



BERKELEY COUNTY

ENGINEERING DEPARTMENT

Thomas R. Lewis, P.E., County Engineer
212 Oakley Plantation Drive
Moncks Corner, SC 29461

April 29, 2016

South Carolina Department of Health and Environmental Control
Bureau of Water- Water Pollution Compliance Section
2600 Bull Street
Columbia, SC 29201-1708

Re: Berkeley County SMS4s Annual Report 2014-2015
Certificate of Coverage No. SCR031501

To Whom It May Concern:

Enclosed herewith is the Berkeley County SMS4s Annual Report for years 2014 and 2015, as required by the General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s) Permit No. SCS030000 and as required by Berkeley County's Certificate of Coverage (SCR031501).

In October 2015, Berkeley County signed intergovernmental agreements to implement the minimum control measures under the general SMS4 permit for the City of Hanahan and the City of Goose Creek and the required reporting data has been included as part of the County's Annual Report.

Please contact me at 843.719.4179 or thomas.lewis@berkeleycountysc.gov if there are any questions regarding the annual report.

Sincerely,

Thomas R. Lewis, PE
County Engineer

Enclosures

CC: William W. Peagler, III
Clint Busby
Kelsey Gagnon
LaShonda Baggett

County Engineering Department
843.719.4127
843-572-4400 ext. 4127
843-567-2061 ext. 4127

Stormwater Management Program
843.719.4195
843-572-4400 ext. 4195
843-567-2061 ext. 4195

Permit Coverage #SCR030000

Reporting Period: January 1, 2014-December 31, 2015

Permittee: Berkeley County

Program Name: Berkeley County MS4

Reporting for more than one Program:

(Prepare copies of this page for each Program and attach to this report.)

Responsible Official Information

(Enter the information of the principal executive officer, mayor, or other duly authorized employee/elected official.)

Name: William W. Peagler, III

Title: County Supervisor and Council Chairman

Telephone Number: 843-719-4094

E-mail Address: bill.peagler@berkeleycountysc.gov

Mailing Address: 1003 Highway 52, P.O. Box 6122 Moncks Corner, SC 29461

Program Manager Information

(Enter the information of the person who is responsible for daily implementation of the program.)

Name: Thomas Ray Lewis

Title: County Engineer

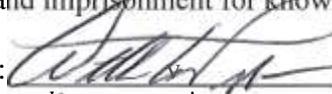
Telephone Number: 843-719-4179

E-mail Address: Thomas.lewis@berkeleycountysc.gov

Mailing Address: 1003 Highway 52, P.O. Box 6122 Moncks Corner, SC 29461

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Responsible Official Signature: 

Date: 4/27/15

(The responsible official may authorize another person or person occupying a specific position to certify this report if this authorization is made in writing and submitted to the Department. Please attach a copy of the authorization with this report, if applicable.)

Submit the annual report to:
South Carolina Department of Health and Environmental Control
Bureau of Water, Water Pollution Compliance Section
2600 Bull Street
Columbia, SC 29201-1708
Questions? Contact (803) 898-4300

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YEAR 1-2 NPDES ANNUAL REPORT

Enter Permit Years

Name of Permittee: Berkeley County

ENTER NAME OF SMS4 PERMITTEE ABOVE

Annual Report Information

The following information is applicable to the above referenced permittee:

In October 2015, Berkeley County signed intergovernmental agreements to implement the minimum control measures under the general SMS4 permit for the City of Hanahan and the City of Goose Creek. The intergovernmental agreements are located in Appendix H of the SWMP. Since these agreements were recently approved, the Berkeley County SWMP will be updated during 2016 to include implementation services for Hanahan and Goose Creek. Since the City of Hanahan and the City of Goose Creek did not have the intergovernmental agreement until the end of 2015, the required information and data for each of these SMS4's were completed separately and are included in Appendix F and Appendix G, respectively.

§1.4 OBTAINING AUTHORITY

Sec.	Item	Yes	No	NA
1.4.8	Have there been any areas annexed into your SMS4 area after you received coverage under this general permit? <small>ANSWER / COMMENT</small> Berkeley County's SMS4 area has not changed since the start of the permit term. The County is now responsible for the City of Hanahan and the City of Goose Creek after an intergovernmental agreement was signed in October 2015. These documents are included in Appendix H of the SWMP. The annual reports for the City of Hanahan and the City of Goose Creek are located in Appendix F and Appendix G, respectively.		<input checked="" type="checkbox"/>	
1.4.8 & 4.5.4.1	If yes, has your SWMP been updated to include these areas and a schedule for BMP implementation in these areas? <i>If yes, see the updated SWMP in Appendix A.</i> <small>ANSWER / COMMENT</small> Berkeley County's SMS4 area has not changed since the start of the permit term. Due to the intergovernmental agreement, the SWMP has been updated to include the City of Hanahan and the City of Goose Creek.		<input type="checkbox"/>	<input checked="" type="checkbox"/>

