

MAY RIVER WATERSHED ACTION PLAN UPDATE

PROJECT DESCRIPTION:

A. Watershed Description:

The May River watershed (HUC 030601100301) is located within the jurisdictions of Beaufort County and the Town of Bluffton, South Carolina, located approximately 17 miles northeast of Savannah and seven miles west of the Town of Hilton Head Island. The May River watershed encompasses an area of approximately 25,582 acres (10,353 hectares) with approximately 85%, or 21,918 acres (8,870 hectares), being upland drainage area that may contribute freshwater inflow. This is the only freshwater input into the euhaline May River as it drains to Calibogue Sound and the Atlantic Ocean. The watershed is located in the Coastal Zone of the Atlantic Coastal Plain with geological deposits from the Late Cretaceous to Holocene that extend from New Jersey to Texas. Around Bluffton, this area lies on the geologic Pamlico terrace, a ridge believed to be caused by fluctuations in sea levels during the Pleistocene epoch and generally found below twenty-five feet. Muds, silts and clays settled out atop this layer and became the foundation of much of the soil types in the coastal plain.

The May River was identified in 2008 as a priority watershed by the EPA and SCDHEC. It is a regionally significant waterbody for a number of reasons including:

- its historic and cultural uses including commercial and recreational activities;
- its aesthetics and views which add to the quality of life for its citizens;
- its numerous natural resource populations that are directly harvested and utilized by local and regional residents;
- its economic impacts, both direct and indirect, to the community from fishing, shellfish harvesting and ecotourism; and
- its Outstanding Resource Waters (ORW) designation from the SC Department of Health & Environmental Control Environmental Quality Control's (SCDHEC-EQC) Bureau of Water for a high level of water quality.

All of these facets of the river provide a sense of community character and pride that is locally, regionally and nationally recognized.

The Town is committed to protecting and enhancing the environment of all of its watersheds including the May, Okatie-Colleton and New Rivers to enable these important resources to function ecologically as well as to continually add value to the quality of life for our visitors and residents alike. To ensure that appropriate support is dedicated to the management of these watersheds, the Town Council has adopted the "May River and Surrounding Rivers and Watersheds" as one of the Town's six (6) Strategic Plan Focus Areas with the Vision that the Town will celebrate the May River while our community's history, culture, and environment are protected for future generations through our actions today.

As a Strategic Plan Focus Area, the Town is committed to support and encourage initiatives that continuously improve the water quality and the economic viability of the watersheds through three (3) Guiding Principles:

1. Support initiatives, such as the May River Watershed Action Plan, to improve water quality of the May, Okatie-Colleton and New Rivers and their watersheds,
2. Seek collaboration and partnerships that protect, and improve the May, Okatie-Colleton and New Rivers and their watersheds, and
3. Celebrate the May River, its heritage and importance to the community.

Until the mid-2000s, few sources of impairments to water quality were recognized within the May River Watershed and even fewer within close proximity to the river itself. While the May River still retains its ORW status, for the first time in its history the river received a shellfish harvesting classification down-grade in 2009 due to an increased concentration of fecal coliform at Shellfish Station 19-19 (Attachment 4). According to Beaufort County's Stormwater Management Plan (Thomas and Hutton, 2006) the headwaters of the May River naturally were the most vulnerable to a possible fecal coliform impairment due to its large drainage area and reduced tidal flow.

Following the 2009 impairment, the Town of Bluffton Town Council directed staff to accomplish two (2) initiatives:

1. Establish a water quality monitoring partnership with the University of South Carolina Beaufort with consistent and coordinated efforts with Beaufort County. Since 2009, staff has conducted weekly fecal coliform "hot spot" sampling in the drainages leading to the headwaters of the May River. The purpose of this sampling program has been to locate areas most suitable for a successful BMP to reduce fecal coliform concentrations.
2. Develop a comprehensive watershed-based plan that included a dual approach of water quality restoration projects as well as policies and programs to provide future protection with the goal to restore shellfish harvesting throughout the May River. The resulting document was the May River Watershed Action Plan (AMEC, 2011).

The Town worked for nearly a year with a consultant team to develop the May River Watershed Action Plan (Action Plan). In November 2011, Bluffton Town Council adopted the Action Plan (Attachment 5), which:

- 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.

