

A CASE STUDY IN WATERSHED-BASED PLAN DEVELOPMENT AND IMPLEMENTATION FOR THE MAY RIVER WATERSHED IN BLUFFTON, SC

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Abstract. The Town of Bluffton, SC was a one square mile coastal village until it experienced exponential growth mainly within the last decade. Today it is approximately 54 square miles and is one of the largest municipalities in South Carolina. Until this recent growth, few sources of possible impairments to water quality were recognized within the watershed, and even fewer within close proximity to the river itself.

In 2007, the Town was told by SC Department of Health and Environmental Control (SCDHEC) that fecal coliform levels in the headwaters of the May River were increasing. In 2009 the river received a shellfish harvesting classification down-grade due to high fecal coliform levels. In response to this down-grade, the Town of Bluffton, with Beaufort County and stakeholders, committed to take action to restore shellfish harvesting in the river and to prevent further degradation to the river.

Following the USEPA guidelines for developing watershed plans, Town staff worked for nearly a year with consultants, Beaufort County, topic experts and local residents to develop the May River Watershed Action Plan, which was adopted by Town Council in November 2011. The May River Watershed Action Plan:

- Provides a strategy for assessing problems and implementing solutions to restore shellfish harvesting in the May River.
- Provides a strategy for assessing and implementing preventative measures to protect the May River from future degradation.
- Identifies opportunities for land purchase, conservation easement purchase, and public, private and public/private opportunities for retrofit projects.

This case study outlines how the Town implemented the USEPA's planning process, as well as the lessons learned during the development of the May River Watershed Action Plan for use by other communities faced with a similar need.

INTRODUCTION

This case study documents the development and initial implementation of a watershed-based plan for the May River Watershed (HUC 3060110-03) in response to rising fecal coliform levels. It serves as a real-world example of the USEPA approach to develop a restorative watershed plan (USEPA, 2008). This process and the lessons learned are pertinent for both coastal and interior water resource managers whose goal is to develop a comprehensive approach to address current and potential future pollutants in their local waterbodies.

BACKGROUND

The May River is located in southern Beaufort County within the jurisdictions of the Town of Bluffton and Beaufort County, where it bisects the Town's jurisdiction (Fig.1). The Town of Bluffton was one square mile for over 130 years until its first annexation in 1987. However the majority of its growth has occurred within the last decade. Today Bluffton is approximately 54 square miles and one of the largest municipalities in South Carolina. Until this recent growth, few sources of possible impairments to water quality were recognized within the watershed and even fewer within close proximity to the river itself.

In 2007, the Town was told by SC Department of Health and Environmental Control (SCDHEC) that fecal coliform levels in the headwaters of the May River were increasing. In 2008, in response to this increase, the EPA and SCDHEC designated the May River as a priority and threatened watershed. However, in 2009 the river received a shellfish harvesting classification down-grade in its headwaters due to high fecal coliform levels (Fig. 2). In 2009 the Town was also awarded a USEPA 319 grant by SCDHEC to reduce fecal coliform levels.