§3.1 DETERMINATION OF RECEIVING WATER CONDITIONS AND IMPACTS

Sec.	Item	Yes	No	NA
3.1.1.1	Refer to the most recent CWA §303(d) list approved by EPA to determine WQMS impairment status. Have there been any impaired stations added to the 303(d) list that your SMS4 discharges to? <i>If yes, update this information in your SWMP and put the updated SWMP in Appendix A.</i> <small>ANSWER / COMMENT</small> When Berkeley County's SWMP was developed, the 2012 303(d) list was the most current list approved by EPA. Presently, the 2014 303(d) list is the most current list approved by EPA and the SWMP has been updated to reflect any changes to the list of impaired stations. Two stations have been added to the 303(d) list in the Berkeley County regulated area. They include: <ul style="list-style-type: none"> • RL-11118 for CHLA, PH, and TP • RL-09081 for CHLA and TP Many stations that were previously listed had revisions to the projected TMDL dates. These changes are reflected in Table 3 of the SWMP.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Several stations that were previously listed had revisions/additions made for the pollutant of concern. They include:

- RL-03340 The pollutants of concern are now CHLA, DO, and PH. Previously TP, CHLA, and DO were listed.
- RL-04390 The pollutants of concern are now CHLA, DO, and TP. Previously only DO was listed.
- RL-08065 The pollutants of concern are now DO and TP. Previously only DO was listed.
- RL-10104 The pollutants of concern are CHLA, DO, and TP. Previously only DO was listed.
- RL-10108 The pollutants of concern are CHLA, DO, and TP. Previously only DO was listed.

Further information for each station is included in Table 3 of the SWMP.

3.1.1.1	<p>Refer to the most recent CWA §303(d) list approved by EPA to determine WQMS impairment status. Have there been any impaired stations removed from the 303(d) list that your SMS4 discharges to? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p><i>If yes, update this information in your SWMP and put the updated SWMP in Appendix A.</i></p> <p>ANSWER / COMMENT When Berkeley County's SWMP was developed, the 2012 303(d) list was the most current list approved by EPA. Presently, the 2014 303(d) list is the most current list approved by EPA and the SWMP has been updated to reflect any changes to the list of impaired stations.</p> <p>One station in the Berkeley County regulated area was removed from the 303(d) list. This station is SC-032 for pH and was removed because the standard was attained.</p>
3.1.1.1	<p>If there have been impaired stations added to or removed from the 303(d) list that your SMS4 discharges to, identify the pollutant(s) of concern (POC) and update POCs in the SWMP. <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p><i>Include updated SWMP in Appendix A with changes made.</i></p> <p>ANSWER / COMMENT When Berkeley County's SWMP was developed, the 2012 303(d) list was the most current list approved by EPA. Presently, the 2014 303(d) list is the most current list approved by EPA and the SWMP has been updated to reflect any changes to the list of impaired stations.</p> <p>Some changes to the pollutants of concern have been updated in the SWMP to reflect changes in the 2014 303(d) list. Where the pollutant of concern was FC, it has now changed to either ENTERO or ECOLI. These have been updated in Table 3 of the SWMP and the pollutants of concern have been updated in Table 6 for the first MCM.</p>
3.1.1.2	<p>Have any new TMDLs been approved that your SMS4 discharges to? <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/></p> <p><i>If yes, determine whether POC have potential to occur in SMS4 stormwater discharges and update SWMP accordingly. Find updated SWMP in Appendix A.</i></p> <p>ANSWER / COMMENT No new TMDLs have been approved to which Berkeley County's SMS4 discharges.</p>

§3.2 TMDL MONITORING AND ASSESSMENT

Sec.	Item	Yes	No	NA
3.2.1.2.1.d	<p>Does your SMS4 discharge to TMDL waters? <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p> <p><i>If yes, list each pollutant of concern and report on the progress of the characterization of the relative pollutant levels from various SMS4 discharges to the TMDL waters.</i></p> <p>ANSWER / COMMENT Berkeley County's SMS4 area discharges to two TMDL watersheds:</p> <p>Ashley-Cooper-Wando-Charleston Harbor for Dissolved Oxygen (DO) Sawmill Branch-Dorchester Creek for Fecal Coliform</p> <p>Berkeley County is not required to monitor in these TMDL watersheds.</p>			
3.2.1.2.1d	<p>If yes, include the resulting data in Appendix B. <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/></p> <p><i>Include data in Appendix B.</i></p> <p>ANSWER / COMMENT A TMDL has been developed for DO in the Ashley-Cooper-Wando-Charleston Harbor watershed, which</p>			

