

# COASTAL WACCAMAW STORMWATER EDUCATION CONSORTIUM: PROVIDING PUBLIC EDUCATION, OUTREACH AND INVOLVMENT TO COASTAL COMMUNITIES

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**Abstract.** The Coastal Waccamaw Stormwater Education Consortium (CWSEC) seeks to develop and implement effective, results-oriented stormwater education and outreach programs to meet federal requirements and satisfy local environmental and economic needs. Primary foci are on (1) using a watershed approach, (2) providing a unified regional message, and (3) maximizing synergistic efforts to enhance cost effectiveness. Six regional agencies jointly serve as core education providers for eight coastal municipalities. The core education providers include the following: Clemson Public Service and Carolina Clear Program; Coastal Carolina University's Waccamaw Watershed Academy; Murrells Inlet 2007; North Inlet – Winyah Bay National Estuarine Research Reserve's Coastal Training and Public Education Programs; South Carolina Sea Grant Consortium; and Winyah Rivers Foundation's Waccamaw Riverkeeper®. The following coastal communities are served by CWSEC: City of Conway; City of North Myrtle Beach; City of Myrtle Beach; Georgetown County; Horry County; Town of Atlantic Beach; Town of Briarcliffe Acres; and Town of Surfside Beach. The Consortium's goals are to: maximize efficiency of stormwater education efforts by using a regional watershed approach; help local small municipal separate storm sewer systems (SMS4s) meet National Pollutant Discharge Elimination System (NPDES) Phase II permit requirements for education and outreach; facilitate collaboration among local service providers to best meet local educational needs; develop a regional stormwater education plan; and create a model for collaborative stormwater education that can be presented and applied throughout the state and beyond.

Currently in its fourth year, CWSEC continues to help SMS4s in northeastern South Carolina meet the NPDES Phase II Stormwater Program's General Permit Minimum Control Measures 1 and 2. Activities by CWSEC education providers meeting Minimum Control Measure 1 (Public Education and Outreach on Stormwater Impacts) include: (1) educational workshops and training for

SMS4s' appointed and elected officials and their staff; (2) field workshops and classroom presentations for precollege (K-12<sup>th</sup> grade) students and teachers; (3) presentations and training for citizen groups such as homeowner associations; (4) public service announcements regarding stormwater issues and solutions on local waterways; and (5) technical assistance to SMS4s with development of comprehensive and open space plans, stormwater ordinances, and watershed management plans. Assistance is provided to the SMS4s on Minimum Control Measure 2 (Public Involvement/Participation) through these various methods: (1) installations of stormwater best management practices such as rain gardens and infiltration swales at public sites such as schools and municipal properties; (2) beach and river clean-ups; and (3) water quality monitoring through volunteer programs in river and estuarine systems.

## INTRODUCTION AND BACKGROUND

CWSEC was conceived in May 2004 when individuals representing two universities, a regional National Estuarine Research Reserve and a Riverkeeper® program discussed the need for coordination of stormwater and watershed education efforts. These service providers agreed to convene a small group of decision makers from local SMS4 communities to assess their need for watershed-related educational services and to evaluate the utility of a regional approach to stormwater education. Much of the urgency to form the Consortium was related to meeting new federal Clean Water Act requirements associated with the NPDES Phase II Stormwater Program.

The education service providers of the CWSEC hosted an inaugural meeting in June 2004. Attending were six of the eight SMS4s located within the mission area, collectively known as the Myrtle Beach Urbanized Area. The participants unanimously endorsed a coordinated approach to regional stormwater education while recognizing that, to achieve a truly regional effort, a

broader range of stakeholders should be involved, including non-profit organizations, citizen groups and state agencies. During fall 2004, a formal needs assessment for the local SMS4s was conducted via an on-line survey. The survey results were used to generate a prioritized list of target audiences, priority pollutants and summaries of existing educational capabilities and available infrastructure. Following the needs assessment, a Regional Stormwater Education Strategy and a Phased Education Work Plan were finalized and a Consortium website was established. During the next few months, a resolution in support of a collaborative approach to regional stormwater education was developed, additional core education providers were engaged, and an Environmental Educator position was established with partial funding provided by the SMS4 communities. These guidance documents can be viewed at the following link to the CWSEC website: <http://www.cwsec-sc.org/business/documents>.

On June 1, 2005, CWSEC convened a meeting and press conference featuring the public signing of a Resolution in Support of Regional Collaboration. Stormwater managers and public officials from each of the participating SMS4 communities were present to endorse the Resolution and to formally establish the Consortium. CWSEC's Coordinator, also the Environmental Educator at Coastal Carolina University's Waccamaw Watershed Academy, began work in October 2005.