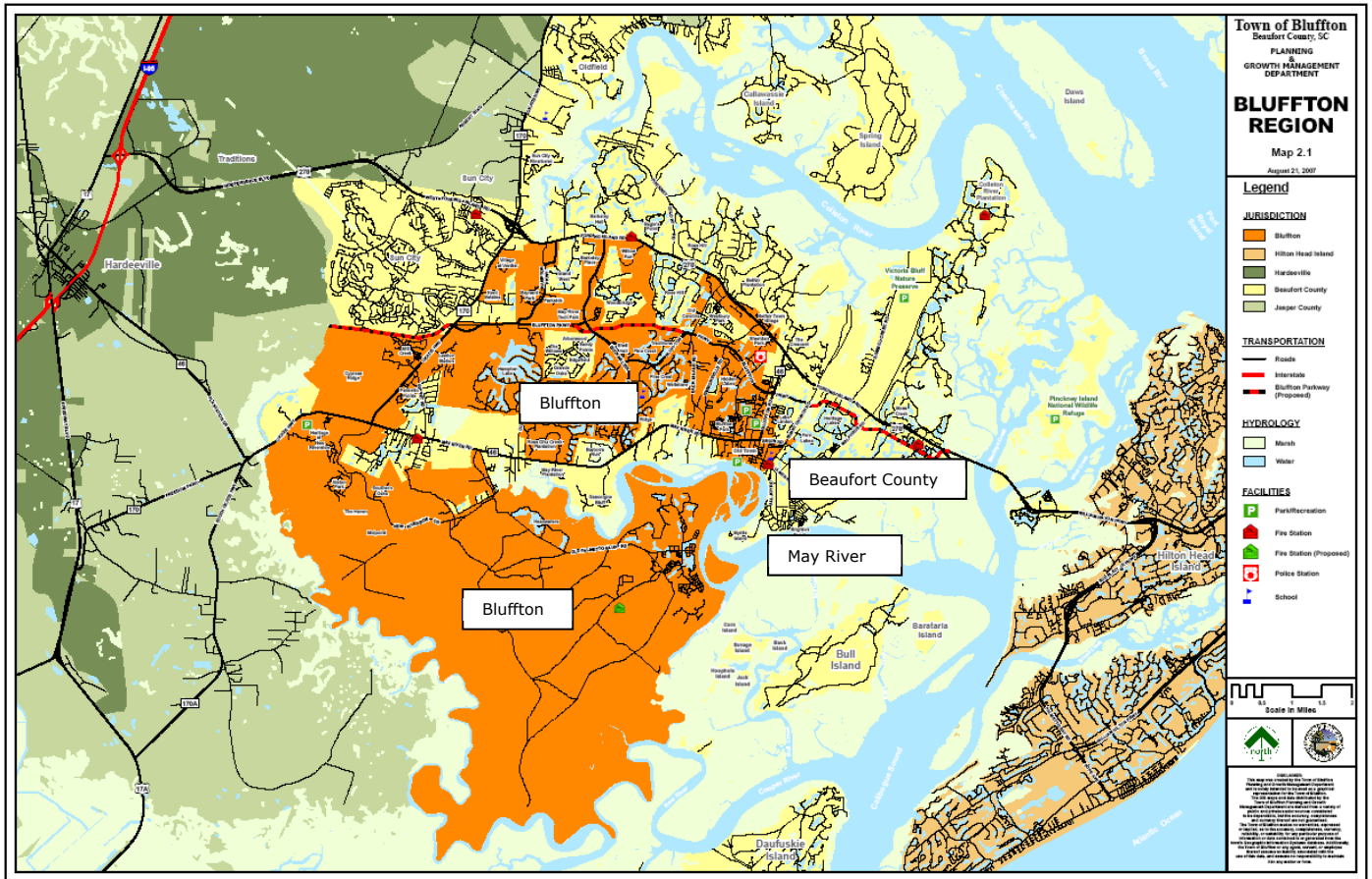


Figure 1. Bluffton Region and May River Location.

While recreational contact is still permissible, these rising fecal coliform levels can be an indicator of the deterioration of the health of a watershed since an increase in this pollutant is often associated with an increase in other pollutants including sediments, potential viruses and nutrients. The Town of Bluffton, in conjunction with Beaufort County and local citizens, committed to take

action using information currently in hand to develop an updated, comprehensive watershed management plan. This plan includes both structural and nonstructural Best Management Practices (BMPs) to restore shellfish harvesting in the river and prevent further degradation in the May River. Town staff worked for nearly a year with consultants, Beaufort County, and local residents to develop the May River Watershed Action Plan (AMEC, 2011), which was adopted by Town Council in November 2011.