	<p>includes portions of the urbanized area within Berkeley County. After reviewing this TMDL, there are no stormwater discharges assigned a WLA.</p> <p>A TMDL has been developed for fecal coliform in the Dorchester Creek and Sawmill Branch watershed, which includes portions of the urbanized area within Berkeley County. This TMDL was effective in 2003, which is before Berkeley County was an SMS4. After reviewing this TMDL, there are no WLAs assigned to Berkeley County.</p> <p>There is no WLA currently assigned to the SMS4 area of Berkeley County within any of the current effective TMDLs. Berkeley County is not monitoring for SMS4 discharges at this time.</p>			
3.2.1.2.2.c	<p>Have updates to the TMDL Monitoring and Assessment Plans been made?</p> <p><i>Include updated Monitoring Plan(s) in Appendix C.</i></p> <p>ANSWER / COMMENT</p> <p>Berkeley County does not have any WLAs currently assigned to the SMS4 area and therefore are not monitoring and do not have a TMDL Monitoring and Assessment Plan.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.2.1.2.2.d and 3.3.6	<p>Provide a brief narrative on the progress of the TMDL Monitoring and Assessment Plan.</p> <p><i>Include narrative below.</i></p> <p>ANSWER / COMMENT</p> <p>Since Berkeley County is not monitoring and does not have a TMDL Monitoring and Assessment Plan, there is no progress to report. In the future, if a TMDL is approved or revised to include a WLA for the SMS4 area of Berkeley County, they will create a TMDL Monitoring and Assessment Plan and begin monitoring.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Appendix B (page 56)	<p>Provide a brief narrative identifying the water quality improvements or degradation.</p> <p><i>Include narrative below.</i></p> <p>ANSWER / COMMENT</p> <p>Though monitoring is not being conducted for the SMS4 discharges, the BMPs for each MCM in the SWMP are being implemented to improve the water quality of the SMS4. Other improvements that relate to stormwater and water quality improvements include, but are not limited to:</p> <ul style="list-style-type: none"> Sanitary sewer lines have been repaired as needed in 2014-2015. This update will help eliminate possible illicit discharges from the aging infrastructure. Community litter sweeps in Berkeley County assist in educating the public, getting the public involved in water quality, and assisting in improving the water quality. Public education and outreach activities educate the public on stormwater related topics and can help improve the water quality of the County. The County participates in the Ashley-Cooper Stormwater Education Consortium and has provided support in 2014 and 2015 including, but not limited to: <ul style="list-style-type: none"> Workshops, presentations, and event booths involving impacts of stormwater on water quantity and quality Storm drain Marking Educational fairs and festivals Public Service Announcements 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

§4.1 PERMIT REQUIREMENTS

Sec.	Item	Yes	No	NA
4.1.6.1, 5.3.1, and Appendix B (p56)	<p>Has your SWMP been reviewed and updated to include the status of your compliance with permit conditions, an assessment of the appropriateness of the identified BMP, progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP, and the measurable goals for each of the minimum control measures.</p> <p><i>See updated SWMP in Appendix A.</i></p> <p>ANSWER / COMMENT</p> <p>Berkeley County's SWMP has been updated and the revised version is included in Appendix A. The majority of updates to this document were made to the Minimum Measure Permit Requirement tables in order to adjust wording for items that have been completed, and to the BMP Minimum Measure tables to reflect the current status of each milestone and to include descriptions of the progress made towards each measurable</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<p>goal. The BMP's listed in the SWMP are appropriate measures for the County to implement as they work towards reducing the discharge of pollutants of concern to the MEP. The BMP's described in the SWMP have not yet been in place long enough to allow for a quantification of the progress made toward achieving the goal of reducing the pollutants of concern; however, the BMP's in place for each MCM have associated measureable goals that will ensure that the County's program contributes to the reduction of pollutants of concern.</p>			
4.1.6.2 and Appendix B (p56)	<p>Have your proposed changes to the stormwater management programs that are established as permit conditions been updated in your SWMP? <i>Include updated SWMP in Appendix A.</i></p> <p>ANSWER / COMMENT Updates on what permit conditions were completed during the first two years of the Permit were added to the SWMP. Dates specified by the permit were not changed, though some interim milestones were updated to reflect feasible time frames for completion.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.1.6.3 and Appendix B (p56)	<p>Include/revise an assessment of controls and the fiscal analysis. In this, include a description of staff resources necessary to meet the requirements of this permit. <i>Include narrative on this assessment here.</i></p> <p>ANSWER / COMMENT Berkeley County has 11 employees in the engineering and stormwater department whose jobs are related to the stormwater management program. The County has 8 approved new positions and is working on filling these positions. The County has the resources, both with staffing and funding, to carry out the tasks described in their SWMP. More information is available upon request.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1.6.4, 5.3.2, and Appendix B	<p>Has a summary of data, including monitoring data, that has been accumulated been added to the appendix? <i>Include updated SWMP in Appendix A.</i></p> <p>ANSWER / COMMENT The County has not been monitoring and therefore does not have a summary of data.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.1.6.5 and Appendix B	<p>Include a summary describing the number and nature of enforcement actions. <i>Include here.</i></p> <p>ANSWER / COMMENT The County has developed an Enforcement Response Plan (ERP), located in Appendix F of the SWMP, to provide guidance in identifying specific violation types and defining appropriate responses for construction/permitting violations, illicit discharge/illicit connection/improper waste disposal, failure to comply with permanent stormwater management requirements, failure to comply with a permit, and failure to comply with a County request. This document was developed in December 2014.</p> <p>Berkeley County has had 3 enforcement actions in 2014 and 16 enforcement actions in 2015 related to construction activities. The inspections and the status of each inspection is recorded using a database.</p> <p>Illicit discharge enforcement actions are discussed below.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.1.6.5 and Appendix B	<p>Include a summary describing the number and nature of inspections. <i>Include here.</i></p> <p>ANSWER / COMMENT All inspections and follow up inspections are documented as necessary and kept on record. The following inspections have been conducted in 2014 and 2015:</p> <p><u>Construction</u> Construction site inspections, inspected at a frequency set forth in the County's permit, have been conducted since the start of the permit term. In 2014 481 construction inspections were conducted and in 2015, 1,344 construction inspections were conducted. These inspections are documented and filed for each construction project in a database.</p> <p><u>Roads and Drainage</u> Berkeley County had 55 roads and drainage inspections conducted in 2014 and 2 conducted in 2015. These results are documented and kept in a database.</p> <p><u>Warranty</u> Berkeley County had 12 warranty inspections and warranty follow up inspections conducted in 2014 and 19</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

conducted in 2015. These results are documented and kept in a database.

