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are financed by the 415 members, a steady decline from 480 when Regan arrived 10 years ago.

Still, as long as the course has access to quality water, it's in good shape, Regan says. The club's water source is an artesian well on property.

"Rainfall this year has been better than the past two years," he says. "We never got into a situation like Birmingham did with extreme drought and water restrictions on home lawns."

To help improve water efficiency last year, Regan started a wetting agent program that included injecting Dispatch into the irrigation system. He bought two 55-gallon drums of Dispatch, which helped reduce irrigation water by 30 percent.

"During the peak of summer, I watered every night," he says. "With the wetting agent, I went back to irrigating every other night."

Regan has been spraying Dispatch and Revolution on greens and using Aqueduct with his drench application. He's using only Dispatch on the rest of the course, but because Regan's budget was cut, he can't afford to inject Dispatch into the irrigation system this year.

While concerns about water use have been expressed in the area, it's nothing to worry about, Regan says.

"Some citizens inquire about where the irrigation water for the golf course is coming from," he says. "They thought it was city water. It's not really an issue."

### NOZZLE CHANGE

Water isn't a big issue at the private, 18-hole Twin Lakes Golf Club in Carmel, Ind., either. Last year was a dry season, but not droughty, says John Westermeier, CGCS. But while conditions weren't as severe as they could have been, the dry season caused him to look at the club's irrigation system.

"I came here in 1985, when we didn't have any fairway irrigation and were using hoses to water the greens and tees," says Westermeier, who maintains the course with a \$400,000 budget. "From 1986 to 1988, we had an irrigation system installed, but it wasn't a top-of-the line system."

Through the spring of this year, Carmel has had above average rainfall, so Westermeier didn't have to use the irrigation system

until early June. The water he uses to irrigate the golf course comes from nine interconnected lakes, which are on the course and fed from underground wells. He pumps from two of the lakes.

During the renovation that took place in the late '80s, Toro 670 heads were installed. But the heads have a coverage weakness: They neglect the turf 10 to 20 feet around the head, Westermeier says. He read comments about FCI nozzles being good replacements for the old Toro 670 heads. Hoping he'd found a solution, he bought two dozen nozzles and installed them. In a few days, he saw the difference the new heads made.

"Toro's new products are fantastic, but they're expensive," he says. "We had money that was budgeted for trees, but after getting approval from the owner, I bought 75 more FCI nozzles, which took care of all my fairways except one."

Since using the new nozzles, Westermeier has reduced his irrigation run times by 20 percent, but he says he can't quantify the dollar amount saved. He also estimates he'll save 20 percent on the electricity to run the system, too. With an older irrigation system, it takes 13.5 hours to water the entire golf course.

"The nozzles will pay for themselves in a year, if it's dry," he says.

Westermeier views the nozzle changes as a temporary situation. In five years, he plans to replace the irrigation system's drives and heads. And because FCI doesn't offer replacements for the Toro 630 heads around the greens, Westermeier will replace them with 830s or 860s.

Twin Lakes' single-row irrigation system is dated, so Westermeier doesn't have computer controls. Until the irrigation system is upgraded in five years, the system will be controlled with hydraulics. Westermeier plans to upgrade the pump station first this fall.

"The cost to renovate has to come out of the operation expense," he says, adding the course has operated profitably for 23 years. "The irrigation upgrade sell is easy because we don't have member equity. Having a single owner streamlines everything."

Westermeier is in the same boat as many other superintendents.