Six regional agencies jointly serve as core education providers for eight coastal municipalities. The six regional agencies that jointly serve as core education providers to the member SMS4s include: Clemson Public Service and Carolina Clear Program; Coastal Carolina University's Waccamaw Watershed Academy; Murrells Inlet 2007; North Inlet – Winyah Bay National Estuarine Research Reserve's Coastal Training and Public Education Programs; South Carolina Sea Grant Consortium; and Winyah Rivers Foundation's Waccamaw Riverkeeper®. CWSEC's organizational structure results in a synergy among the educational providers, with the overall educational outcome being greater than would be achieved if each provider worked separately. The member SMS4s include: City of Conway; City of North Myrtle Beach; City of Myrtle Beach; Georgetown County; Horry County; Town of Atlantic Beach; Town of Briarcliffe Acres; and Town of Surfside Beach. Each SMS4 contributes a modest annual fee toward the salary of the Coordinator and operational costs.

## GOALS AND OBJECTIVES

The Consortium's goals for stormwater education include the following: (1) maximize efficiency of stormwater education efforts by fostering collaborations among local stormwater educators; (2) promote a watershed-based approach to stormwater management; (3) ensure that a unified stormwater educational message is disseminated through the region; (4) help local SMS4s meet NPDES Phase II Stormwater Program permit requirements for public stormwater education, public involvement, and illicit discharge detection; and (5) serve as a model for collaborative stormwater education.

## ACTIVITIES AND ACCOMPLISHMENTS

Currently in its fourth year, CWSEC has enjoyed considerable success in helping northeastern South Carolina's SMS4s meet their NPDES Phase II permit requirements for public education and outreach (Minimum Control Measure 1) and public involvement and participation (Minimum Control Measure 2). Activities for both minimum control measures are led by the education providers with guidance from the local communities as to their needs on a wide variety of stormwater topics.

Education providers communicate with member communities using various methods. Biannual business meetings are held, which include topic-specific training for stormwater managers and associated staff. Annual reports are generated to document activities and accomplishments for member SMS4s. These reports are available for distribution to each community's government officials, staff and citizens. A monthly CWSEC E-News keeps recipients updated with stormwater-related announcements, events and activities. A searchable, interactive database that members may utilize for permit and related reporting will be finalized in the coming months.

### Public Education and Outreach

In June 2008, a new Consortium website ([www.cwsec-sc.org](http://www.cwsec-sc.org)) was launched to better facilitate communication among education providers and SMS4 members and to provide a wide range of stormwater educational materials for various audiences such as developers, contractors, homeowners, teachers and students.

Customized stormwater education workshops are developed and presented to SMS4 officials and their staff and are tailored to the unique needs of each community. Topics covered during the workshops may include: (1) watershed and nonpoint source pollution concepts; (2) an overview of the NPDES Phase II Stormwater Program; (3) a community's progress with their stormwater

management plans; (4) hands-on watershed mapping activities; (5) stormwater management options at the regional, neighborhood and site scales featuring low impact development, better site design, buffers and other stormwater best management practices (BMPs); and (6) the need for coordinating water quality monitoring on a watershed scale. Some seminars include site visits to demonstrate local examples of issues and the use of stormwater BMPs. Some conclude with a consensus-building activity in which the participants prioritize steps for implementing their stormwater management plans. All workshops close with a written assessment providing constructive input from the participants for future programming. A customized web page linked to the CWSEC website, featuring the event agenda, presentations, and a suite of references and planning tools is created for each community following each workshop.

The workshops for government officials have been adapted for the general public, most often home/property owner associations. These presentations also use a watershed approach to focus on the specific issues and concerns of the neighborhood, while offering recommendations to individual homeowners for dealing with stormwater problems and suggestions for community projects. Requests for these programs have increased significantly over the last two years as the local citizens of northeastern coastal South Carolina have become more interested in stormwater issues. Property management companies were also identified by the SMS4s as targets for stormwater education. In May 2008, the first seminar for property management companies was led by the education providers and the City of Myrtle Beach Stormwater Department. This workshop focused on identification and understanding of stormwater facilities and drainage systems and their associated maintenance plans as well as pollution prevention techniques. More workshops will be conducted in the future focusing on this target audience of condominium, hotel and neighborhood management companies.

The general public in this region is learning about stormwater and nonpoint source pollution through various methods. Under the leadership of Clemson University's Carolina Clear Program, radio Public Service Announcements (PSAs) have been developed and broadcast addressing regional stormwater issues, and additional written PSAs have been published in regional newspapers. Topics range from general water quality, to managing pet waste, to caring for your lawn and garden. These PSAs are available for download at the CWSEC website. Currently, Carolina Clear is developing television PSAs which will greatly increase the number of audience members. The education providers have also developed brochures for public distribution ranging in topic from an explanation of CWSEC's role and activities to ways to protect South Carolina watersheds.

