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The Politics of Water

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"Jack wants the course as hard as it can be," McBride says. "He wants the fairways to run, and he wants firmness in the greens."

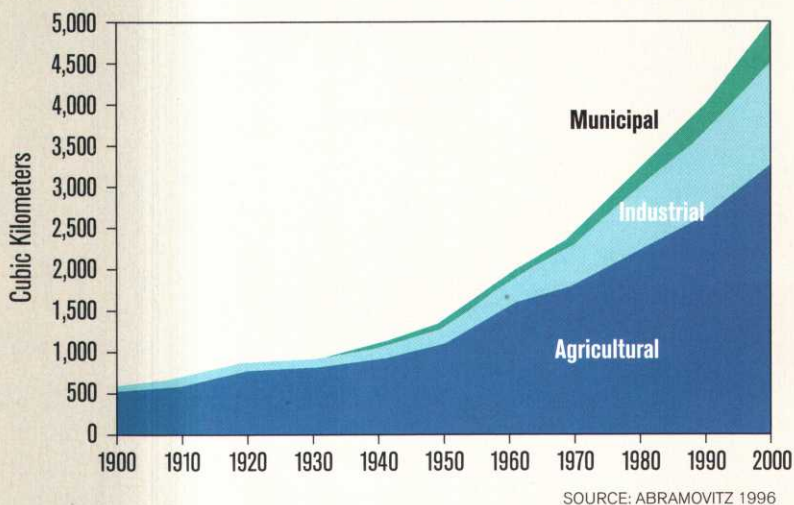
How does McBride convince Muirfield's members that a hard and brown course isn't so bad for golf? Simple: You must take the time to explain it to them, McBride says. "I try to communicate to members what we're trying to do, and what Jack would like this club to be," McBride adds.

McBride achieves that through conversation, and the word eventually spreads among members. It helps that McBride can drop Nicklaus' name when educating members on the benefits of a dry golf course.

"If you're on the dry side, your course is going to play shorter — and members want to get as much roll as they can," McBride says of Nicklaus' playability philosophy.

McBride admits there's a fine line between maintaining a good-looking

Global Annual Water Withdrawal by Sector, 1900-2000



course and a track that looks like it's begging for rain.

"You don't want to get to the point where it looks like you're not taking care of the property," McBride says. "You have to time your watering with anticipated rain."

Charlie Fultz, superintendent of the

Country Club of Culpeper in Culpeper, Va., says he would rather have his course a little dry than a little wet. "If that means the turf has to be a little off-color, then so be it," he says.

Like Slattery, however, Fultz feels pressure to keep the course a near-perfect green. He says many superintendents suc-

Simon Says: Golf Courses Need to Do Their Part to Conserve Water

Paul Simon (the former U.S. senator, not Art Garfunkel's singing partner) says he's a tennis player, not a golfer. But Simon, an environmentalist, knows enough about golf to say the industry needs to use less water to green up its golf courses.

Simon, senator from Illinois from 1984 to 1997, knows something about water — specifically an impending freshwater shortage he says will greatly affect the world. In 1998, Simon wrote a book about the subject: *Tapped Out: The Coming World Water Crisis and What We Can Do About It*.

In *Tapped Out*, Simon says the world is heading toward a "grave" water crisis. He also says regional wars could be fought over water. "Ultimately, that would affect golf because it would affect everything," Simon says.



Paul Simon

Simon says he heard criticism from environmental groups and others that the golf industry uses too much water, especially in the water-depleted West. Simon has no proof to back the claims but says, "There's a feeling that we must discourage construction of golf courses in areas where there are water shortages, like the Southwest."

Simon points out that the United States has 4 percent of the world's population and 8 percent of its freshwater supply.

"But it's not evenly distributed here," he adds. "That's why cities like Las Vegas and Phoenix face problems. They're sunny areas where people like to retire and play golf, so you have built-in conflicts there."

Simon says more education on the water crisis is needed, and not just for people in the golf industry. The public —

from the country's leaders to its citizens — needs to take the water shortage seriously. "The sooner we adjust to the problem, the better off we'll be," he adds.

The golf industry must do its part, Simon adds. "The golf industry has to be willing to change its methods of preserving its greenery."

That may involve desalinization, of which Simon is a proponent. Ninety-seven percent of the world's water is seawater and needs to be utilized for consumption, not to mention golf course irrigation, Simon says. Desalinated water is expensive, but its cost is decreasing, Simon contends.

Simon says municipalities have begun to charge more for fresh water to get people to conserve.

"The old market system works," Simon says. "When the price of gas goes up, people drive less."

— Larry Aylward, Editor

cumb to members' demands and "push the limit of how green their courses can be," which is not a healthy approach.

