

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*

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

Enter effluent water. More golf course owners and superintendents are turning to recycled water as a smart irrigation choice. Effluent water is environmentally sound because it preserves the natural resource by recycling usable treated water that's normally dumped into the ground, rivers and oceans. One of effluent's attractions is its endless supply, even in times of drought. As long as people are showering and flushing toilets regularly, the supply is consistent.

## 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





The plant, called Durango Hills, can process 10 million gallons of effluent a day. Angel Park pays \$2.33 per 1,000 gallons for recycled water. Fresh water costs about \$3.50 per 1,000 gallons, so Angel Park saves significantly. Rohret believes recycled water expenditures will increase later this summer.

When Angel Park converted to effluent water, there were other costs as well, mainly to build or retrofit pump stations because recycled water wears out the irrigation infrastructure more quickly than potable water. The conversion from potable water to effluent water cost about \$1 million, Rohret says.

"We had to reline all our irrigation links with 60 mL PVC liners to prevent leakage into the environment," he says. "We also rebuilt a bunch of our lakes and installed new pump stations."

#### A WATER AGREEMENT

Richard Staughton, CGCS, general manager at Towne Lake Hills Golf Club in Woodstock, Ga., also uses effluent water. Towne Lake Hills was built in 1994 and is part of a housing development that started a couple of years before the course opened. A water treatment plant was part of the development and was online when the course was constructed.

"This has been our only source of irrigation for the course from day one," Staughton says. "The water is a good source. The owners feel good about the business decision that was made 14 years ago to irrigate with reclaimed water, especially with the present and future water crisis in the state."

An agreement was reached between Towne Lake Hills and the county water department, which is the water supplier, allowing the course to determine the amount of water needed. There are no minimums or maximums.

"In a sense, the water itself is free because the course pays monthly for the power required to run the pumps, plus a \$100-per-month maintenance fee for pump repairs," Staughton says. "The average yearly cost is about \$3,000 to use reclaimed water."

#### SALT OF THE EARTH

Although Rohret generally has been happy with the overall quality of the reclaimed water he uses, he's not happy with the salinity levels (about 800 parts per million). Because of those levels, he has to aerify his greens more frequently to improve the health of the turfgrass. Aside from the turf, trees develop an effluent sheen because of the additional bicarbonates in the water.

"This is a white look," he says. "When the water spray hits the trees, it causes the leaves to defoliate in the summer."

Angel Park's Bermudagrass greens are overseeded with *Poa trivialis*, or rough bluegrass, in the winter. But a problem with *Poa trivialis* is that it's sensitive to rapid blight, which can damage greens badly if not caught early. Rohret didn't see this disease until three years after the conversion to recycled water.

"Rapid blight is salt sensitive, so we test salinity levels every week and flush our greens

The average yearly cost to use reclaimed water at Towne Lake Hills in Georgia is about \$3,000. Photo: Towne Lake Hills

once a month to wash away the salt," he says. "We're also noticing higher salt levels in poor drainage areas on our fairways and roughs. Aerifying and flushing is a must."

Since Towne Lake Hills switched to effluent, Staughton has seen salinity levels rise. The sodium levels increase during the summer if there are no flushing rains, so Staughton does sodium and gypsum flushes during the summer as a safeguard.

The Nevada department of natural resources requires Angel Park to post signs around the lakes warning the water is recycled, even though the water used at Angel Park is so clean you could bathe in it or drink it, according to Rohret. The course is also required to post this fact on scorecards.

Towne Lake Hills also communicates to its golfers that the course uses effluent water. It has a sign posted in the golf shop that states reclaimed water is used to irrigate the golf course.

#### ON THE WAY OUT

Tom Verrips, CGCS, at Otter Creek Golf Course in Ankeny, Iowa, has used effluent water to irrigate the course for 20 years, but that's going to change soon. The course is in the midst of a grow-in because the original 18 holes were renovated completely. Verrips can still use the effluent until the grow-in is complete, but after that, he's going to use well water.

"When I arrived, Otter Creek was an 18-hole course with an automatic double-row irrigation system for the fairways, but I couldn't use it because there wasn't enough water," he says. "We looked at drilling wells, but then effluent as a potential water source was brought to the table by a young engineer working for us who spearheaded the project."

The effluent water has been good for the course, Verrips says.

"In 1988, we had a drought, but as a result of our effluent water supply, we were the only public golf course with an irrigation system on its fairways and we were able to stay green," he says. "We went from about

20,000 rounds a year to 38,000.”

Verrips says the quality of the effluent was always top-notch, so that's not the reason Otter Creek is changing its irrigation source. Rather, the decision is driven by politics and economics. The city of Ankeny decided to change water sources for various reasons.

“We're basically land-locked,” Verrips says. “Recently, another golf course was built south of ours, and they have a holding pond and well. They put in a pump station and have an empty hole for our course to pump into.”

“I hate to lose the reliability of the effluent because I knew what it was,” he adds. “I always thought it was progressive to use effluent water, but it became a political and economic issue.”

#### ON THE WAY IN

The public, 36-hole River Ridge Golf Club in Oxnard, Calif., isn't irrigating with effluent

water now, but it's in the process of switching from well water to recycled water by 2010.

“The city has got the infrastructure set with the exception of the piping out to the golf course,” says Kyle Kanny, superintendent at River Ridge. “The city recently changed all its mainline water distribution piping and left the old pipes for effluent distribution.”

Kanny is excited about the transition.

“I can't wait for it to happen because the water quality I currently get out of the deep well isn't that good for growing grass, though it's fine for consumption,” he says.

“Our bicarbonate and sodium levels are high for grass, and the combination of those two items is a superintendent's nightmare.”

Oxnard is building a reverse osmosis plant that will clean the water used to irrigate River Ridge.

“During reverse osmosis, effluent water is

forced through a filter to remove impurities,” he says. “I'll be able to dictate the chemistry of the water. The water quality I'll wind up with will be far superior to what I'm using now.”

Kanny pays for the use of his irrigation water now, but when he uses the effluent water, it won't cost him a cent.

“That's the agreement with the city,” he says. “We get the free effluent in exchange for our water rights. It's such a win-win.”

Kanny believes all golf courses will have to use effluent water eventually because water is a dwindling resource.

“Good planning can make the switch to effluent such a positive experience for generations to come,” he says. “You're taking dirty water, cleaning it and then putting it back into the aquifers. Meanwhile, you're growing great grass, and you're not using any potable water.” **GCI**



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