Students of all ages along with their teachers are also among the target audiences for CWSEC. CWSEC's educators provide field trips, in-class experiences, and teacher workshops using a watershed approach to teach about runoff pollution. Hands-on activities, e.g. water quality monitoring, reading maps, and the collection and identification of phytoplankton, macroinvertebrate and other aquatic organisms, are utilized to expose students to topics relating to nonpoint source pollution. Whether held indoors or out in the field, these interactive lessons help to demonstrate effects of various land uses on our waterways.

Technical training for professionals such as contractors, engineers and developers is conducted by several of the education providers. These seminars and workshops include topics such as (1) the use of pervious concrete, (2) constructed wetlands for stormwater treatment, (3) high performance building and low impact development, and (4) neighborhood scale stormwater management. At one event, a technology fair was held to showcase new technologies for stormwater treatment in urbanized settings. Another workshop focused on an installation of pervious concrete at the Georgetown Chamber of Commerce parking lot.

In addition to formal workshops, programs, and informational materials, CWSEC frequently provides additional technical assistance and advice. The education providers often serve as technical advisers for SMS4 committees dealing with land use, natural resources, water quality, open space, and stormwater, as well as providing technical guidance to SMS4 staff as requested.

### **Public Involvement and Participation**

A volunteer water quality monitoring program, which is partly funded by several of the SMS4s, began in the spring of 2006 in conjunction with Coastal Carolina University's state-certified Environmental Quality Laboratory. This monitoring program provides several benefits, such as (1) highly visible public involvement; (2) public access to water quality information through an interactive database and website (<http://gis.coastal.edu/volunteermonitoring>); and (3) collecting data to meet the NPDES Phase II Stormwater Program illicit discharge detection requirement (Minimum Control Measure 3).

Professional (e.g. contractors, engineers and developers) involvement through technical training workshops has also been successful as a means of involving community members. Clemson University has hosted several Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) courses in the region aimed at certifying contractors, developers, and equipment operators in required soil erosion and sedimentation control measures to be used during construction. A multi-day Coastal Watershed Academy was taught by various

education providers in November 2007 for local government officials, natural resource professionals, and other professionals to provide training in water quality assessment and watershed management. The Academy was sponsored by Clemson University's Carolina Clear Program and the United States Department of Agriculture Cooperative State Research, Education, and Extension Service.

Precollege students and teachers and community members have become involved in installing stormwater BMPs throughout the region. In 2007, CWSEC secured a \$14,000 grant from regional Wal-Mart stores to create a demonstration and educational site utilizing stormwater BMPs at a local high school. Students, teachers, and employees from Wal-Mart and Horry County Stormwater Department along with members of CWSEC installed an infiltration swale and bioretention cell, or rain garden, at Socastee High School in Myrtle Beach. Information on stormwater pollution and innovative solutions was incorporated into the science curriculums. In addition to installing the stormwater treatment techniques, the classes will use water quality monitoring equipment purchased with the grant funding to perform monitoring and data analysis to determine the effectiveness of the treatment practice. Local citizens from several SMS4s have also participated in rain garden installation projects to serve as demonstration sites for the region. Plans are now forming for more school installations in addition to projects in the local communities.

Another public participatory activity includes beach and river sweeps. Education providers plan and implement beach and river cleanups to involve local citizens and student groups. These occur periodically throughout the year and often coincide with state and national initiatives such as Beach Sweep/River Sweep.

## CONCLUSIONS AND FUTURE PLANNING

CWSEC is working within the Myrtle Beach Urbanized Area to increase the understanding of stormwater issues among a diverse group of stakeholders using a regional, watershed-based educational strategy. The core education service providers hope that their system for a collaborative, regional approach to stormwater and watershed education will serve as a useful model for communities across the southeastern United States and beyond.

In the coming years, the education providers will continue to strive to help the local SMS4s meet the NPDES Phase II Minimum Control Measures 1 and 2 through various methods. Many activities that have been initiated will expand while additional projects will be established. Plans for future undertakings include the following: assistance to SMS4s in grant selection and

proposal writing; production of television public service announcements; development of a map of innovative BMP locations in the region and associated workshops centered around these sites; design of additional brochures on various stormwater topics; creation of storm drain stenciling kits for use by SMS4s, homeowner associations, businesses, schools and scouting groups; expansion of outreach activities to area visitors; and continuation to improve communication among all members and education providers of the CWSEC as well as the citizens of the region.