

GCSAA Water Utilization Fact Sheet

FINDING: Water is essential for the maintenance of all life. Thus, experts are increasingly worried about the continued supply of this resource in the future. Already periodic droughts and regional shortages cause planners to worry about supply issues. Many forecasters foresee more serious shortfalls in the future.

For the most part, golf courses are efficient users of water. The professionals who care for the nation's golf courses recognize the potential dangers of water shortages and have already started conservation efforts. Techniques have been adopted to decrease demand for freshwater, and the future promises to bring even more advances to save this resource.

NET WATER USE: Golf courses are important sources of recharge of rainfall and snowmelt to groundwater supplies. For example, open, grassy areas are approximately 90% pervious to rainwater whereas residential areas are only 20% pervious.¹

Even assuming a 50% rate of evaporation, a typical golf course in Westchester County, New York provides seven times as much groundwater recharge as it consumes for irrigation purposes.² By providing an open "green belt," a golf course is actually a net water supplier to the community.

EFFLUENT WASTEWATER: An estimated 10 percent of the golf courses in the United States have already started using effluent wastewater for irrigation needs.³ Because recreational users are generally low-priority recipients of potable water, reclaimed water is a real panacea for golf courses. Use is especially high in hot and arid regions like Arizona, Florida and California.⁴ It is anticipated that nearly all desert courses will be irrigated with effluent by the year 2007.⁵

Effluent water is high in nutrients like nitrogen and phosphorus, which means that professionals can use less chemical fertilizers.⁶ Moreover, reclaimed water cannot currently be returned to municipal water supplies, and federal regulations make it difficult to release it into streams, lakes or oceans.⁷ Thus, turfgrass use helps dispose of this water. Obviously, turfgrass use of wastewater is safer than use of effluent to irrigate food crops.⁸

TECHNOLOGICAL PROGRESS: Many technological advances promise to reduce golf course demand for water. Indeed, some have already been adopted by superintendents. For instance, a new low pressure irrigation system, combined with computer controls, is being used on some golf courses, including one in the Southern California desert. That course achieved a 25 percent reduction in water use.⁹ Additionally, the new technology substantially reduced the need for fertilizers and other chemicals.¹⁰

Still other courses are beginning to apply improved climatological information to irrigation problems. Using data about evaporation and transpiration—known as "evapotranspiration" or ET—turf specialists can achieve 20 to 40 percent reductions

in water demand, depending on the season.¹¹ More savings are achievable during warm seasons than in cool. The National Weather Service provides ET data.

Turfgrass research and development can also lead to reduced water needs. In particular, drought resistant strains can be developed that will require less water. A jointly operated research program by the GCSAA and U.S. Golf Association provides funds for scientists to develop new turfgrass strains. The ultimate goal of the program "is a 50 percent reduction in water use."¹² Scientists also seek ways to decrease compaction of the soil, a condition that increases the need for irrigation.

EROSION CONTROL AND WATER SUPPLY: Soil erosion causes sedimentation of the nation's lakes, rivers and streams, thus effectively limiting supply of clean water. Since turfgrass prevents soil erosion, golf courses indirectly assure a continued supply of fresh water.

According to the scientific evidence, land planted in grass erodes at a rate far less than soil planted in agricultural crops. Indeed, corn erodes 668 times more topsoil, and wheat 84 times as much.¹³ Construction is even more devastating to soil, often causing the equivalent of a decade's erosion in a single year.¹⁴ Thus, alternative projects such as shopping malls or housing developments cause much more erosion than does a golf course.

Golf course ponds also combat the harms of erosion by serving "as a reservoir for storm water drainage."¹⁵ Pond water additionally creates a "supply of irrigation water that the superintendent can use at his discretion."¹⁶ Thus, ponds on golf courses can reduce the need to compete against other users of a community's water supply.

CONCLUSIONS: Golf course superintendents recognize the potential importance of water supply issues in the future. Many have already started to adopt means to conserve water today. Various techniques have been developed that can reduce demand for water by 25 percent or more. Other projects are in the research stage and could achieve even greater water savings.

* * * * *

1. Larry A. Roesner, "Quality of Urban Runoff," in *Urban Stormwater Hydrology*, ed. David F. Kibler (Washington, DC: America Geophysical Union, 1982), p. 168.