"When a Scotsman sees how green golf is in the United States, he says, 'That's not how golf is supposed to be,'" Fultz relates. "I agree. I don't like that your course is considered to be in awful shape if you have a patch of brown on it."

Fultz says it's time superintendents unite with pros, architects and others in the industry to educate golfers that brown isn't bad and that using less water on courses is more environmentally sound.

"All of us must be involved [in the education process]," Fultz stresses. "Superintendents can't do it by themselves."

No they can't, echoes Troon's Clark, who insists education must start with the PGA Tour. He says golfers' views about green won't be changed until the PGA Tour allows them to see brown turf on television every weekend — and feel good about it.

"The PGA tour *has* to educate," Clark adds. "End of story."

In the near short-term, however, it could be politics and economics that dictate freshwater use, educating golfers in the process. If the country is experiencing widespread drought in a few years, expect the government to flex its muscle. However, don't expect the government to demand cuts of fresh water to grow crops, Clark says. Politicians will summon the "non-essential recreation industry," which includes golf courses, to decrease its freshwater use.

If a fresh and potable water shortage leads to increased prices, which it already has in some areas, many golf courses will be forced to use less water for financial reasons. "If we get in a prolonged recession, you're going to see more superintendents minimize water use because of cost, not because they want to save water," Clark says.

The bottom line, Slattery says, is that more people in the industry need to take the water crisis seriously — now. "Hopefully, we have enough foresight as an industry to tackle this problem," he adds. ■

The Word on Water

Superintendents and others provide their takes on potable and freshwater issues:

"The industry uses too much water. When we see a problem, we throw water at it, instead of trying to delve deeper into it. I think the population boom is going to make us realize even more that there's a water crisis."

— **Charlie Fultz**, superintendent of the Country Club of Culpeper, Culpeper, Va.

"Superintendents are not aware of how tight water restrictions could become."

— **Brian Vinchesi**, president of Irrigation Consulting, Peperell, Mass.

"The industry needs to do everything it can to be more efficient in terms of water use. Some courses are very efficient, but my guess is there are a lot of courses that aren't very efficient."

— **Paul Parker**, executive vice president of the Center for Resource Management, Salt Lake City.

"The whole issue of water — the way you hold it, the way you use it, the way you conserve it — it's all a big-time issue for me."

— **Tim O'Neill**, certified superintendent of CC of Darien (Conn.)

"I'm convinced that [the West] is one place where the golf industry has taken a leadership role [to conserve water]. Superintendents are far more efficient with their water use than average homeowners here."

— **Damian Pascuzzo**, California-based architect and president of the American Society of Golf Course Architects



RAIN BIRD

"We water our dry spots more than we water our wet spots. We just don't turn it on and let it run."

— **Clint Smallridge**, certified superintendent of Banyan GC, West Palm Beach, Fla.

"In some areas, there's more water being used than needs to be used. Other superintendents are conscious of what they're doing and working within good agronomics and environmental awareness."

— **Demie Moore**, director of communications for Aquatrols, Cherry Hills, N.J.

"If I'm a superintendent, I'm going to put down all the water I can because I'm living for today. Am I going to turn off my irrigation system and say I'm conserving water? If I do that, how long do you think I'll keep my job?"

— **George Frye**, water consultant and former superintendent, Kiawah Island, S.C.

"In site-specific situations, the tendency of superintendents is to overwater. [Generally], I think we can grow grass with a lot less water than we're using."

— **Ed Etchells**, president of Golfturf, North Palm Beach, Fla.

"Water scarcity will affect everything from prospects for peace in the Middle East to global food security."

— **Sandra Postel**, director of the Global Water Policy Project in Amherst, Mass., in her 1997 book, *Last Oasis: Facing Water Scarcity*.

Dealing With Water Woes

BY LARRY AYLWARD, EDITOR

Tim O'Neill is beaming because his life as a superintendent is about to make a sweeping change for the better. The certified superintendent's course, the Country Club of Darien (Conn.), is getting a new irrigation system.

Darien's previous 40-year-old irrigation system had 240 heads, and the new system has 1,200 heads. No longer will O'Neill and his crew have to haul hoses and sprinklers to certain areas not adequately watered by the old irrigation system. With the new system, O'Neill says the course has a water conservation plan to turn

From installing a new irrigation system to using surfactants, superintendents can cut down on water use

back, turn down and turn off certain heads to conserve water during specific times of the year.

"It's going to change this golf course and my life," says O'Neill, noting the course also installed a new pump station a few years ago. "It's going to allow us to use water more efficiently. We

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Certified superintendent Tim O'Neill can't wait for his course to finish installation of a new irrigation system.

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Dealing with Water Woes

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should be able to use only the amount of water we absolutely need.”