"We're all trying to use resources more efficiently," he says. **GCI**





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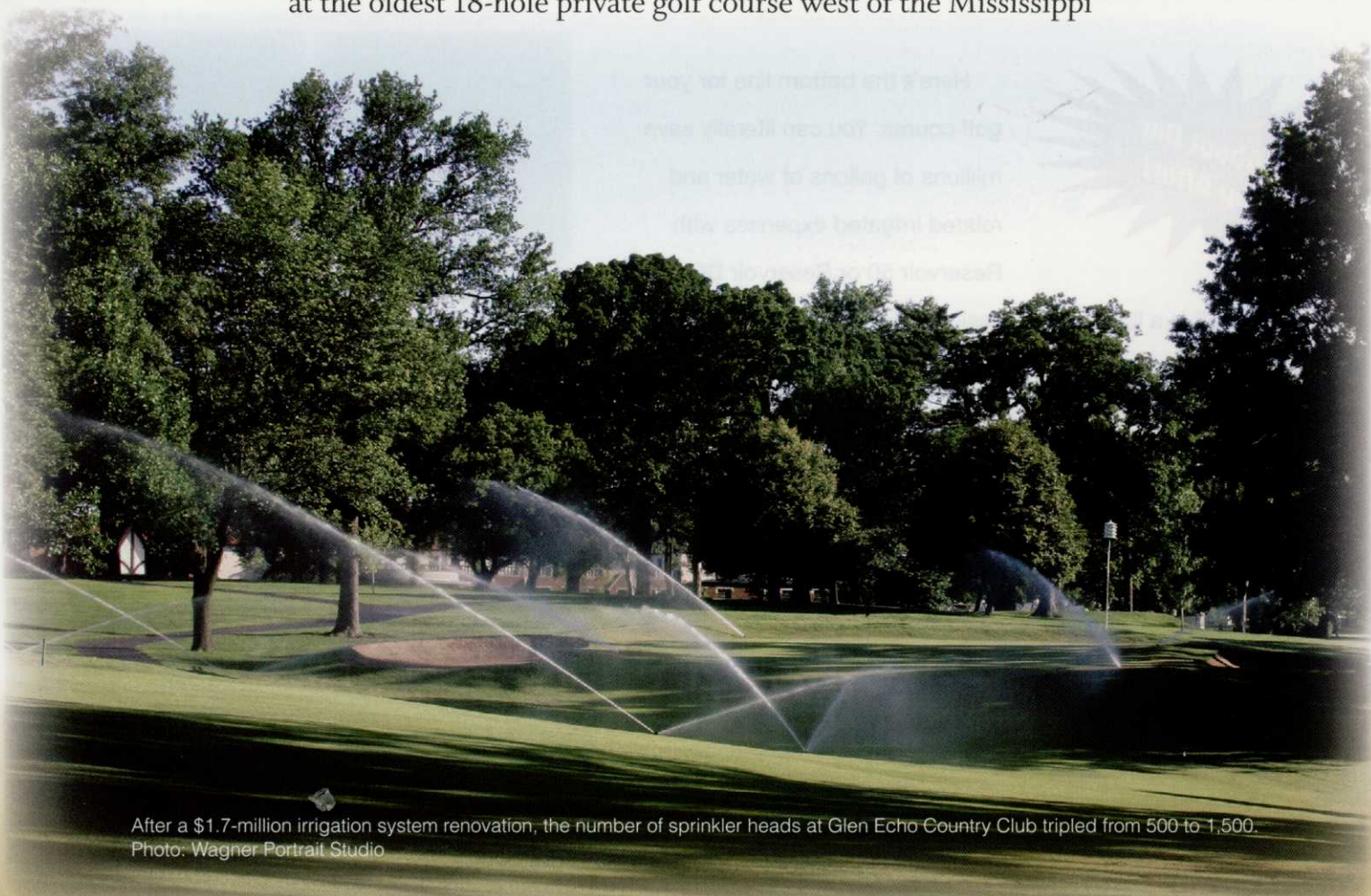
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# MAKING HISTORY

By Margaret Hepp

A new superintendent facilitates a new irrigation system  
at the oldest 18-hole private golf course west of the Mississippi



After a \$1.7-million irrigation system renovation, the number of sprinkler heads at Glen Echo Country Club tripled from 500 to 1,500.  
Photo: Wagner Portrait Studio





In 1904, 21 years before the first fairway irrigation system was developed in Dallas, the golf course maintenance crew at Glen Echo Country Club in Normandy, Mo., prepared for the first (and only) Olympic golf tournament played on American soil. Glen Echo has gone to great lengths to maintain its course since its inception in 1901. Most noteworthy is the 1911 American Golfer note that Glen Echo, in its Report of the Greens and Grounds Committee publication, recommended subirrigation of its greens.

"Theoretically, subirrigation is all right," American Golfer states. "But we have not seen a green treated in this way, with the exception of an experimental one at Onwentsia last summer, which was really not so good as any of the regular ones."

By the time Scott Egelhoff arrived at Glen Echo in February 2006 as golf course superintendent, the existing irrigation system had been in place for many years. Egelhoff knew he'd encounter quite a bit of history during his tenure at the course, but its 28-year-old Toro irrigation system, the oldest in the St. Louis area, came as a surprise.