Illicit Discharge

Berkeley County had a total of 37 suspected illicit discharges in 2014 and 25 suspected illicit discharges in 2015. Each of these suspected illicit discharges were inspected and corrected as necessary. Inspection findings were recorded.

Municipal Facility/High Priority Facility

The County completed 25 facility inspections in June 2015. From these inspections, the high priority facilities were determined. Details can be found in the Berkeley County Facility Inspection Report. The high priority facilities will continue to be inspected on an annual basis.

Municipally-Owned Structural Controls

According to the County's SWMP, the County will conduct inspections and perform necessary maintenance for County-owned structural controls as necessary. The County's municipally-owned structural controls are present at municipal facilities and were inspected as a part of the municipal facility inspections. The structural controls will be maintained as necessary.

Post-Construction Installation

In 2014 91 post-construction inspections were conducted and 104 were conducted in 2015. These inspections ensure BMPs were installed per the approved plans and are conducted as a part of the close out meeting. These are conducted within 30 days of construction completion.

Post-Construction Maintenance

The County will conduct post-construction BMP inspections on County permitted BMPs to ensure that BMPs are maintained properly once during the permit term. The County stormwater inspectors schedule periodic post construction inspections to verify ensure that privately owned post construction BMPs are properly maintained. The County has an inventory of all County permitted post-construction BMPs constructed during this permit term. It is stored in the County's project management system, Energov. During 2014, 24 post construction inspections of County-permitted BMPs were conducted. In 2015, 53 post construction inspections of County-permitted BMPs were conducted.

4.1.6.5 and Appendix B	Include a summary describing the number and nature of public education programs.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<i>Include here.</i>		
ANSWER / COMMENT		
Berkeley County maintains a contract with Clemson University/Carolina Clear for the Ashley Cooper Stormwater Education Consortium (ACSEC) to manage the Public Education and Outreach (MCM #1) and Public Involvement/ Participation (MCM #2) program components. During the reporting period, calendar years 2014 and 2015, the ACSEC estimated achieving nearly three million impacts for Public Education and Outreach, in the form of workshops, articles, printed materials, and permanent exhibits. The ACSEC employed litter sweeps, monitoring, storm drain marking, and training seminars to achieve over 300,000 impacts for Public Involvement/ Participation during the reporting period. Appendix E to this annual report includes the ACSEC annual reports for calendar years 2014 and 2015 as well as a summary table of completed activities during the reporting period. It is important to note that the ACSEC implements a region-wide outreach strategy, so the numbers presented by the ACSEC are for the Charleston tri-County area, not specific to the Berkeley County SMS4 area.		
4.2.3.2.7.e	Include any corrective actions taken/resulting enforcement actions to eliminate illicit discharges.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<i>Include here.</i>		
ANSWER / COMMENT		
The County has developed an Enforcement Response Plan (ERP), located in Appendix F of the SWMP, to provide guidance in identifying specific violation types and defining appropriate responses for construction/permitting violations, illicit discharge/illicit connection/improper waste disposal, failure to comply with permanent stormwater management requirements, failure to comply with a permit, and failure to comply with a County request. This document was developed in December 2014.		
Berkeley County had a total of 37 suspected illicit discharges in 2014 and 16 suspected illicit discharges in 2015. Each of these suspected illicit discharges were inspected and corrected as necessary. Inspection		

findings were recorded. During elimination of these illicit discharges, 3 enforcement actions were taken in 2014 and 4 enforcement actions were taken in 2015.

§4.5 REVIEWING AND UPDATING STORMWATER MANAGEMENT PLANS

Sec.	Item	Yes	No	NA
4.5.1, 5.3.4, and Appendix B (p56)	<p>Have you reviewed and updated your SWMP, including changes to any BMP or any identified measureable goals that apply to the program elements?</p> <p><i>The updated SWMP can be found in Appendix A</i></p> <p>ANSWER / COMMENT Berkeley County's SWMP has been updated and is included in Appendix A. Appendix B of the SWMP includes the items that were changed in the SWMP. In general, changes were made to the Minimum Measure Permit Requirement tables to adjust wording for completed items along with adjusting BMP Minimum Measure tables to include the status of the milestone and updates to the measureable goal. The SWMP also has an item included to address the City of Hanahan and the City of Goose Creek, as a result of the intergovernmental agreement completed in October 2015.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.3.3	<p>Has a summary of the stormwater activities you plan to undertake during the next reporting cycle been developed and updated?</p> <p><i>The implementation schedule can be found in Appendix D.</i></p> <p>ANSWER / COMMENT Appendix D of this document includes deadlines for the County associated with the SWMP. This table has been developed to include the schedule for implementing items throughout the remainder of the permit term.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.3.5	<p>Is your SMS4 relying on another entity to satisfy some of your permit obligations?</p> <p><i>If yes, please list and include agreement in Appendix E.</i></p> <p>ANSWER / COMMENT Berkeley County is relying on CUCES/Ashley-Cooper Education Consortium to satisfy MCM #1 and MCM#2. Berkeley County will be assisting the City of Hanahan and the City of Goose Creek in satisfying their permit obligations.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appendix B (p56)	<p>Provide annual expenditures and proposed budget, including legal restrictions in the use of such funds for the following year.</p> <p><i>Provide information here.</i></p> <p>ANSWER / COMMENT Berkeley County implemented a stormwater fee during the 2014/2015 fiscal year to help fund the Stormwater Management Program. Prior to the 2014/2015 fiscal year, the County borrowed money from the general fund in order to implement the Stormwater Management Program. Over the past two years the utility has generated between \$1.5M-1.7M in revenue each year and the general fund has been reimbursed. With the recent intergovernmental agreement with Goose Creek and Hanahan, additional revenues will be generated in the 2015/2016 fiscal year to further increase total utility revenues. Since the start of the utility, the County's revenues have exceeded the programs expenditures. The County has the necessary resources to complete items listed in their SWMP. A more detailed budget can be provided upon request.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix A
Berkeley County
Updated/Revised SWMP