You might think Connecticut is an oasis compared to some states, but it's not. About 18 months ago, O'Neill sought approval to expand his irrigation pond by 40 percent. He says his request came under tremendous scrutiny by local lawmakers but was eventually approved by them and is now being reviewed by the state. "It opened my eyes to the importance of water and how we use it," O'Neill says.

O'Neill, who's been at the course 20 years, says the state is also cracking down on courses for not having water diversion permits, which are required in Connecticut if a course draws more than 50,000 gallons a day.

O'Neill says he wouldn't be surprised if more area courses aren't looking at installing new or upgrading existing irrigation systems. New irrigation systems have greatly improved the efficiency of water use, says Brian Vinchesi, president of Irrigation Consulting in Peperell, Mass.

The problem is at least 40 percent of U.S. golf courses have old irrigation systems that are wasting water. And "old" isn't necessarily 40 years like Darien's system. Any system installed before 1991 can be considered antiquated and inefficient, Vinchesi says, noting that irrigation technology changed dramatically in the early '90s.

Vinchesi and O'Neill realize many courses can't afford to fork out \$1 million to \$2 million for a new state-of-the-art irrigation system, but that doesn't mean older irrigation systems can't function properly with maintenance and updating of vital components, such as control systems and irrigation heads. "You can still enhance your existing system to make it more efficient," O'Neill says, adding that the key is not to fall behind on maintenance.

Effluent is in, but ...

Effluent water for golf course irrigation is a major trend in dry states such as Florida, Nevada and Arizona (*see sidebar*



Wetting agents and surfactants will help soil hold water better in root zones.

MIKE KLEMM

on page 39). But effluent water will soon be in vogue in other states, thanks to an impending potable and freshwater shortage. "We're headed in the direction of using more effluent water," says former superintendent George Frye Jr., now a water consultant in Kiawah Island, S.C.

As Frye points out, effluent water has an upside and downside, the latter meaning it can contain high levels of calcium magnesium carbonates, sodium and alkaline substances. He notes that suspended solids in effluent water can damage soil by plugging pore spaces.

It's vital that superintendents adjust agronomic practices to deal with the different types of effluent water, Frye says. "Superintendents have to design agronomic programs around their water quality, not their soil tests," he adds.

Frye is a proponent of sulfur burners to produce sulfurous acid to reduce bicarbonates, sodium and alkaline in water and soil. He is a consultant for Aqua SO₂, a Grass Valley, Calif.-based company that markets sulfur burners.

"Golf courses will be forced to deal

with more poor-quality water in the future," Frye says. "So we're going to have to figure out how we can use poor-quality water and get the same results we were getting when we used good water at a low cost."

Frye says sulfurous acid is a step in the right direction.

Not just for localized dry spot

You thought wetting agents and surfactants could only help localized dry spot.

Stan Kostka, director of research and development for Cherry Hill, N.J.-based Aquatrols, points out that more superintendents claim surfactants and wetting agents have helped them cut down on water use. Turf treated with surfactants and wetting agents helps soil hold water better in root zones.

Aquatrols doesn't have formal information or statistics to market its products as "water saving," but the company is gathering the information. "We want to be able to say that surfactants can allow superintendents to have more control of the water they apply so they can use

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On the Wastewater Front

Communication key to successful effluent irrigation program

By Vicki Martz

Water quality and availability are probably the most important issues facing our citizens and businesses today. The depletion of this precious natural resource is a concern for us all.

The need to recycle water is mandatory in many states and will be a component in many of our future development and business decisions. Recognizing this need makes economic sense, especially when the cost of fresh water rises as supplies dwindle.

This, however, does not always translate into acceptance by a public that's wary of government intervention and skeptical of the technology that promises to clean the water to an acceptable standard. Public comfort has everything to do with public knowledge. Many citizens educated about the recycled water benefits for their communities will accept it.

One area of acceptance by the general population is the use of wastewater for irrigation on golf courses. Many courses have voluntarily or by mandate turned to effluent water for their irrigation needs. Their experiences, however, reveal the need for better and up-front communication between the effluent provider and the superintendent before a deal is struck.

Arizona, California, Florida and Texas are states in which potable water shortages have already led to a comprehensive use of effluent water for golf course irrigation. There are few standardized guidelines, however, among municipalities in these states. Issues as diverse as wastewater quality, what degree the water has been cleaned, and charges the treatment facility imposes on the end-user are areas of conflict that need to be resolved — especially as more states anticipate using effluent sources to conserve their water supplies.

The effluent or wastewater from sewage treatment facilities is generated in large volumes. Even when treated to third stage (tertiary), the wastewater often can't be released into existing streams or rivers.

However, providers (municipalities or private treatment facilities) assume that golf courses can easily use the water directed to them.

A golf course appears to be the perfect recipient of this treated water. However, providers have little understanding of the requirements and complexities of maintaining turf with the concentrations of metals, salts and nitrates that can be found in effluent water, even after third-stage treatment.