The Town has been implementing and assessing the projects, programs and policy recommendations found in the Action Plan since its 2011 adoption. A basic premise of the Action Plan was that it be a "living document" which was periodically assessed and updated to reflect current environmental conditions, social conditions, watershed state of knowledge, and relevant advances in both structural BMPs and non-structural BMPs (programs and policies).

An example of a deeper state of knowledge and understanding of our watershed today when compared to 2011 is the complicated relationship between ponds, their downstream drainages, and the impacts on receiving waterbodies. As the Town's water quality monitoring effort has continued, and the Town has evaluated the downstream impact of a constructed BMP pond for more than two (2) years. Generally speaking, water quality data show that stormwater effluent leaving a pond is low in fecal coliform concentrations. Yet, when that same discharge is sampled again in an undeveloped wetland-like area just a few feet from the pond outfall, the fecal coliform concentration may increase by a factor of 10. Thus, while the BMP functions as designed and modeled, it is not having the anticipated positive impact on the receiving waterbody.

This type of knowledge was not addressed in the original May River Watershed Action Plan BMP recommendations as it wasn't known. The Town also continues to adopt policies, implement programs and construct projects recommended in the Action Plan which may also need to be updated to reflect the current state of knowledge.

While a number of Action Plan policies, programs and projects have been implemented, and others are still underway, the increased fecal coliform concentration at Shellfish Station 19-19 continues, as reported in the SCDHEC Shellfish Management Area 19 Annual Updates (SCDHEC, 2009 – 2015). The Town of Bluffton and its established partnering committees (Water Quality Technical Advisory Committee chaired by Dr. Geoff Scott and the Watershed Action Plan Advisory Committee chaired by Attorney Wes Jones) and citizens have committed to take action using the May River Watershed Action Plan and its future updates to improve conditions in the May River and to prevent further deterioration.

B. Previous Work in the Watershed:

The Town of Bluffton has been working to improve water quality conditions in the May River for nearly six years via a number of structural and non-structural BMPs with funding from Stormwater Utility funds, grants, State appropriations, and a South Carolina Coastal Nonpoint Program Capacity Building Grant for Local Governments. A number of small scale projects have been completed including receiving technical assistance to re-write the Town's Unified Development Ordinance (UDO) to include watershed-based planning principles and design elements, installing 150 rain barrels and 15 rain gardens throughout the watershed, completing a social marketing campaign aimed at septic system maintenance and pet waste reduction, installing 5 doggie dooley pet septic systems and 10 community-wide pet waste stations, and conducting over 100 septic system service calls throughout the watershed. A number of these programs continue today including septic system maintenance assistance and our community outreach and participation efforts.

The May River Watershed Action Plan identifies a number of large scale projects for consideration. As outlined in the Action Plan the primary restorative solutions involve retrofit and engineering projects that are aimed at reducing the existing level of fecal coliform that reaches the headwaters. These projects have the highest potential for success with respect to feasibility and pollutant load reduction based upon the knowledge at the time. Additionally, the projects utilize three (3) different technologies including 1) strategic placement of new stormwater ponds, 2) retrofitting existing ponds, and 3) wetland restoration/floodplain reconnections. The strategies that revolve around ponds need to be assessed and updated with the current information regarding downstream pond efficacy.

The first large-scale project from the Action Plan, the New Riverside Stormwater BMP, was completed in 2013. Town of Bluffton water quality sampling data have shown that ponds are very effective at reducing fecal loads from stormwater runoff. Therefore, the Town constructed a 1.25 acre pond in New Riverside to treat an approximately 300 acre undeveloped, drainage area where a high background concentration of fecal coliform existed.

With over two (2) years post-construction monitoring data, the pond is showing a statistically significant removal efficiency, approaching 90%. However, the effluent from the pond is "contaminated" again from resident coliform colonies in the downstream ditches. Within 1,300 linear feet downstream of the pond, and prior to discharging into the May River, all removal efficiencies are lost. There is no statistically significant difference at the last sampling station from pre-pond installation bacteria levels with post-pond installation bacteria levels. The Town plans to employ microbial source tracking to determine the source of the coliforms to target BMPs with the most potential to maintain the pond's removal efficacy in the effluent on its way to the May River. This is crucial information that affects all the BMPs currently recommended in the Action Plan.

