



**CLEMSON UNIVERSITY**  
**CENTER FOR WATERSHED EXCELLENCE (CWE)**  
(submitted February 2013)

***Measures of Success (IV. Section I. MOU):***

***Number & Names of Clients Supported***

CAROLINA CLEAR PROGRAM

Carolina Clear (<http://www.clemson.edu/carolinaclear>) is a program of the Center for Watershed Excellence and is a comprehensive approach to inform and educate communities about water quality, water quantity, and the cumulative effects of stormwater. Carolina Clear addresses the special significance of South Carolina's water resources and the role they play in the state's economy, environmental health and overall quality of life. Carolina Clear supports municipalities statewide through seven consortiums. Nearly three-dozen cities, towns and counties are working regionally to increase awareness and involvement in stormwater management and successfully comply with NPDES General Stormwater Permit requirements. Last year alone, there were approximately 3.5 million impacts documented statewide from programs including workshops and presentations to billboards and commercials.



Specific clients supported within each consortium include: **Ashley Cooper Stormwater Education Consortium** – participating communities include the counties of Berkeley, Charleston and Dorchester and the municipalities of Charleston, Folly Beach, Goose Creek, Hanahan, Isle of Palms, Lincolnville, North Charleston, Sullivan's Island and Summerville. **Beaufort County Regional Stormwater Outreach** - participating communities include Beaufort County, Town of Bluffton, Town of Hilton Head Island, Town of Port Royal Sound, and soon, the City of Beaufort. **Coastal Waccamaw Stormwater Education Consortium** – participating communities include the counties of Horry and Georgetown and the municipalities of Atlantic Beach, Surfside Beach, Conway, Myrtle Beach, Briarcliffe Acres and North Myrtle Beach. **Florence Darlington Stormwater Consortium** - participating communities include the City of Florence, Darlington County and Florence County. **Pickens County Stormwater Partners** – participating communities include Pickens County and the cities of Easley, Pickens and Liberty. **Richland Countywide Stormwater Consortium** – participating communities include Richland County along with the municipalities Arcadia Lakes and Forest Acres. **Sumter Stormwater Solutions** – participating communities include Sumter County and the City of Sumter.

### CITY OF AIKEN – SAND RIVER ECOLOGICAL RESTORATION MASTER PLAN

The Center facilitated development of the Sand River Ecological Restoration Master Plan for the City of Aiken, South Carolina. This effort was comprised of a yearlong planning process conducted in partnership with the City of Aiken, the Hitchcock Woods Foundation and other key stakeholders. The master plan involves the creation of multi-party agreements for restoring the Sand River with a plan that balances stormwater management with habitat preservation and restoration (Project website - [http://www.clemson.edu/restoration/focus\\_areas/restoration\\_ecology/projects/sand\\_river/index.html](http://www.clemson.edu/restoration/focus_areas/restoration_ecology/projects/sand_river/index.html) ).

### ***Training and technical assistance to build capacity of local governments and/or stakeholders***

#### 2012 STORMWATER POND MANAGEMENT CONFERENCES

The Stormwater Pond Management Conferences held March 3 in Myrtle Beach and March 22 in N. Charleston were hosted by Carolina Clear and its partners to educate homeowner associations and community managers about the importance of pond management and maintenance.

#### 2012 WASTE WATER TREATMENT SYSTEM TRAINING

The Center partnered with experts from Clemson University and the Universities of Georgia, Tennessee and Kentucky to offer the On-Site Waste Water Treatment System Training Workshop for county agents and local authorities on July 31 in N. Charleston.

#### 2012 GREEN INFRASTRUCTURE DESIGN & IMPLEMENTATION TECHNICAL WORKSHOP

The Center partnered with the City of Aiken to hold the Green Infrastructure Design & Implementation Technical Workshop to address site design techniques and implementation practices on June 26 in Aiken followed by an Educational Field Day for the general public and media on June 27.

#### CAROLINA CLEAR WORKSHOPS, TRAININGS AND EDUCATIONAL PROGRAMS

Dozens of statewide Carolina Clear workshops, trainings and educational programs were held in 2012 for target audiences ranging from engineers, landscape architects, contractors and municipal officials, as well as the general public. Selected topics included: creating rain gardens and making rain barrels; proper disposal of restaurant food waste; environmentally friendly landscaping; construction site care; pond management; and stormwater compliance.

### ***Report on any Client Feedback Collected***

Evaluations are incorporated into trainings, workshops and conferences. The feedback collected is reviewed and kept on file for future planning processes. Evaluation results for specific events may be provided upon request.

### ***Watershed Plans Developed (Partnership)***

No watershed plans were developed due to lack of financial and staff resources.

## ***Watershed Plans Implemented (Partnership)***

No watershed plans were developed due to lack of financial and staff resources.

