Collaborating Golf Course Environmental Stewardship to Ensure a Healthy Watershed

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Bayville Golf Club is an 18-hole golf course built in the early 1990's with a goal of offering a premier golfing experience. Situated on the banks of the Lynnhaven River, the golf course is within 2-miles of the mouth of the Chesapeake Bay. A former dairy farm, the 265-acre property has over 1-mile of estuary shoreline, which simply stated is the ocean's inlet into the lower end of the river. Protecting this shoreline and the adjacent waterway is integral to the success of the club. From the onset of construction we solicited assistance from local and regional environmental leaders for direction and counsel on environmental issues. Their inclusion opened a two way communication with the community at large that has continued to this day.

Pre-construction 1990 USGS aerial photo

The true commitment to the environment originated with the founding members of the club. Without their steadfast leadership and direction the level of cooperation and results could never have occurred. Bert Crawford, Founding Member and Green Chair from 1995 to 2003 explains the environmental philosophy of the club in the following statement. "Members of Bayville Golf Club have a mutual respect for the property's immediate surroundings as much as the

maintenance of the grounds itself. Since inception, the club has taken an active role to improve and enhance local watersheds. Environmentally friendly plantings were and continue to be a prerequisite for preserving the ecosystem of the adjoining tributaries which lead to major waterways. Bayville has also been relentless in preserving the area's natural habitat. It's not uncommon to see fox running across fairways, osprey nesting on a nearby inlet post, various species of hawk overhead or even an imposing eagle perched in a tree. With guidance from a professional management team led by the course director, superintendent and staff, Bayville is proud of its continued focus to raise the bar to improve the environment while aesthetically maintaining a magnificent piece of property with a simplistic natural appeal".

Hole #2 with estuary in background. Note the buffer vegetation

Hole #7 with buffer vegetation

In fact, the Bayville Golf Club is considered such an environmental success that the Alliance for the Chesapeake Bay included the course in its recent Lynnhaven River BayScapes tour. The alliance, a not-for-profit watershed group with offices in Virginia, Maryland and Pennsylvania, has worked for 25 years to educate residents who live and work in the Bay watershed about preventing pollution.

During the course's construction, Billy Mills, BayScapes project director from the Alliance for the Chesapeake Bay, made site visits and offered suggestions on how to enhance the environmental benefit the course would have to the Lynnhaven River. Environmental Consultant Mary Heinricht steered the club through the permitting processes with ideas and goals which would not just meet, but exceed required environmental regulations. The golf course's architects took into consideration their environmental recommendations and incorporated them into the design of the course. From the lake drainage system that keeps creek marshes healthy to native trees, shrubs and colorful wildflower meadows planted along the course; Bayville Golf Club has kept both golfers and nature in mind. Environmental tours are designed to showcase BayScaping in lieu of "landscaping", which promotes ways of keeping fertilizers and other chemicals from running off into the Chesapeake Bay. The golf course was

cited for its ``innovative and exemplary planning and design," said Billy Mills of Richmond, for the Alliance.

``Most people don't think of golf courses as being an environmental showcase," Mills said, ``because all of us know that successful golf course management includes extensive use of fertilizers and pesticides.

``At Bayville, this is radically different," he said.`` From the beginning, concerns with nutrient runoff were addressed, including the planting of warm-season grasses and native grasses to reduce the use of fertilizers and pesticides."

Hole #6: Natural areas and buffer vegetation such as these pictured not only provide filters to ensure water quality and erosion control, but provide enhanced green space, wildlife habitat, and reduce maintenance costs.

Bayville's Golf Course Superintendent, Jeremy Beech has carried on the course's established tradition through his work with Virginia Tech and conducting a study on the potential benefit of phytoremediation. He worked with Ph.D. Laurie Fox as part of his course work toward a Master's Degree from Virginia Tech in Horticulture. Phytoremediation is the process of using plants to clean waterways. Floating water hyacinths (*Eichhornia crassipes*) can be used in storm water and irrigation ponds as biological filters to absorb excess nutrients, primarily nitrogen and phosphorus, and improve water quality.

Hyacinths grew rapidly in containment corrals on the irrigation pond on the fifth hole. After summer growth the hyacinths can be harvested, dried and spread over the turf, further cycling

nutrients through the turf and reducing their runoff. Currently expanded methods of growing the hyacinths in areas contained by a turbidity barrier are being explored.

