Lockwood Folly Brunswick County Case Study

This case study introduces the collaborative effort the community engaged in to develop a multifaceted watershed-based strategy to maintain and restore water quality in the Lockwood River. It also identifies specific strategies for managing impacts of growth on resources deemed valuable by the community, which are applicable in other locations.

Summary

Worried about the river's health and the continued viability of the local fishing industry the Brunswick County Board of Commissioners teamed up with the N.C. Coastal Federation, the U.S. Environmental Protection Agency and the state Ecosystem Enhancement Program to establish the Lockwood Folly Watershed Roundtable. The Commissioners were concerned about the potential impacts of rapid growth in the watershed. The eight-member Watershed Roundtable was tasked with developing a set of strategies to maintain the health of the watershed while facilitating continued growth. Roundtable members were appointed by the Board of Commissioners and represented wide community interests. The Roundtable worked for two years to develop a final report that includes a set of nine strategies for future growth in the watershed. The strategies range from educating the public about the importance of protecting water quality to changing land development policies to protect vulnerable water quality. The Board of Commissioners voted to accept the strategies in February 2007 and appointed an implementation committee to work toward putting the strategies in place.

In order to develop these strategies, Roundtable members heard presentations by water quality professionals and reviewed reports that documented water quality trends and conditions, learning about stormwater runoff and deficiencies in current pollution management practices and regulations. Early on, the Roundtable partnered with the NC Environmental Enhancement Program, who brought water quality modeling and watershed planning expertise to the process.

Water quality experts from a number of state agencies presented the Roundtable with evidence that demonstrated a long-term deterioration of water quality in the Lockwood Folly River. These presentations showed that between 1980 and the present, widespread areas in the Lockwood Folly failed to meet state water quality standards set for shellfishing. As a result, the percentage of the river's shellfishing areas that are closed increased from 18% in 1980 to the current level of 55%. Increasing turbidity and increasing levels of fecal coliform (an indicator of waste from warm-blooded animals) were noted as the causes. Rising turbidity and fecal coliform levels are known to be the result of alteration in hydrology of the watershed, whereby stormwater runoff increases and carries sediment and pollution further downstream. Development and ditching can alter hydrology. And it was also suspected that poorly maintained and failing septic tanks were contributing to water quality impairment.

The Roundtable also considered an economic study conducted by NC State University that demonstrated the financial feasibility of implementing the low impact development strategy compared to conventional land development approaches. The final strategies provide the county with a range of options for reducing environmental impacts,

including changing land development policies, developing education programs, and implementing site preservation and retrofit techniques.

Strategies and Tools

The Roundtable developed nine strategies that are now in the process of being implemented. Implementation is being overseen by an implementation committee appointed by the Brunswick County Board of Commissioners.

Strategy 1: A) Assess water quality risk according to natural systems in the watershed and develop future land use policies and ordinances that fit land use density and landscape design to the level of water quality risk.

B) Sewer extension policies that:
(1) give priority services to communities with malfunctioning septic tanks, and
(2) ensure that land use and development policies in wastewater service areas are consistent with risks to water quality. These strategies would look at hydrologic features and assign water quality risk factors and use them to determine the appropriate type and density of development. Possible implementation options include using cluster housing neighborhood design for a given amount of development and limiting built-upon surfaces in the most vulnerable areas.

Strategy 2: Incorporate low impact development (LID) technology into county site design and development policies. The strategy will include methods to integrate this tool into the County's existing development management program as an option for developers. LID is a comprehensive land planning and engineering design approach that seeks to maintain and improve the pre-development hydrology of a developing watershed. LID uses the natural capacity of land to soak up rainfall and prevent contaminated stormwater runoff from entering water bodies. These techniques were the basis for a national conference held in Wilmington in March, which featured Brunswick County's work on the Lockwood Folly. For more information about LID, visit www.lowimpactdevelopment.org.

Strategy 3: Coordinate state, local and federal regulatory programs with Brunswick County taking the lead enforcement role and fostering inter-local cooperation. This strategy suggests policy changes and a financial plan to implement it.

Strategy 4: Create an action plan to acquire strategic sites and properties to protect and restore water quality. Sites would be targeted according to a comprehensive selection method, and would be acquired from willing property owners by partnerships with the nonprofit community and state and federal agencies.

