THE OLD COLLIER GOLF CLUB
Naples, Florida
Case Study: Preserving Habitat and Water Quality

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On 267 acres in Naples, Florida that was zoned for an 800-unit residential development, the Barron Collier family chose to create a premium-membership, stand-alone, private club dedicated to the game of golf, with long-term environmental quality. The project was to have an "Old Florida" feel by making the site look as natural as possible. The par 72, 7069 yard eighteen-hole golf facility with practice range, putting green and short game area was constructed from January through November 2000, opening for play in September 2001.

The site is ¾ mile from the Gulf of Mexico and is bounded by major roads to the east, south and west. The Cocohatchee River is the northern boundary and is designated an Outstanding Florida Water (OFW) by the Florida Department of Environmental Protection (DEP). This state designation affords such a water body special protection including a provision which mandates that there can be no degradation of existing water quality beyond the existing levels. This had an impact on the amount, types and methods of application of traditional plant food and pesticides. The concern was the release of high nitrogen or phosphorus content products into an OFW, thus the requirement for water quality and hydrology permits. Permit conditions required more than 50 acres of mangrove and wetland habitat bordering the river be set aside as a wildlife preserve. Imposed by the Florida Game and Fresh Water Fish Commission was the requirement to preserve existing habitat for the gopher tortoise, a state-listed threatened species, that was present on the site. Permit conditions also required preserving 45.6 acres of upland scrub.

Under the authority of the DEP, the South Florida Water Management District (SFWMD) is responsible for permitting water-related issues, including water consumption. The major design issue to be resolved for the golf course was to find a water source for irrigation. There was no surface or underground water available on site and no practical source of treated effluent, the water used in Southwest Florida for public rights-of-way and golf courses. The property had been undeveloped except as a storm water management system for a sizable older community, Naples Park, to the south. SFWMD stated that the golf course could not increase nor impede storm water run-off from that neighborhood into the OFW after completion of construction. To meet permit demands, SFWMD required that a system be designed that retained water draining into, as well as falling on, the site, based on a 25-year storm event. This drove the size and number of lakes, as well as the amount of fill that would be required for the golf course.

One million cubic yards of excavated soil created the new terrain that blends naturally with its surroundings and provides man-made uphill, downhill and side hill shots unique for southern Florida. Sand bunkers mimic the visual characteristics of the upland scrub and vary in size and shape to create the strategy of each hole. Also integral to the strategy and character of each hole was the use of mature trees. Engineering solutions solved the water quality and hydrological concerns of the permitting agencies.

Protective berms were designed and constructed to divert potential surface runoff away from the mangrove buffer and the Cocohatchee River. Eleven water management lakes were built to retain rainfall on the golf course and the drainage from Naples Park. Lake design allowed for the use of natural filtration to maintain pollutant discharge at or below permitted levels. Monitoring of water

quality and quantity was required as part of the permit requirements and by Audubon International. Concrete cart paths were installed only in high use areas and on slopes; pervious concrete screenings that blend with the white sand are used elsewhere. Golf course bridge surfaces and course furniture are made of 100 per cent post-consumer plastics.

An irrigation system that could directionally apply brackish water on only turf grass and that could withstand salt water corrosion was required. Collier Enterprises invested in state-of the-art, energy saving, low pressure computerized irrigation system, complete with soil probe analysis and 2700 heads (as opposed to the 800-1200 typically used for a comparable quality course) to achieve a turf-only envelope. Stainless steel components, over-sized pipes and variable frequency drive pumps serve to reduce degradation of the system from operation. The installed system has a five to eight year longer life expectancy than the 20-year lifespan of a typical golf course irrigation system. Because the lowest wind speeds are between midnight and 6:00 AM and coincide with off-period electrical demand, at least $6,000 per year is saved in electrical costs.

The need to pay for irrigation water and for a water use permit was eliminated by the decision to use Seashore Paspalum for the course, a turf that could be irrigated with brackish water readily available from the Cocohatchee River. The impact of salt water on water quality and hydrologic permits were handled by reducing the total amount of turf using irrigation to 77 acres. This also reduced the amount of plant food and possible nutrient run-off. The areas taken out of turf were established as native habitat with indigenous salt-tolerant species. Once established, these plants required no irrigation, plant food or pesticides, thus reducing the chance of these materials reaching the OFW. These areas became part of the 64 additional acres of existing and created native habitat that were preserved for the plentiful wildlife that has increased substantially since the course has opened. The continuous corridors of upland scrub with its distinctive native white sugar sand weave between, around and through golf holes.

Integrating the site's many natural habitats into the course was a primary goal in order to enhance the golf experience. Key to the success of this project was the involvement of Audubon International. Their approach fostered design and operations that improve the long-term health of the site's environment as well as the surrounding watershed through an integrated resource management plan that required that each decision have an economic benefit. Careful execution of construction activities by the golf course builder throughout the project contributed significantly to the successful integration of golf course and site.

The Old Collier Golf Club was the first golf course in the world to irrigate with brackish water, and the first to landscape with indigenous plants that are halophytes. It was the first golf club in the world to be designated Audubon Gold Signature Sanctuary. It took the vision, careful planning, management and commitment by Collier Enterprises to create and maintain a world-class golf course that would be both economically and environmentally sustainable.