2. Ted Horton, "Presenting a Case for Golf Courses," *Golf Course Management*, May 1988, p. 76.

3. Richard M. Phelps, "Effluents for Irrigation: The Wave of the Future?" *Golf Course Management*, April 1985, p. 106.

4. Phelps, p. 106

5. Jolee Edmundson, "Hazards of the Game" *Audubon*, November 1987, p. 37.

6. William H. Sloan, "Irrigation of public use areas by land application of combined industrial and domestic waste effluent," *Journal of the Water Pollution Control Federation*, May 1984, pp. 478, 480.

7. Dr. Ali Harivandi, "Questions from the Floor," *Golf Course Management*, April 1983, p. 73.

8. Bob Jarecki, "Seven years of Effluent Irrigation," *Golf Course Management*, April 1986, p. 78

9. "The Look of the Future Today?" *Golf Course Management*, May 1987, p. 34. Adapted from material provided by Mona, Meyer & McGrath.

(Continued on Page 13)

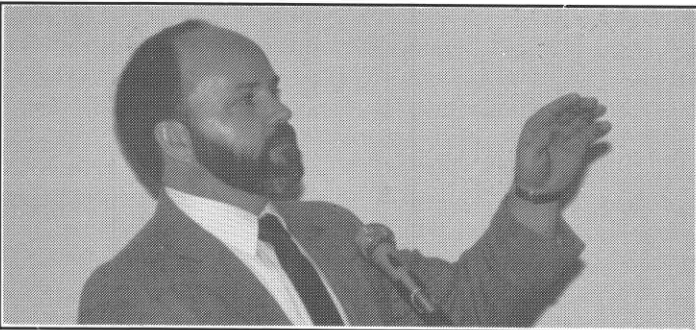
Dale Wysocki Catches Action at Owatonna Country Club



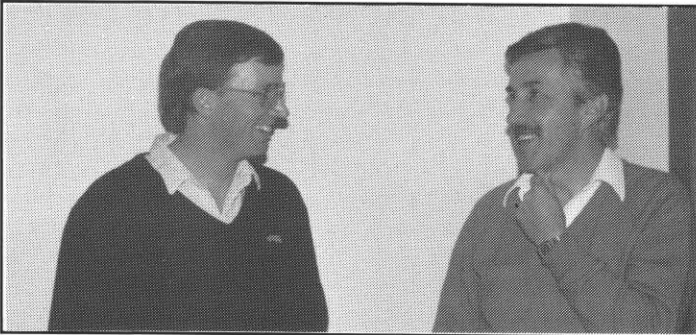
CHATTING, from left, are Richard Dicks, Jr., Owatonna; Jerry Murphy, MGCSA director from Somerset Country Club, and Mike Redmond, Scotts Pro Turf.



ROCHESTER COUNTRY CLUB SUPERINTENDENT Jim Gardner shows how it's done from the postside.



PRINCIPAL SPEAKER was Dwayne Schindler, University of Minnesota/Waseca.



SMILING ABOUT A STORY — or the camera — are Jeff Backstrom, Cannon Falls Golf Club, left, and Bob Reime, MTI Distributing.



ENJOYING LUNCH are Butch Greeninger, MTI, and Scott Austin, Midland Hills.

Water Utilization—

(Continued from Page 10)

10. "Water Management Enhances Savings, Player Satisfaction," *Ground Rules*, June 1987.
11. Dr. M. Ali Harivandi, "Irrigation Efficiency," *Golf Course Management*, April 1984, p. 49
12. William H. Benguefield, "Turfgrass Research Letter," in *1986 Annual Turfgrass Research Report*, 1986, (p. 1).
13. M. DeBoot and D. Gabriele, eds. *Assessment of Erosion* (New York: John Wiley and Sons, 1980), pp. 219-21.
14. Dr. Andrew Goudie, *The Human Impact on the Natural Environment*, 2nd ed., (Oxford, England: Basic Blackwell Ltd., 1986), pp. 137-8.
15. Alan R. Frantik, "Golf Course Pond Construction," *Conference Proceedings, 58th International Golf Course Conference and Show*, January 26-February 2, 1987, p. 36.
16. Frantik, p. 36.

Remaining 1990 MGCSA Meeting Sites

Date	Site	Event
June 11	Stone Brooke Golf Club	
July 9	Northfield Golf Club	
August 13	Hazeltine National Golf Club	MGCSA Championship
Sept. 24	Dellwood Hills Golf Club	Stodola Scramble
October 8	Baker Park Golf Club	