Berkeley County

Stormwater Management Program (SWMP)

Prepared in accordance with SCDHEC NPDES General Permit for Storm Water Discharges from Regulated Small Municipal Separate Storm Sewer Systems (SMS4)
Permit No. SCR030000

Adopted July 1, 2014
Revised April 20, 2016

1003 Highway 52
Post Office Box 6122
Moncks Corner, SC 29461-6120
Telephone: (843) 719-4127

CERTIFICATION OF STORMWATER MANAGEMENT PROGRAM

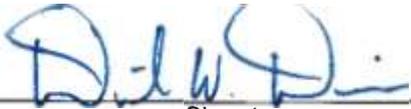
I certify that Berkeley County has taken the necessary steps to obtain and maintain full legal authority to implement and enforce each of the requirements contained in the NPDES General Permit for Storm Water Discharges from Regulated Small Municipal Separate Storm Sewer Systems (SMS4), Permit Number SCR030000. Items 4.1.4.3(a-d) are addressed within this SWMP.

Daniel W. Davis

Name (Print)

County Supervisor

Title



Signature



Date

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- Appendix F: Enforcement Response Plan
- Appendix G: Contract with Clemson University/Carolina Clear
- Appendix H: Intergovernmental Agreements with the City of Hanahan and the City of Goose Creek
- Appendix I: Pollution Prevention/Good Housekeeping Manual

List of Acronyms and Abbreviations

BMP	Best Management Practice
CEPSCI	Certified Erosion Prevention and Sediment Control Inspector
CSR	Construction Site Runoff
CUCES	Clemson University Cooperative Extension Service
EPA	Environmental Protection Agency
EPSC	Erosion Prevention and Sediment Control
ERP	Enforcement Response Plan
IDDE	Illicit Discharge Detection and Elimination
IECA	International Erosion Control Association
MEP	Maximum Extent Practicable
MCM	Minimum Control Measure
MS4	Municipal Separate Storm System
NPDES	National Pollutant Discharge Elimination System
NOI	Notice of Intent
PP&GH	Pollution Prevention and Good House Keeping
PCR	Post Construction Runoff
PEO	Public Education and Outreach
PIP	Public Involvement and Participation
SMS4	Small Municipal Separate Storm System
SCDHEC	South Carolina Department of Health and Environmental Control
SOP	Standard Operating Procedure
SWMP	Stormwater Management Program
SWP3	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load

Berkeley County

NPDES Stormwater Management Program (SWMP)

1.1 Introduction

This Stormwater Management Program (SWMP) is designed to reduce the discharge of pollutants from Berkeley County's Municipal Separate Storm Sewer System (MS4) to the maximum extent practicable, to protect water quality and to satisfy the appropriate requirements of the Clean Water Act. The contents are expected to change with time due to the iterative process of developing the SWMP recognized by the Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC). EPA predicts that it will likely take two to three SMS4 general permit terms (5-year terms) to fully develop and implement the SWMP. The first permit term focused heavily on data collection, organization, development of necessary programs, and initial implementation. During the current second SMS4 general permit cycle, the SWMP will need to be amended based on the observed effectiveness of existing plan components and to address the terms and conditions of the new permit. This document is meant to be a living document that will be reviewed and updated, as necessary, on an annual basis to reflect accomplishments, revisions to plan components, and additions of other or expanded efforts.

There are a number of departments within Berkeley County government that conduct stormwater-related activities. These departments include:

- Codes Enforcement
- Planning
- Engineering
- Roads and Bridges
- Facilities and Grounds
- Sangaree Tax District

This SWMP addresses the requirements of the NPDES General Permit for Stormwater Discharges from Regulated Small MS4s; Permit No. SCR030000, effective January 1, 2014 and expiring December 31, 2018. Specific language from the SMS4 general permit has been copied and pasted into this SWMP for consistency. The section numbers used in this SWMP correspond with the general permit section numbers.

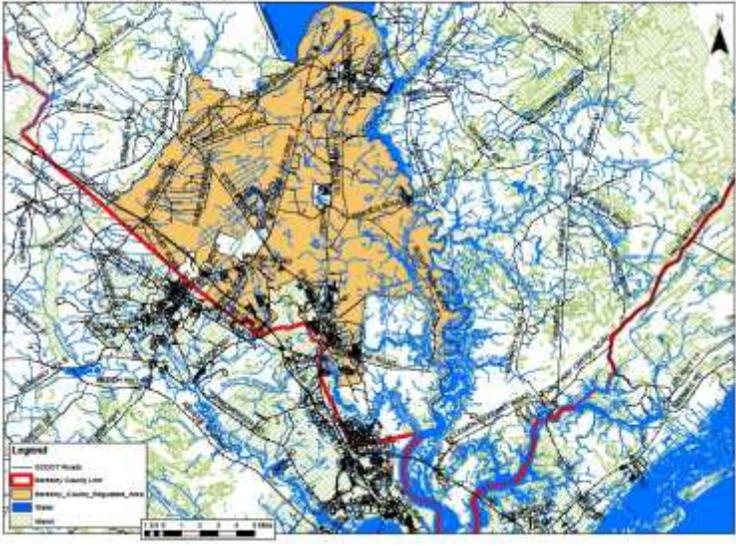
Updates to the SWMP will be included in Appendix B.