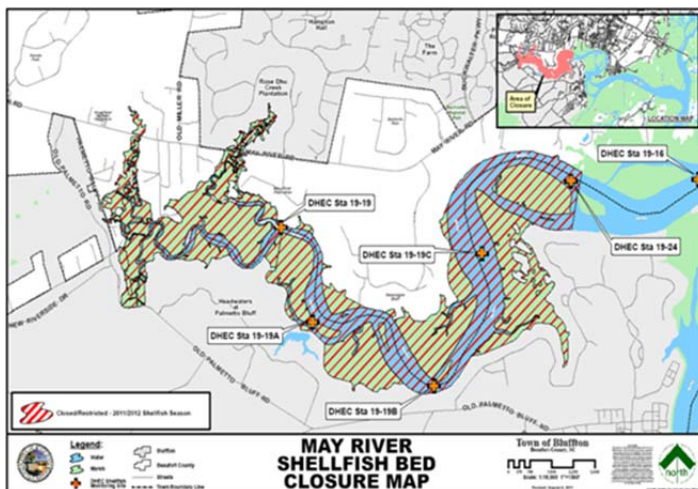


Figure 2. Shellfish Bed Closure in the May River.

PROJECT GOAL AND OBJECTIVES

The goal of the May River Watershed Action Plan (Action Plan) is to protect and restore shellfish harvesting within the headwaters of the May River. To achieve this goal the objectives for the Action Plan include:

- Providing a strategy for assessing problems and implementing solutions to restore shellfish harvesting in the May River.
- Providing a strategy for assessing and implementing preventative measures to protect the May River from future degradation.

- Identifying opportunities for land purchase, conservation easement purchase, and public, private, and public/private opportunities for retrofit projects.
- Establishing priorities, identifying funding opportunities, coordinating specific partners and policies (i.e. ordinance changes), and establishing timelines such that the Town can use this information as a business plan to be implemented with other Town annual Capital Improvement and Budgeting programs.
- Serving as a template for other area watershed action plans.

The Action Plan utilizes the significant amount of available information gathered over the four previous years regarding the watershed and the May River itself. It also incorporated lessons learned from previously implemented actions and BMPs within this watershed and similar watersheds, to develop a strategy with specific short-, medium-, and long-term actions for measurable water quality improvement. The May River Watershed Action Plan will allow the Town of Bluffton to have earlier implementation of projects for short term results and develop community-supported long-term strategies to return the May River Watershed to full shellfish harvesting status.

METHODS

Adapting the guidelines set out by the USEPA (2008) for developing watershed plans, the Town worked through each of the following steps:

Set Goal and Initial Objectives

The ultimate goal of the May River Watershed Action Plan is to restore shellfish harvesting throughout the May River. However, identifying measurable objectives across various timeframes was an important component in the Action Plan's development. One of the biggest threats the Town recognized to any watershed improvement or protection plan is taking early meaningful steps. Often the full list of projects needed to completely restore and protect a watershed can overwhelm the decision-making process and prevent any improvement from taking place.

Therefore, the Action Plan priority projects have been identified with respect not only to their anticipated performance, but also to their rate of implementation. The rate of implementation becomes an important factor as the cumulative loading reductions will be higher due to earlier implementation of projects. A timeline for all Action Plan projects and programs has been identified and allows for the proper policies, partnerships and funding

mechanisms to be developed for successful implementation.

Environmental Inventory

Conducting an environmental inventory of the watershed is an integral step in the planning process. Many historical and current data sets may be available and a thorough literature search including water quality sampling reports, land use, wetland coverage can provide key data.

A wealth of previous and current environmental data for the May River Watershed exists from a number of independently conducted studies and monitoring programs. These monitoring programs and studies include the SCDHEC – Shellfish Management Area 19 monitoring data (Monday, 2007-2012), the SC Estuarine and Coastal Habitats Assessment Program (Van Dolah, et. al., 2006), May River Baseline Assessment (Van Dolah, et.al., 2004), May River Waterbody Management Plan (Kiernan, 2008), Water Quality Concerns in the May River (Bergquist, 2010), as well as on-going weekly fecal coliform “hot spot” monitoring by the Town and Beaufort County in partnership with the University of South Carolina Beaufort – Gateway Campus.

These data and reports characterize the watershed and its changes over time, thus identifying potential areas to implement structural and non-structural BMP retrofits and preventative measures.

Social Inventory

Equal in importance to conducting an environmental inventory is conducting a social inventory of stakeholders. This group should include representatives of a variety of perspectives to develop community involvement and buy-in to the plan.