The second large-scale project from the Action Plan is the Pine Ridge BMP Retrofit, which was recently completed in the summer of 2016. This project involves the retrofit of existing ponds within the Pine Ridge community to act as a water source for irrigation. Irrigating adjacent open space from the lagoon network not only reduces stormwater runoff volume, but it creates available storage within the lagoon network for future storm events. This additional storage allows for increased residence time within the ponds, improving their overall effectiveness at treating polluted stormwater runoff using natural processes. Again, the monitoring results of the Pine Ridge retrofit will help guide future projects.

Finally, the Town continues to pursue a wetland restoration/floodplain reconnection project in the Stoney Creek drainage. Generally wetlands are believed to clean and filter polluted stormwater runoff from upland development. However, the Town and County's sampling program has shown in several places, including Stoney Creek, that "clean" water from stormwater ponds is entering wetlands areas and becoming "dirty." While some background level of fecal coliform is natural in the wetlands, the levels measured during sampling appear to be greatly elevated, indicating that the wetlands are not functioning as expected. This is likely due to deterioration of the wetlands or from ditches being disconnected from their historic floodplain over time.

Natural wetlands typically slow down and clean stormwater runoff while providing flood storage for rain. The most likely reason that this is not happening in the Stoney Creek wetlands is the man-made ditches throughout the wetlands to drain them. These were dug long ago as a part of agricultural and timber operations. Once constructed, the ditches were effective in quickly moving water through the wetlands, thereby minimizing storage time and wetland flooding while maximizing usable agricultural acreage. However, this altered wetland lost its stormwater treatment capabilities which the original, natural wetlands provided.

The proposed wetland restoration project involves filling in a portion of the ditch system in the wetland area of Stoney Creek. This wetland drains nearly 4,900 acres that are largely developed for residential purposes, although many home sites have not yet been built. By filling or plugging a portion of the existing ditch system the Town expects to restore/reclaim a significant portion of wetlands and their cleansing function. The restoration would force stormwater runoff to flow across a much larger area, slowing it down and increasing stormwater infiltration, as well as the natural fecal coliform die-off and sedimentation processes.

This will be a true "pilot" project as there are very few wetland restoration projects aimed at improving water quality for comparison. Ideally the restoration project will reduce fecal concentrations to the river. However, even slowing the release of stormwater to the May River over a longer period of time to mimic natural hydrologic conditions will make this project a success. If this restoration is successful at reducing fecal concentrations from the wetlands, this project template could easily be implemented throughout the May River watershed. It is estimated that this project will cost \$500,000, not including site acquisition.

Each of the above construction projects is aimed at reducing fecal loadings from its respective drainage area and includes the best recommendations to improve water quality within a watershed. However, the Town also pursues non-structural Best Management Practices. For example, the Transfer of Development Rights (TDR) Program allows the Town to work cooperatively with developers to potentially offer incentives if the developer will transfer or extinguish their development rights out of the environmentally sensitive headwaters of the May River into an area which is more able to assimilate development. The Town was successful in working with Crescent Resources at Palmetto Bluff and New Riverside to move 1,300 development units (equating to approximately 146 acres of impervious surface) out of the environmentally sensitive areas of the May River. These units may be used elsewhere in areas more appropriate for development, or they may be retired altogether.

These projects and programs provide a significant accomplishment by the Town in implementing the May River Watershed Action Plan to restore the May River to full shellfish harvesting status. While these projects are aimed at achieving positive short-term results, they also aid in developing community support for long-term strategies to restore and protect the river, as well as future partnerships and funding opportunities.

C. Planning Goal:

The ultimate goal of the May River Watershed Action Plan has always been, and will continue to be, the restoration and protection of shellfish harvesting throughout the length of the May River. The Action Plan

Update will be formally reviewed and recommended for adoption by Town Council as a supporting document to the Town's Comprehensive Plan by the following Town Committees:

- Water Quality Technical Advisory Committee
- May River Watershed Action Plan Advisory Committee
- Planning Commission

Once adopted as a supporting document to the Comprehensive Plan, the Action Plan Update project, program and policy recommendations will be incorporated into the Strategic Plan which currently spans two fiscal years. With public input, Council prioritizes implementation of the Strategic Plan via the annual operating and capital budgets, which sets staff annual work plans. This includes construction of projects through the Town's multi-year Capital Improvement Program, adoption of policies, and creation of programs. Via this public process, the Action Plan Update will be implemented.

Funding to implement the Action Plan has been and will continue to be provided from a variety of sources including the following:

- Stormwater Utility Fee Funds
- Grants
- State Appropriations
- Town of Bluffton General Fund

Additional funding sources that may be considered include the State Revolving Fund for green infrastructure implementation and potentially bonds.

