

KEEPING AN EYE OUT

Managing water quality on golf courses.

by RON DODSON

GOLF COURSES can play an important role in the quality of our water resources. Concern about the use and overall health and vitality of our water resources is important to everyone and has been a major factor in the management of existing golf courses as well as in the permitting of new courses.

Properly sited, designed, and maintained golf courses can positively affect the quality of water both on and off the course. The proper design, construction, and buffering of water features ensures adequate protection of ground and surface waters. In addition, golf courses can play an important role in protecting and improving the water quality of entire watersheds.

A water-quality monitoring program should be put into place to document positive results and to provide early warning of any possible problems. Monitoring programs may consist of simple testing of pH, dissolved oxygen, or even macroinvertebrate surveys. Some programs include more complex analysis for water chemistry and pesticide and nitrate residue testing.

Establishing a water-quality monitoring program is good environmental insurance. Some courses with streams have documented water-quality improvement as the stream leaves the golf course property, as compared with the water that enters the property. This kind of result not only documents a *no negative impact* resulting from

course management, but an actual improvement of water quality that will benefit the greater community.

All golf courses should review their water-quality management practices and establish ongoing water-quality monitoring programs. The following golf courses (all fully certified in the Audubon Cooperative Sanctuary Program for Golf Courses) provide good examples of strategies for water-quality monitoring plans.

Carmel Country Club (Charlotte, North Carolina)

Superintendent Hank Kerfoot has worked diligently to establish an effective water-quality testing program. He and his staff monitor water quality by regularly scheduled, comprehensive testing. Dr. Bud Smart (Audubon Conservation Services) developed a long-term plan for testing water quality at Carmel Country Club in Charlotte, North Carolina, after a site visit with Hank and his staff. The plan consists of sampling and analyzing surface water, groundwater, and sediment. Testing for pesticides also will be included based on the type of pesticide and time of year it is applied.

To reduce impacts to surface waters from course management practices, 20-foot *no-spray* zones were delineated around all water bodies where only hand-weeding is allowed. In addition, 15-foot vegetative buffers have been established alongside streams. The installation of a recycling system for the wash area and separate storage tanks for sprayer rinsate are also slated for the future.

Minikahda Club (Minneapolis, Minnesota)

Vegetative buffers have dual value: They provide valuable cover and food

Dr. Bud Smart (left) of Audubon Conservation Services trains the Carmel Country Club staff in taking water samples.



for wildlife and they filter any runoff that may occur from the course before it enters the water features. The Minikahda Club has done an exemplary job of creating vegetative buffers around all water features, including three ponds and the entire length of a creek on the property. Not only do vegetative buffers exist along water features, but they are contiguous for approximately 500 yards, creating a valuable wildlife travel corridor.

One reason for the development of this strong water-quality management plan is the location of nearby Lake Calhoun, a popular swimming and fishing lake located within 600 yards of the course property. In addition to an extensive water-quality testing program conducted through Hennepin County, the course also has been chosen as one of four Twin City Metro golf courses to participate in a comprehensive study of water quality administered by the Hennepin County Water Quality Management office. To further help improve the quality of the creek that flows

through the golf course, three ponds were constructed along the creek to provide flood control, increase filtering, and act as a sediment catch.

Baker National Golf Course (Medina, Minnesota)

This golf course has done an excellent job of restoring wetlands on the course and creating vegetative buffers around these specialized areas. Many of the wetlands on the property had previously been drained for agricultural purposes. These wetlands were restored, and Keith Greeninger, course superintendent, has worked hard to maintain extensive vegetative buffers that were allowed to grow around the wetlands to reduce any potential impacts from course maintenance practices.

Water-quality testing is another important issue at Baker National Golf Course due to its location along Spurzen Lake, a 70-acre lake that is commonly used for swimming and other recreational activities. About

80% of the course runoff drains into this lake, making the quality of the water leaving the course a vital concern. The first component of the course's water-quality program is regular monitoring of the water quality of course water features, including Spurzen Lake itself. Water monitoring stations sample nitrogen, phosphorus, pH, conductivity, heavy metals, herbicides, and fungicides. Long-term monitoring of leachate passing through a green also was used to determine appropriate adjustments in fertilizer use on the course. Finally, aeration, not chemical additives, is used to control any pests in water features to eliminate the use of pesticides and other chemicals in water features.

RON DODSON, *president of Audubon International, located in Selkirk, New York, travels extensively to visit golf courses involved in the Audubon Cooperative Sanctuary Program for Golf Courses and the Signature Program.*

This aerial view of a restored wetland at Baker National Golf Course demonstrates the vegetative corridors that interconnect the wetland areas, providing valuable wildlife travel routes.