Nonetheless, Egelhoff settled into his new job, becoming accustomed to the lay of the land, battling the *Poa annua* and Bermudagrass encroachment characteristic of the St. Louis area and gearing up for extreme summer temperatures. But he soon realized the ornery old irrigation system was more than just an annoyance. It threatened the turf and health of the entire club. A 12-inch pipe break and pump station failures caused disastrous consequences, spraying unsuspecting members during play and flooding areas of the course with water that had run all night. The irrigation system was down that summer for 36 days – disastrous when you take into account St. Louis experienced its hottest July in history that year.

It wasn't just the malfunctions that were causing problems, either. Egelhoff was forced to overwater his fairways to drive water into the cool-season rough.

"We were wasting gallons of water," he says. "You'd set the clock on the old heads for five minutes, and you didn't know if you were going to get two minutes, five minutes or 10 minutes."

It dawned on Egelhoff that his own job might be in jeopardy if he didn't instigate a considerable change. As the new superintendent of a club steeped in tradition, Egelhoff knew he was taking a big risk. But his job – and the golf course – was too important. It was time to speak up.

#### PROOF IN THE PUDDLES

Egelhoff went to the general manager, Thom Johnson, and the green committee chairman, Hal Wagner, with a plan. He anticipated the two to challenge his proposal, but he was surprised to find they were receptive to his renovation plan. Johnson and Wagner knew the system had been causing problems, but Wagner says no one had been able to explain the situation as effectively as Egelhoff did.

"Scott recognized immediately that we had problems maintaining our grasses," Wagner says. "With his help, we began to put together the details of what we'd allowed to happen throughout the years. We were facing irrigation failure."

Once he got the green light, Egelhoff's first phone call was to Tim Burch, superintendent at St. Louis Country Club. Burch had taken Egelhoff under his wing when he started at Glen Echo and was happy

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## SMART IRRIGATION

to hear of the upcoming renovation. He directed Egelhoff to Brian Nichol at nearby Algonquin Country Club, where a new irrigation system had just been installed. Nichol couldn't say enough good things about his irrigation consultant, Erik Christiansen, president and founder of EC Design. Egelhoff called the firm right away. Christiansen recommended Egelhoff gather as much data as possible with his general manager and green committee chairman to help sell the renovation to the membership.

The team went to work, assessing the current system and then performing a cost analysis, which they eventually presented to the green committee and board.

"We wanted them to understand just how inefficient and limited the system really was," Egelhoff says.

The renovation pitch traveled through board, green committee and full membership meetings, and Egelhoff, Johnson and Wagner also worked to disseminate information to individual members whenever possible to generate support of the project. Finally, the project, a \$1.7-million renovation wholly funded by the membership, was approved.

### BREAKING GROUND

The renovation began Nov. 22, 2006, the day before Thanksgiving. The course remained open as EC Design consultants Larry Collins and Erik Christiansen, Leibold Irrigation Construction Co. and the Glen Echo staff worked in concert to install the new Toro OSMAC system. In particular, Egelhoff and EC Design focused on greens and tees, where they thought most problems would arise.

"I remember those guys with tape measures trying to figure out where to put each head to make sure it would fight 20-mph wind," Egelhoff says. "And Larry and I questioned every head. We made a few changes once the design was in place because we didn't like the coverage of the slopes. I called Larry twice and asked him to fly back to Glen Echo."

Collins and Christiansen accommodated each of Egelhoff's requests for improvements, no matter how small, and they labored over spacing and nozzle placement. In the end, the club tripled the number of heads from 500 to 1,500.

"The sprinkler heads do the work, so we like to concentrate on head spacing," Christiansen says. "It pays off long term. Sprinkler heads are the muscle of the system, and they're important. But my fee is the same whether I ask you to put one sprinkler head out or 2,000. I don't represent the products. I don't represent contractors. I'm just here to ensure my customers make educated decisions."

Fertigation and weather systems were installed on the course as well. The fertigation system features two 550-gallon calibrated tanks in which Egelhoff is able to mix wetting agents. The system also is equipped with nitrogen and calcium jets designed to target a water quality issue common of golf courses in the St. Louis metro area. Egelhoff was able to refine the pH of Glen Echo's water to 6.8. The system will pay for itself during the next few seasons, he says.

"We knew we could touch the whole golf course by making sure our water quality was good," Egelhoff says. "It was definitely designed with the thought in mind that fertigation is the future."





Scott Egelhoff estimates Glen Echo saved 20,000 gallons of water May through August from 2006 to 2007. Photo: Wagner Portrait Studio

#### IMMEASURABLE IMPACT

With the new system up and running, Egelhoff didn't waste any time planting new zoysiagrass in the greens surrounds. Two days after the renovation was completed, he brought in two semi truckloads of the warm-season grass he'd struggled to maintain since his arrival.