Implementation of the Action Plan Update is beyond the scope of the Town's MS4 permit requirements which are being met via separate programmatic elements.

D. Strategies for Plan Development:

As this project is an update of the current May River Watershed Action Plan, the required nine elements of a watershed-based plan exist in the current document and will be updated accordingly.

The following items outline the strategy to accomplish the Action Plan Update:

- A. *Project initiation*** – This effort will involve a kickoff meeting to discuss details of the Action Plan Update, scheduling and budget as well as points for collaboration to expeditiously move through the process.
- B. *Analysis of existing Action Plan based on current projects, policies and programs within the Town*** – This effort will entail the review of the 2011 May River Watershed Action Plan, its recommended strategies and how they coincide with the current Town projects, policies and ordinances, and programs including the following sub-tasks:
 - a. Evaluate current proposed projects in Action Plan based on known performance and current watershed conditions – A review of recommended project types in the Action Plan will be conducted and assessed for performance based on project data within the Watershed and/or other known applications.
 - b. Conduct code and ordinances review for Low Impact Development (LID), Green Infrastructure (GI) and Septic Systems

- c. Conduct post construction stormwater program review for options suited to the estuarine receiving waters
 - d. Evaluate the existing Action Plan with respect to GI/LID practices promoted in the “Low Impact Development in Coastal South Carolina Planning and Design Guide”
 - e. Evaluate existing five (5) year schedule for Action Plan assessment, e.g. should it be completed more or less frequently
- C.** *Conduct stakeholder driven review process* – At strategic points in the Action Plan Update, focus groups, public meetings, and committee presentations will be held for stakeholder input, review and agreement to approach.
- D.** *Identify and select new or advanced BMPs alternatives including LID* – Evaluate the proposed projects in the current May River Watershed Action Plan compared with the current state of knowledge for Best Management Practice (BMP) efficacy in the watershed conditions, as well as advances in BMP and LID alternatives for consideration. This effort will include high-level calculations for potential fecal coliform load reductions which will be used in addition to project budgets for construction prioritization in the Town’s CIP.
- E.** *Assist in the development of new or advanced design standards for current or existing projects* – For any current project applications requiring an update and/or new projects identified as current state of knowledge, the team will assist the Town in developing new design standards for implementation.
- F.** *Prepare draft Action Plan Update which includes recommendations for improved design standards, policies and programs* – Identify any current policy and/or program applications requiring an update and/or new strategies identified based on current state of knowledge.
- G.** *Develop scope and budgets for BMP design and construction for inclusion in the Town’s 5-year and beyond long-term Capital Improvement Program (CIP) projects* – Using the current state of knowledge for BMP’s and LIDs, BMP project scopes and budgets will be developed for the Town’s 5-year and beyond long-term CIP. Those projects with the most return (potential for highest level of fecal coliform reduction) on investment (project budget for design, permitting, construction and operation/maintenance) will be the highest priority for construction.
- H.** *Develop final plan update with Update May River Watershed Action Plan Proposed Project Area Map* – Based on the results of the Action Plan Update review, including finalization of BMP and LID projects, an update to the existing May River Watershed Action Plan Map (AMEC, 2011) for inclusion in the May River Watershed Action Plan Update final report.
- I.** *Present updated Action Plan to policy-makers* – Present the final May River Watershed Action Plan Update for adoption.

E. Data Usage:

The following data will be used for the Action Plan Update:

- Town of Bluffton and University of South Carolina fecal coliform water quality sampling data to identify “hot spots” for BMP locations
- Microbial source tracking results from Source Molecular to indicate appropriate BMPs for bacterial source reductions and locations for these BMPs

- US Census Data – identify demographic trends for targeted outreach initiatives related specifically to projects, programs and policies unrelated to MS4 Minimum Control Measures 1 and 2 (public education/outreach; public involvement/participation)

F. Monitoring Component: (if applicable)

The Town will continue to conduct its weekly fecal coliform monitoring program and BMP project-efficacy monitoring. However, these data will be collected outside of the scope of the May River Watershed Action Plan Update. The continued results of these efforts will inform BMP location choices as part of the Action Plan Update.

Monitoring accomplished as part of MS4 requirements will be used to inform those initiatives specific to MS4 permit compliance.