## ***Documented Water Quality Improvements***

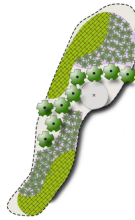
### SAND RIVER HEADWATERS AIKEN GREEN INFRASTRUCTURE FINAL REPORT

#### **Sand River Headwaters Green Infrastructure Project**

February 2013

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The report summarizes research associated with the Sand River Headwaters Green Infrastructure project, conducted in partnership with the City and Woolpert Inc. The project incorporated sustainable development practices to capture and treat stormwater within downtown watersheds, including the use of bioswales and bioretention, multiple applications of pervious pavement, and a cistern. Download the report from the project website at this link - [http://www.clemson.edu/restoration/focus\\_areas/restoration\\_ecology/projects/watershed\\_center/aiken\\_green/index.html](http://www.clemson.edu/restoration/focus_areas/restoration_ecology/projects/watershed_center/aiken_green/index.html).

## ***Important work not specified above***

### SOUTH CAROLINA WATER RESOURCES CONFERENCE (SCWRC)

The biennial South Carolina Water Resources Conference is organized and coordinated by the Center in conjunction with a statewide planning committee, made up of industry, academia, regulatory and consulting representatives. The purpose is to provide an integrated forum for discussion of water policies, research projects and water management in order to prepare for and meet the growing challenge of providing water resources to sustain and grow South Carolina's economy, while preserving our natural resources. The conference goals are to: (1) communicate new research methods and scientific knowledge; (2) educate scientists, engineers, and water professionals; and (3) disseminate useful information to policy makers, water managers, industry stakeholders, citizen groups, and the general public.



The 2012 SCWRC, building on the success of the 2010 and 2008 conferences, brought together over 300 registered participants (**Table 1**) to discuss current water policies, research projects and water management. Attendees included those from colleges and universities; municipal water authorities and entities; environmental engineering, consulting and law firms; state and federal agencies; nonprofit organizations; economic development associations; utility companies and land trusts. Participants have responded in an overwhelmingly positive manner about the organization of the conference, the speakers and the information that was presented and shared. The conference website, [www.scwaterconference.org](http://www.scwaterconference.org), provides up to date information for all event audiences from

contributors to presenters and exhibitors and houses the archives for all proceedings to date. Due to their success and popularity, the conferences were self-sustaining financially.

**Table 1 - SCWRC Categorized Participant Information 2008, 2010, 2012**

	<u>2012</u>	<u>2010</u>	<u>2008</u>
Registered	320	312	350
One Day Registrations	50	52	55
Student Attendees	47	43	33
CEUs Requested	90	16	45
Oral Presenters	87	111	99
Posters on Display	38	40	20
Plenary Speakers	9	7	7
Exhibitors	15	14	12
Major Contributors	7	3	7
Supporting Contributors	7	9	11
<b><i>Sector Breakdown of Attendance</i></b>			
Academic	38%	31%	31%
Private	24%	10%	29%
State	15%	13%	29%
Federal	11%	9%	10%
Municipal	7%	6%	
Nonprofit	3%	5%	
Other	2%		1%

***Highlight any other activities of the center that you would like to report:***

***Environmental stewardship (IV. Section K. MOU)***

SOUTH CAROLINA WATERSHED STEWARDSHIP MAPPING TOOL

In fulfilling the mission to promote local stakeholders' involvement in protecting and improving the natural and economic resources of their watershed, the Center and Carolina Clear have compiled a "Watershed Steward Contact List" comprised of organizations that support and manage local watershed issues and also offer watershed-related volunteer opportunities to the public. The list has been mapped by geographic coverage and presented as a mapping tool on the Center website so that users can identify watershed-related volunteer opportunities within their community or region: [http://www.clemson.edu/restoration/focus\\_areas/restoration\\_ecology/projects/watershed\\_center/stewardship/index.html](http://www.clemson.edu/restoration/focus_areas/restoration_ecology/projects/watershed_center/stewardship/index.html).

## ***Work with State and Federal agencies***

### INTELLIGENT RIVER® TECHNOLOGIES

In January 2012, Center director, Gene Eidson, Ph.D., met with representatives of the U.S. EPA's Office of Water and other departments at EPA headquarters in Washington D.C. to discuss projects involving Intelligent River® technology.

### U.S. EPA'S PATHFINDER INNOVATION PROJECTS REVIEW PANEL

Center director, Gene Eidson, Ph.D., was invited to participate on the U.S. EPA's Pathfinder Innovation Projects 2012 Review Panel to review and recommend funding for internal EPA research projects in March of 2012 in Washington D.C.

### INTELLIGENT RIVER® NSF MRI DEPLOYMENT PLANNING WORKSHOP

The Intelligent River® NSF MRI Project Team hosted a 2-day Deployment Planning Workshop and Peer Review Session at the Clemson University Madren Conference Center June 12-13, 2012. Over 40 participants



representing nearly a dozen state and federal agencies and institutions attended including U.S. EPA, Georgia EPD, USACE, SCDNR, SCDHEC, U.S. Fish and Wildlife, U.S. Geological Survey and Coastal Carolina University. Participants provided input and discussion on: recommendations on how and where to set sensors; database development; regulatory requirements for data collection; the use of data and quality control and assurance; evaluating the best strategy for deployment; and pilot use of data by agencies through the research period.

