendents maintain golf courses. Some changes will be more severe than others based on location.

"I know there are superintendents suffering, but they're also becoming better," Bladen says. "They're also working harder because they have to make water go farther."

Clark predicts an even more drastic change.

"It's becoming very difficult to grow grass with poor water quality," he says. "I see us playing on synthetic grass in the future." GCI