High sodium content, commonly found in effluent, can break down the soil structure, reducing soil permeability and inhibit-

High sodium content, commonly found in effluent, can break down the soil structure, reducing soil permeability and inhibiting the turf's water absorption.

ing the turf's water absorption. If the original potable water source is high in salts and picks up additional salts in the treatment process, the reclaimed water might be toxic to the turf over time, especially on heavy clay soils. Tight clay soil does not allow salts and metals to move through it. In both instances, a constant water testing program will determine if and how much fresh water should be mixed with the effluent to flush out these accumulations.

Industrial sources of effluent can have a high concentration of heavy metals, another source of plant toxicity. Initial water analysis can provide information on the amounts of the dissolved salts and solids. With this knowledge, the treatment facility can work with the superintendent to potentially minimize or alleviate some of the problem

conditions for healthy turf.

Compounding these issues, many treatment facilities require golf courses to accept effluent water every day and year-round, whether the course needs it or not. Irrigation needs are lower during periods of daily rains and during colder months when the turf is not growing, and placing too much water on turf can be just as injurious as not enough water.

Storage of excess water in holding ponds can be costly because a pond's storage capacity must be able to accommodate millions of gallons when the golf course has little irrigation requirement. This acreage can be hard to find when retrofitting an existing course and can be expensive real estate in today's development dollars. In addition, holding ponds can have an ongoing problem with algae bloom because of the higher concentrations of nitrates in effluent water. Drawing effluent water directly from a treatment plant is not always the ideal situation for golf courses.

In the spirit of cooperation, inherent problems with wastewater can be resolved and a program can be mutually beneficial for golf courses and treatment facilities. For example, some facilities provide their wastewater free to golf courses, acknowledging that the effluent discharged after treatment has been paid for by normal sewage rates.

The bottom line is that effluent water providers and superintendents need to discuss their separate challenges in-depth before agreeing on programs. An open dialogue between the two is essential if golf courses are to assist communities with their wastewater accumulation — and achieve a successful future of effluent for golf course irrigation. ■

Martz is vice president, director of environmental design and an architect for Palmer Course Design Co. She is also an associate member of the American Society of Golf Course Architects.



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it more efficiently,” says Demie Moore, Aquatrols’ director of communications.

Clint Smallridge, certified superintendent of Banyan GC in West Palm Beach, Fla., put wetting agents in an injection system on his irrigation pump. It helped him cut back on water — and his course was still in good, green shape.

“We get as much moisture out of a cup of water that we used to get out of a gallon [because of wetting agents],” Smallridge says. “Wetting agents are a thing of the future.”

Super turfs

Drought-resistant turfgrasses have helped superintendents decrease water use. Indeed, the turfgrasses are a godsend for many golf courses, but are they green and flush *enough* for picky golfers?

Ronny Duncan, professor of turf breeding at the University of Georgia, says turf scientists continue to improve the genetic components of drought-resistant turfgrasses so they are more efficient in water uptake. “There are about 1,000 genes involved with drought tolerance in turfgrass,” Duncan says.

Seashore paspalum is another new

turfgrass that will help conserve potable and fresh water because it can be irrigated with alternative water sources, such as saltwater. Duncan, who has bred strains of seashore paspalum and is marketing the turf, stresses that the salts have to be constantly managed to prevent buildup in the soil. “You never get away from managing salts — before, during and after managing the grass,” he adds.

Duncan would love to try and grow seashore paspalum in Boston or Cleveland, but the turf doesn’t have the cold

Less Water, Better Turf

Even if it’s left a little brown, turf experiences many benefits when it’s left a little dry, according to the *Turfgrass Maintenance Reduction Handbook*:

- Better wear tolerance
- Fewer weeds
- Fewer diseases and insects
- Fewer clippings
- Better fertilizer and pesticide efficiency
- Less wastage for water overthrow
- Less thatch

Hand-watering dry areas is better than turning on an irrigation system and watering areas that don’t need moisture.

hardiness of ryegrass. “We’re not pushing it north of a general line from south of Raleigh, N.C., to Chattanooga, Tenn., to Little Rock, Ark., to Dallas to San Francisco,” he adds.

Desalinization?

In 1998, former U.S. Senator Paul Simon wrote, *Tapped Out: The Coming World Water Crisis and What We Can Do About It*. Simon advocated desalinization in the book.

Duncan, however, says desalinization is not the answer for the golf industry’s water problems. It can cost about \$1.2 million to build a desalinization plant to provide water to one golf course, Duncan says. Since the plant is always running, a golf course’s energy bill would increase dramatically.

Duncan also notes that getting rid of the concentrated salt collected from the water is not an easy task. “It’s a very concentrated brine and getting rid of it is a challenge and requires special permits,” he adds. ■

MIKE KLEMM