Strategy 5: A) Develop a public education, information and outreach program. Involve the public so that protecting and restoring water quality in the Lockwood Folly River becomes an important local priority.

B) Recognize the environmental and cultural significance of the Lockwood Folly River through federal Wild and Scenic River designation. This non-regulatory designation will

underscore the special nature of the river as development in the area continues to increase.

Strategy 6: Protect stream edges in the watershed by implementing a 'living shorelines' program. A living shoreline is an innovative alternative to bulkheads for shoreline stabilization, erosion control and stormwater buffer and wildlife habitat restoration. This strategy involves possibly creating a cost-share program for living shoreline restoration projects and incorporating language supporting living shorelines into the county's CAMA land use plan.

Strategy 7: Identify sites for water quality 'retrofit' to reduce or eliminate unwanted runoff. The county should work with state agencies such as the NC Ecosystem Enhancement Program and non-profit organizations to secure funding to address targeted sites for retrofit identified by the Roundtable.

Strategy 8: Develop a financial incentive program that encourages developers to take alternative approaches that support water quality objectives. Development practices, such as LID, conservation easements and preservation of wetlands, which are protective of water quality, would be rewarded with mechanisms such as a streamlined review process, favorable ad valorem tax treatment, and tax-advantaged donations.

Strategy 9: Develop a working waterfront program that assists in the preservation of traditional waterfront businesses, such as fish houses and commercial marinas, and public access sites, such as boat ramps and fishing piers.

The full report on the Roundtable's findings and strategy implementation options and the first tabloid are available on the county's website at www.brunsco.net. Check the website for notice of the work sessions that the county will hold to plan to how to put the strategies into action.

Lessons Learned

Keep Focused - It is important to keep project goals as the focus throughout the duration of the roundtable process. In this case the primary goal was stated as maintaining open shellfish waters as the watershed is developed. The group found they could always return to this goal to guide their work.

Being Proactive – Because the Lockwood Folly is still relatively undeveloped, taking action now allows the county to be proactive in steps it takes to manage development.

Continued Citizen Participation - There are long term community benefits associated with engaging "stakeholders." New working relationships were developed during the roundtable process, bringing new involvement of the community and leading to subsequent assistance from citizens in groups addressing community issues. For example, homebuilders and engineers who were either participants or observers of the roundtable process have gone on to serve as key participants of the LID ordinance technical advisory committee.

Publicity – A positive collaborative process can result in great publicity for the County. Brunswick County has been asked to share the message of the Lockwood Folly Roundtable process at several conferences including the National LID conference in 2007 and at the watershed roundtable in Asheville in 2005. Brunswick County was also invited to Atlanta to present the process to high level officials at EPA Region 4 in Atlanta in 2005. EPA funded the Lockwood Folly project.

Science – It is important to bring in experts who can provide quality base line data and science and serve as references when making suggested policies on land use and development techniques.

Panelists

May Moore, County Commissioner, Brunswick County
E-mail: mmoore46@ec.rr.com Phone: 910-253-2000

Steve Stone, Assistant County Manager, Brunswick County
E-mail: sstone@brunsco.net Phone: 910-253-2015

Jason Doll, Senior Scientist, Stantec
E-mail: Jason.doll@stantec.com Phone: 919-264-1337

Resources

Lockwood Folly River Roundtable-Strategy Report : www.brunsco (under Departments go to Administration, and a link to the reports are on the left side of the page)

Watershed Planning Handbook (U.S. Environmental Protection Agency) Free Download: Visit: http://www.epa.gov/owow/watershed_handbook/

Living Shorelines: A *living shoreline* is an innovative approach to shoreline stabilization that combines various stabilization methods to control shoreline erosion, while restoring and/or preserving the characteristics of the estuarine marshes and upland buffers. Living shorelines typically use a low rock sill to absorb wave energy. Behind the sill, wetland vegetation is planted to restore the lost habitat, provide a stormwater buffer, and reduce erosion. Vertical walls and rip-rap revetments do not absorb wave energy like sloping vegetation. Instead, the energy is reflected back along the shoreline, which can increase the erosion in these areas and scour marshes that naturally grow here.
For more information on Living Shorelines Techniques visit:
http://www.jefpat.org/Living%20Shorelines/lsmainpage.htm
http://www.nccoast.org/Restoration/LivShore
http://www.whitehallbay.org/Living%20Shorelines%20Final.pdf