In October 2015, intergovernmental agreements between Berkeley County, the City of Hanahan, and the City of Goose Creek were signed. Berkeley County will be responsible for the items stated in the agreements, located in Appendix H. In 2016, Berkeley County will work to update this SWMP to address these additional municipalities. Berkeley County will provide the services stated in the agreements for the City of Hanahan and the City of Goose Creek.

2.0 Notice of Intent (NOI) Information

The following information is applicable to Berkeley County.

Table 1: NOI Information

General Permit Section	NOI Requirement	Description
2.2.1 Information on the Permittee:		
2.2.1.1	Name of Municipality:	Berkeley County
	Mailing Address:	William W. Peagler, III County Supervisor 1003 Highway 52 PO Box 6122 Moncks Corner, SC 29461-6122
	Telephone Number:	(843) 719-4094
2.2.1.2	Public Entity Type:	County
2.2.2 Information on the SMS4:		
2.2.2.1	Map of Berkeley County's MS4 Regulated Area:	<p><u>SMS4 Location:</u> MS4 Regulated Area</p> <p><u>SMS4 Center Coordinates:</u> Latitude: N32° 12.38' Longitude: W79° 58.98'</p> <p><u>MS4 Regulated Area:</u> Approximately 180 square miles (See Appendix A)</p>
		<p>Berkeley County Regulated Area</p> 

General Permit Section	NOI Requirement	Description
2.2.2.2	Major Receiving Waters:	Lindy Branch, Cooper River**, Back River*, Durham Creek*, Sophia Swamp, Laural Swamp, Daisy Swamp, Canterhill Swamp, Lake Dennis, Lake Hastie, Molly Branch, Stony Branch, Black Tom Bay, Gants Mill Branch, Biggins Creek, California Branch, Cypress Swamp, Sandy Run, Smith Branch, Miller Dam Branch, Felder Branch, Dawson Branch, Kelley Branch, Stanley Branch, Sawmill Branch**, Limehouse Branch, King Branch, Long Branch, Stroberfield Branch, Ancrum Swamp, Tillmans Branch, Poplar Branch, Lake Moultrie*, Mill Branch, Big Run, Wassamassaw Swamp, Foster Creek*, Goose Creek*, Goose Creek Reservoir*, Prioleau Creek, Martin Creek, Tail Race Canal*, Wando River**
2.2.2.3	Indian Lands:	No portion of Berkeley County's MS4 is located on Indian Country Lands.
2.2.2.4	List of Entities within Berkeley County's SMS4 Area that Operate a Small Separate Storm Sewer System:	There is no small separate storm sewer system operator within the Regulated MS4 area of Berkeley County.
2.2.2.5	Other Governmental Entities:	<u>Clemson University Cooperative Extension Service:</u> Responsible for the public education and outreach and the public participation/involvement components of the NPDES program.
2.2.2.6	BMP Information:	See Section 4.0 for a discussion of the Best Management Practices (BMPs) for each minimum measure. Each minimum measure contains all available information on the BMPs that are to be implemented, their measurable goals, a schedule for their implementation, and the person(s) responsible.

*Listed on the CWA §303(d) list; **Allocated a TMDL

3.1 Special Conditions Applicable to Permitted Stormwater Discharges to Sensitive Waters

The SMS4 general permit requires that Berkeley County determine whether its systems discharge to sensitive waters. For the purpose of the permit, sensitive waters are waters:

- With a Total Maximum Daily Load (TMDL) developed and approved, or established by EPA,
- Included in the most recent SC DHEC Bureau of Water Clean Water (CWA) Section 303(d) list approved by EPA,
- Pursuant to DHEC Water Classifications & Standards (R.61-68) and Regulations (R.61-69) classified as either:
 - Outstanding National Resource Waters (ONRW)
 - Outstanding Resource Waters (ORW)
 - Trout Waters (Natural (TN), Put, Grow, and Take (TPGT) & Put and Take (TPT)), or
 - Shellfish Harvesting Waters (SFH), and
- In Source Water Protection Areas (SWPA).

3.2 Determination of Receiving Water Conditions and Impacts

The SMS4 general permit requires Berkeley County to determine whether their SMS4 discharges to receiving waters within a TMDL watershed or on the most recent SC DHEC's CWA Section 303(d) impaired waters list. To meet this permit requirement, Berkeley County has collected information from SCDHEC on the location of existing TMDLs and impaired waters, as determined from results of the State's monitoring program, that could potentially be impacted by discharges from Berkeley County's SMS4. Tables 2 and 3 in the sections below provide a list of approved TMDLs and the impaired waterbodies on the 2012 303(d) list that Berkeley County's SMS4 contributes to, either directly or indirectly.