"We did major renovations on our greens surrounds and fairways where we had single-row irrigation," he says. "A lot of triangular areas died because the spacing was so terrible. Now, we're totally covered, and it looks wonderful. You can't even compare the two systems. It's night and day."

Egelhoff is especially pleased to be able to turn his attention to achieving Audubon International certification for the golf course. It was one of his major goals as he prepared for his job at Glen Echo.

"I knew that to become certified I needed to make an impact in water conservation, water management and water quality," he says. "With a new, state-of-the-art irrigation system, I could prove Glen Echo was environmentally conscious."

The course is on track to receive certification later this year. As he navigates the facility through the Audubon certification process, Egelhoff has attempted to calculate water conservation to date, but the utter chaos of the former system makes efficiency difficult to quantify. What he does know is he's not flooding the greens, he can trust the clocks, and he's able to mark dry and wet spots and input changes to the computer.

"How do you measure that?" he says. "It's immeasurable. We went from a single row to five or even six rows on certain fairways, and I've got control over everything. The turf is much more uniform."

Egelhoff estimates the course saved 20,000 gallons of water May through August, from 2006 to 2007.

"We had the hottest July ever in 2006, unfortunately, but it helped sell the irrigation system," he says. "Last August was the hottest in St. Louis history, and we were great."

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## WORK WITH THEM

Scott Egelhoff, golf course superintendent at Glen Echo Country Club in Normandy, Mo., offers suggestions for dealing with members when it comes to construction projects:

1. Pinch their pennies. Spend members' money as if it were your own.
2. Build trust. Get your g.m., golf pro and members involved in and educated about what it's like on the golf course and what your challenges are.
3. Show, don't tell. Take pictures because they're about as factual as you can get. If I show you a picture, you can't tell me it's just my opinion.
4. The great outdoors. Have green committee meetings outside. Show members the situation with no spin involved.
5. Look ahead. Mark areas on the course you know you'll renovate in the future.
6. Make it last. Don't do a project on the cheap. A year or two later you'll have issues. That's disastrous for trust.

## A JOB WELL DONE

The completed system was handed over to Egelhoff May 15, 2007, and the club celebrated with a grand reopening ceremony. The management team, staff and 150 members attended the party, where Egelhoff and his crew fired up 30 heads on the golf course at once.

"The camaraderie outweighed everything else," Egelhoff says. "That night, I knew we'd done the right thing."

Christiansen, a former superintendent, says a good superintendent wants to know everything to help get the club he works for the best possible irrigation system.

"For Scott to go through this process at an early time in his career was a tough task," he says. "Superintendents like Scott keep pushing the profession to a new level. The club benefits from that. These guys didn't do this for a bonus. They did it because they love what they do."

Egelhoff, who is glad to be able to focus on the golf course once again, is grateful for the opportunity to grow.

"The project taught me a lot about myself, but it wasn't me alone," he says. "I just happened to be the golf course superintendent when it needed to be done. Hal, Thom and the members believed in me and trusted me. Now we have a system that'll last years to come." **GCI**

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By David McPherson

# IT'S NOT A DIRTY WORD

Effluent water is becoming a more common irrigation source

*"Water, water everywhere, Nor any drop to drink"*

*From The Rime of the Ancient Mariner by Samuel Taylor Coleridge*

**N**ationwide, water for golf course irrigation isn't scarce yet, but the precious natural resource is under intense scrutiny by governmental and environmental groups.

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## JUSTIFICATION IN THE DESERT

Bill Rohret, CGCS, at Angel Park Golf Club in Las Vegas – one of the largest and busiest golf facilities in the state – switched from potable water to effluent water in 2001.

"We can justify being a golf course in the desert because we use reclaimed water," Rohret says. "If we were using potable water, people would be up in arms."

Angel Park's decision to use the alternative irrigation source was driven initially by politics. During a drought in 2001, the Las Vegas Valley Water District needed potable water to supply the fast-growing community. Moving water from Lake Mead to the west side of town was costly to the water district because of the significant change in elevation.

"The water district said, 'We're going to build an effluent plant in the neighborhood, and we want you to take our water,'" Rohret says. "They built a state-of-the-art treatment plant. Much of it is underground, so no odors are emitted into the community. Most people don't know it's there."

Angel Park Golf Club's conversion from potable water to effluent water cost about \$1 million. Photo: Angel Park Golf Club