This broad-spectrum approach for the Town included representatives from the general public, community leaders, developers and subject-matter experts (both public and private sector). After these individuals were identified, the Town engaged them in various activities including committees, workshops, and advisory groups, ensuring community engagement in the process.

Design an Implementation Program

To show activity and dedication to improving water quality conditions, the Town decided to develop an initial watershed plan directed at reducing fecal coliform sources. The initial plan was submitted to SCDHEC in response to a Request for Proposals (RFP) for a USEPA 319 grant. SCDHEC awarded the Town a 319 grant in 2009 which included over a dozen projects. These 319-funded immediate actions include:

- Rain Barrel/Rain Garden Program
- Septic System Inspections/Pump Outs

- Pet Waste Stations
- Social Marketing Campaign
- Unified Development Ordinance overhaul based on watershed management principles
- Bird Roosting Deterrents
- Stormwater Pilot Project Retrofit

Again, these projects were implemented to not only improve water quality within the May River and its watershed immediately, but to also show action, raise community awareness to the problem, and involve the community in several of the solutions.

Develop Watershed Action Plan

With the assistance of previously identified stakeholders, consultants, governmental and non-governmental partners, the available information and recommendations from the multiple studies previously conducted were synthesized into the May River Watershed Action Plan from December 2010 to November 2011. The final document incorporates structural and non-structural BMPs, as well as restorative and preventative measures. Town Council adopted the May River Watershed Action Plan in November 2011 and an Advisory Committee was formed in June 2012.

Implement the Watershed Action Plan

With short-term, mid-term and long-term projects identified in the Action Plan, implementation began immediately with the smaller projects included in the 319 grant. These accomplishments are summarized in the “Results” section.

Simultaneously, based on prioritization procedures developed in the Action Plan, four initial restorative BMP projects have been identified. These projects were identified as priorities based upon weekly fecal “hot spot” monitoring results, potential fecal coliform loading reduction after a BMP retrofit, available funding and land access.

Measure Progress and Make Adjustments

The Action Plan is a living document and is expected to be updated periodically as the identified strategies and tactics become implemented and further developed. It should be noted that as this document is updated, additional studies and other work products are expected. These work products will be added as appendices or may be included as references to external updates (e.g. monitoring databases, websites). This ensures that future work products will be incorporated in this Action Plan and can be properly utilized, that interested parties can see the technical basis for the recommended strategies and tactics, and will prevent the document from becoming overly cumbersome to the point that it is no longer user friendly.

RESULTS

While the Action Plan was recently adopted, a number of activities, projects and programs have been completed and are on-going throughout the watershed including:

- 149, 55-gallon rain barrels installed
- 31 rain gardens installed
- 98 septic system service calls
- 10 pet waste stations installed
- 6 trash cans in Old Town installed
- 5 doggie dooley pet septic system
- 1 manure management plan and buffer garden installed
- RV/Campground Waste Management Plan developed
- Unified Development Ordinance overhaul based on watershed management principles
- Animal Waste Ordinance completed
- Social Marketing Campaign completed
- On-going construction site inspection program
- On-going ditch maintenance and enhancement program
- On-going easement acquisitions and negotiations for access to properties
- On-going water quality monitoring program.

Current programs include installing a stormwater retrofit BMP pilot project and installing 40 bird roosting deterrents on docks in the headwaters of the May River.

Additionally, the Town has executed a contract with SCDHEC for a second 319 grant which will install a retrofit project for stormwater volume reduction via re-use for irrigation in a private community.

DISCUSSION

Throughout the process of developing the May River Watershed Action Plan, there have been a number of lessons learned which are of use to others who are about to embark on a similar project. These include:

- The EPA Watershed Planning Guidelines are just that – guidelines. Adapt the process to work for your situation and community.
- Do not underestimate the power of stakeholders in the process. Identify and engage them early.
- Technical expertise is invaluable, but plain communication (education) is key.
- Involve all pertinent internal departments (public works, planning, engineering, stormwater, etc.) and other jurisdictions.
- Show early action for credibility.
- Identify potential funding sources (establishing a Stormwater Utility, grants, etc.).

- Be patient. The Plan took one year to develop after over 4 years of initial studies and activities.

ACKNOWLEDGEMENTS

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