3.3 TMDL Monitoring and Assessment

In compliance with Section 3.2.1 of the SMS4 general permit, TMDL monitoring and assessment plans will be developed for all TMDL waters receiving SMS4 discharges of pollutant(s) of concern, except where Section 3.1.1.2 of the SMS4 general permit is applicable. For TMDLs existing before the effective date of permit coverage, TMDL monitoring and assessment plans will be completed, submitted to SCDHEC, and attached to this SWMP within 12 months of the effective date of permit coverage. For newly established TMDLs, Berkeley County will complete a TMDL monitoring and assessment plan within 12 months of the effective date of the TMDL. As completed, TMDL monitoring and assessment plans will be submitted to SCDHEC and attached to this SWMP in Appendix C. Monitoring will be initiated within 18 months of the effective date of permit coverage for TMDLs existing before the effective date of permit coverage. For newly established TMDLs, Berkeley County will initiate monitoring activities within 18 months of the effective date of the TMDL.

A list of approved TMDLs for the waterbodies within Berkeley County's regulated MS4 area, and/or which Berkeley County's MS4 area drains to, can be found in Table 2. In addition to the approved TMDLs, the Wando River is included on this list because it was under

development by DHEC at the time of this SWMP update. Berkeley County was not named as a contributor and was not assigned a wasteload allocation in any of the TMDLs listed in Table 2.

Table 2: TMDLs Approved and Under Development

TMDL Watershed	Pollutant of Concern	Monitoring Stations	Effective Date
Ashley-Cooper-Wando-Charleston Harbor	Dissolved Oxygen	MD-110, MD-111, MD-136, MD-089, MD-088, MD-146, MD-137, MD-087, MD-085, MD-091, MD-125	2002 (Original) 2013 (Revision)
Sawmill Branch - Dorchester Creek	Fecal Coliform	CSTL-013, CSTL-043	2003
Wando River	Fecal Coliform	09B-18, 09B-16, 09B-02, 09B-21, 09B-07, 09B-11, 09B-12, 09B-09, 09B-04, 09B-10	Under Development (Proposed for 2014)

3.4 TMDL Implementation and Analysis

In compliance with Section 3.3.2 of the SMS4 general permit, TMDL implementation and analysis plans will be developed for all approved TMDL waters receiving SMS4 discharges of pollutant(s) of concern, except where Section 3.1.1.2 of the SMS4 general permit is applicable. TMDL implementation and analysis plans will be completed and submitted to SCDHEC within 48 months from the effective date of permit coverage, or, for TMDLs established after the effective date of permit coverage, within 48 months of the effective date of the TMDL. The progress on the TMDL implementation and analysis will be included in the Annual Report.

3.5 Discharges to Impaired Waterbodies

Berkeley County will determine whether stormwater discharges from SMS4 system contribute directly or indirectly to the impaired waterbodies listed with monitoring stations in the SC DHEC 303(d) list. BMP applications will be conducted through implementation of the minimum control measures in section 4.2 to protect water quality. The BMP implementation strategies are designed so as not to cause or contribute to violations of water quality standards in water bodies with impaired monitoring stations.

A list of all impaired water bodies receiving discharges from the Berkeley County SMS4 can be found in the Table 3 below.

Table 3: 2014 303(d) List of Impaired Stations within Berkeley County's SMS4 Area and/or that the SMS4 Area Drains Into

Basin	Station Description	Station	Pollutant of Concern	Projected TMDL Date
Santee	Goose Creek at S-08-136 Bridge	MD-039	ENTERO	2025
Santee	Tail Race Canal at US 52 & 17A Below Lake Moultrie (SC-033)	CSTL-062	HG	2027
Santee	Foster Creek at Charleston CPW Water Intake	MD-240	DO	2023
Santee	Back River Res in Forebay Equidistant from Dam and Shorelines	CSTL-124	DO	2023
Santee	Cooper River at Bushy Park	MD-042	HG	2027
Santee	Durham Creek at S-08-9 Bridge	MD-217	HG	2027
Santee	Goose Creek at US 52 N CHTN	MD-114	DO	2023
Santee	Goose Creek Reservoir 2.3 M S of Goose Creek Town Center	RL-01008	DO	2025
Santee	Goose Creek Reservoir 1.0 MI NW of Spillway Near W Shoreline	RL-03340	CHLA, DO, PH	2025
Santee	Goose Creek Reservoir 2.8 MI NW of Spillway Near Otranto	RL-04390	CHLA, DO, TP	2025
Santee	Goose Creek Reservoir 0.55 MI W of Dam	RL-05412	TP	2025
Santee	Goose Creek Reservoir 2 MI N of Spillway	RL-06434	DO	2025
Santee	Goose Creek Reservoir 0.6 MI NW of 2 nd Powerlines US of Boat Ramp, Near W Shore Btwn 2 Western Embayments	RL-07017	DO	2025
Santee	Goose Creek Reservoir Midlake in Line with Northbrook Blvd	RL-08065	DO, TP	2025
Santee	Lake, Goose Creek Reservoir 1.95 MI West of Poppenheim Crossing	RL-10104	CHLA, DO, TP	2025
Santee	Lake, Goose Creek Reservoir 1.95 MI West of Poppenheim Crossing	RL-10104	ECOLI	2025
Santee	Lake, Goose Creek Reservoir 2.5 MI SW of Poppenheim Crossing	RL-10108	CHLA, DO, TP	2025
Santee	Goose Creek Reservoir 100 M US of Dam	ST-032	CHLA, TP	2025
Santee	Goose Creek Reservoir at 2 nd Powerlines US of Boat Ramp	ST-033	TP	2025