George S. Rhodes, Chairman, Green Committee supports the research, "Concern for the environment has been a major consideration in all activities at Bayville Golf Club since ground was broken to build the course in 1994. We have actively participated in studies with Virginia Tech on phytoremediation in an effort to develop information to help other golf courses improve their relationship with the environment. Furthermore, we have successfully created and maintained buffers to control runoff. No efforts are spared to maintain an ecologically friendly habitat for wildlife. Members of Bayville sincerely appreciate our ongoing efforts to make the local and adjoining environment better than it was before the golf course was built."

Additional efforts at Bayville include working with Lynnhaven River Now, a not-for-profit river group, was organized the civic and business leaders looked within the community for volunteers, who had experience and knowledge that could benefit their cause to restore the river's ecosystem. Committees were established which would be delegated with researching specific areas of interest. These committees included:

- Buffer Restoration
- Clean Boating and Marina
- Education
- Oyster Restoration
- Public Relations & Marketing
- Special Events
- Water Quality
- Public Affairs

The Lynnhaven River's Story

In the 1607 Captain John Smith sent exploratory crews into the Lynnhaven River before settling in Jamestown. They discovered pristine waters abundant with wildlife and in particular large delectable oysters. The Lynnhaven River gained fame through the years for the quality and abundance of its oysters. Also the estuary served as a resting area for migratory waterfowl that had just crossed the mouth of the Chesapeake Bay on their southerly flyway.

The Lynnhaven River is a tidal estuary which now serves as the watershed basin for 64 square miles of the city of Virginia Beach. As the population of Virginia Beach grew, the water quality of the Lynnhaven declined. This decline was so great that the Virginia Department of Health declared the shellfish unfit for consumption. In the fall of 2003 a group of local community leaders embarked on an endeavor to establish a community based non-profit organization with the goal of cleaning the waters of the Lynnhaven River.

The founding of the Lynnhaven River 2007 sanctioned the goal of determining the cause of the decline, create public awareness of these causes, and establish a community based plan of action to clean the waterway. The consumption of oysters was used as benchmark to determine if improvements were made. The goal of the organization, which is currently named Lynnhaven River Now, is to create a sustainable clean estuary that can be enjoyed and appreciated by generations to come.

Additional information can be found at:

http://www.lynnhavenriver2007.org/

As the Director of Golf Course Operations of a 265-acre property on the shores of the Lynnhaven River with a tract record of environmental leadership I was honored to be selected to the executive committee and buffer restoration

committee. The buffer restoration committee would spearhead the direction for plant selection and landscaping not just the shores of the Lynnhaven, but offer guidance for all plant health care management techniques within the entire watershed.

Hole #15 Native vegetation left in the course's design and supplemental buffer vegetation

The committee's first order of business was to work with the Susan French, committee chair and Extension Agent for Virginia Tech, to develop planting guidelines and lists of recommended plant materials. Working with the plant health care specialist, city engineers, and planners the committee developed brochures that are easy for homeowners to use and helpful in steering them in a "Lynnhaven Friendly" path. Additionally buffer committee members have spoken at garden club meetings, golf course superintendent meetings, landscaping seminars and other public venues to espouse the benefits of proper landscape design and plant health care management techniques. Demonstration seminars have been provided for the public as well.

Golf Course Superintendents can and should be leaders in the field of environmental stewardship. Offering our services to the community is one of the best ways to 'give back' but can also enlighten the general public on how modern golf courses are being managed. Many homeowners and fellow committee members have commented that they had no idea of the environmental commitment that golf course superintendents had and their impressions of the management of golf courses was changed in a positive way.

Our involvement with local watershed organizations has had many benefits including:

- Assisting in the design and construction processes to address environmental concerns in an effort to ensure a successful and "healthy" project
- Providing outreach and education opportunities with assistance and guidance from environmental groups to promote the golf course and its value to the environment
- Enhancing relationships with watershed and other conservation groups, who are concerned about water quality and habitat.
- Providing opportunities for community service that enhance both the golf industry and golf course superintendent profession

Being proactive with a watershed group can help ensure that water rights and water quality issues are presented accurately for the golf courses located in the watershed. Being reactive to watershed campaigns such as water quality projects that are established by non-golf members could mean some hard challenges for the course. Becoming involved may also identify grant monies associated with the Clean Water Act, non-point source pollution, stream restoration projects and other watershed protection initiatives from the federal or state governments.

Beginning with the design and construction on through to today's maintenance practices, Bayville Golf Club's involvement with the watershed groups has been a key link to making the

course more compatible with the environment. The resulting community awareness about Bayville Golf Club and related opportunities for the golf course superintendent to help make a difference has helped promote a healthy relationship with local advocacy groups, the community and the environment.

Hole #16 Designed to be challenging and environmentally sensitive