### SCDHEC CONSTRUCTION GENERAL PERMIT WORKING GROUP

Center associate director, Calvin Sawyer, Ph.D., served as technical advisor on the SCDHEC Construction General Permit Working Group. This invited SCDHEC working group was charged with writing the draft National Pollutant Discharge Elimination System CGP, which became effective on January 1, 2013.

### 2012 S.C. WATER RESOURCES CONFERENCE (SCWRC) PLANNING COMMITTEE

The SCWRC Planning Committee is made up of over two dozen members including representatives from agencies such as: Beaufort Jasper Sewer and Water Authority, Coastal Carolina University, College of Charleston, National Oceanic and Atmospheric Administration, Savannah River National Laboratory, SCDHEC - Bureau of Water, SCDHEC, Ocean and Coastal Resource Management, University of South Carolina, USDA Forest Service, U.S. Army Corps of Engineers, and U.S. Geological Survey.

## ***Regional partnerships***

### INTELLIGENT RIVER® SAVANNAH RIVER NSF MRI PROJECT

The Intelligent River® NSF MRI Project to design develop and deploy a basinwide network of computerized sensors to monitor water quality along the entire length of the 312 mile Savannah River involves partnerships with agencies from South Carolina, North Carolina and Georgia.

## SOUTHERN REGIONAL WATER PROGRAM

The Center's associate director, Calvin Sawyer, Ph.D., is the state coordinator for the USDA-NIFA Southern Regional Water Group.

## COMMUNITY RESOURCE INVENTORY (CRI-SC) MAPPING TOOL

The CRI-SC is an interactive, web-based mapping tool that has been piloted in Georgetown County, South Carolina - <http://www.clemson.edu/public/rec/baruch/cri/>. The development and maintenance of the tool is a partnership between the Center, the Clemson University Baruch Institute of Coastal Ecology and Forest Science, S.C. NEMO (Nonpoint Education for Municipal Officials), S.C. Sea Grant Consortium, North Inlet – Winyah Bay NERR and Georgetown County.

## S.C. LOW IMPACT DEVELOPMENT ATLAS (LID)

The goal of the S.C. Low Impact Development Atlas is to share information among communities and organizations so that low impact development projects can serve as models for communities trying to address stormwater and growth-related issues - <http://www.clemson.edu/public/carolinaclear/lidmap/>. This atlas is a partnership between the Center, National NEMO Network (Nonpoint Education for Municipal Officials), S.C. NEMO, S.C. Sea Grant, and Carolina Clear with assistance from ACE Basin and North Inlet-Winyah Bay National Estuarine Research Reserves.

## ***Other related activities of note***

### CENTER COMMUNICATIONS

Begun in June of 2010, the *IAE Research News* newsletter is now published biannually highlighting news from both the Center and the Institute of Applied Ecology (IAE). The newsletter is posted on the IAE website and is emailed to the Center / IAE e-list made up of project faculty and team members, partners, watershed stakeholders, other CWEs in the Southeast, SCWRC participants and other interested parties within South Carolina, North Carolina and Georgia. The e-list has increased to over 800 addresses, and is used to distribute the newsletter, announce workshops and trainings and share information about the SCWRC.

The Clemson University Center website [www.clemson.edu/watershedcenter](http://www.clemson.edu/watershedcenter) and its individual project sites, have had over 18,200 unique visitors since 2008. The site provides detailed information on projects, partners, involved faculty and news coverage, and houses the S.C. Watershed Stewardship Mapping Tool. The SCWRC website is housed separately from the Center site and has had over 23,300 unique visitors since 2008.

Since 2008, Clemson University has distributed over two dozen press releases detailing news, activities and events related to the Center and Institute, leading to over 100 media hits by television, radio and print news outlets.



## ***Report on any benefits your center has received because of the MOU:***

### ***Ability to leverage resources or support***

Craig Hesterlee and Katie Snyder of the U.S. EPA, Region 4 have provided the Centers of Excellence in Watershed Management with information about potential grant opportunities.

### ***Financial benefit***

Partial funding was provided by the U.S. EPA, Region 4 office to coordinate the Charleston Vertical Farm Design Feasibility Study through our project contacts, Suganthi Simon and Pam Swingle.

### ***Other issues related to benefits***

The U.S. EPA designation allowed the Center to leverage a leadership role to develop the S.C. Water Resources Conference. The designation also elevated the importance of water within the Clemson University faculty and provided evidence of support at Clemson initiated by Center staff.

## ***Centers of Excellence input to EPA regarding the MOU:***

### ***Interest in renewal of the MOU after 5 years***

Though interest is strong in renewal of the MOU, current responsibilities would have to be modified based on limited financial and personnel resources. Clemson University would like to begin discussion with U.S. EPA Region 4 and SCDHEC regarding proposed changes during spring of 2013. The existing MOU is being reviewed internally and responses to any recommended changes will be confirmed in the near future.

### ***Other than funding, any recommended changes and/or improvements?***

It would be beneficial to have organized direct and indirect communication among the designated Centers.

### ***Other issues related to the MOU***

There are no other issues to report.