Basin	Station Description	Station	Pollutant of Concern	Projected TMDL Date
Santee	Goose Creek Reservoir Approximately 1.3 miles upstream from the dam. Site is located 100 yards south of the major point on the east bank in the middle of the reservoir.	RL-11118	CHLA, PH, TP	2025
Santee	Goose Creek Reservoir 0.1 mile northeast of the John. R. Bettis boat landing and 0.1 miles southeast of ST-033 near the northeast bank.	RL-09081	CHLA, TP	2025

3.6 Discharges to Classified Waters

For discharges to Classified Waters, BMP applications will be conducted through implementation of the minimum control measures in section 4.2. The BMP implementation strategies will not cause or contribute to violations of water quality standards in water bodies with impaired monitoring stations. A list of Classified Waters in Berkeley County is provided in the Table 4 below.

Table 4: Classified Waters

Waterbody	Water Quality Classification	Description
Guerin Creek	SFH	The entire creek tributary to Wando River
Ralston Creek	SFH	The entire creek tributary to Wando River
Wando River	SFH	That portion from its headwaters to a point 2.5 miles north of its confluence with Cooper River

3.7 Discharges to Source Water Protection Areas

For discharges to Source Water Protection Areas, BMP applications will be conducted through implementation of the six minimum control measures in Section 4.2 for protection necessary to support its uses.

4.1 Stormwater Management Plan (SWMP)

4.2 Permit Requirements

4.2.1 Requirements of the NPDES SMS4 General Permit

Berkeley County will implement this SWMP to reduce the discharge of pollutants from its SMS4 to the maximum extent practicable to protect water quality.

4.2.2 SWMP Development

The County will revise and update the written SWMP document and submit the SWMP to SC DHEC Bureau of Water within six months from the effective date of the permit.

4.2.3 Contents of the SWMP

At a minimum, the County must include ordinances, or other regulatory mechanisms, providing the legal authority necessary to implement and enforce the requirements of the SMS4 general permit. See Appendix D for Berkeley County's Stormwater Management Ordinance.

4.2.4 Requirement to Develop Adequate Legal Authority

Within one year from the effective date of the permit, the County will review and revise the Stormwater Management Ordinance, or adopt any new ordinances or other regulatory mechanisms that provide adequate legal authority to control pollutant discharges into and from the SMS4, and to meet the requirements of the SMS4 general permit.

At a minimum the legal authority will address the following:

- Authority to Prohibit Illicit Discharges
- Determination of Allowable Non-Stormwater Discharges
- Authority to Prohibit Spills or Other Releases
- Authority to Require Compliance
- Authority to Require Installation, Implementation, and Maintenance of Control Measures
- Authority to Receive and Collect Information
- Authority to Inspect
- Response to Violations
- Monetary Penalties
- Civil/Criminal Penalties
- Interagency Agreements (if applicable)

A certification statement has been included in this SWMP that certifies Berkeley County has taken the necessary steps to obtain and maintain full legal authority to implement and enforce each of the requirements contained in the NPDES SMS4 general permit (see Page i).

4.2.5 Enforcement Measures and Tracking

The County will develop and implement an enforcement response plan (ERP) within 12 months from the effective date of this permit, and revise as necessary. The ERP sets out Berkeley County's potential responses to violations and addresses repeat and continuing violations through progressively stricter responses as needed to achieve compliance.

4.1.5.2 Enforcement Tracking: The County will track instances of non-compliance either in hard-copy files or electronically.

4.1.5.3 Recidivism Reduction: The County will summarize inspection results by consuetudinary violators and include incentives, disincentives, or an increased inspection frequency at the operator's sites.

4.1.6 Report Requirements

Berkeley County will at a minimum submit the following information in the report (See Section 5.3 for details).

- The status of implementing the components of the SWMP that are established as permit conditions;
- Proposed changes to the SWMP that are established as permit conditions;
- Revisions, if necessary, to the assessment of controls and the fiscal analysis, including a description of staff resources necessary to meet the requirements of the permit;
- A summary of data, including monitoring data, that is accumulated throughout the reporting year; and,
- A summary describing the number and nature of enforcement actions, inspections, and public education programs.

4.1.7 SWMP Minimum Control Measure Requirements

Berkeley County SWMP will include the following information for each of the six minimum control measures (MCM) described in Section 4.2 of this SWMP in detail:

- Best management practices (BMP) that the County or another entity will implement for each of the MCM;
- Measurable goals for each of the BMP including, as appropriate, the months and years in which the County will undertake required actions, including interim milestones and the frequency of the action; and,
- Person, or persons, responsible for implementing or coordinating the BMP for the County's SWMP.

4.1.10 SWMP Modifications

SC DHEC Bureau of Water may notify Berkeley County of the need to modify the SWMP document to be consistent with the permit, in which case Berkeley County will have 90 days to finalize such changes to the plan.

Berkeley County will keep the SWMP document up to date during the term of the permit. Where Berkeley County determines that Ordinance modifications are needed to address any procedural, protocol, or programmatic change, such changes must be made as soon as practicable, but not later than 360 days.

The following table describes schedule, frequency and responsible party for SWMP requirements:

Table 5: SWMP Requirements

SWMP REQUIREMENTS			
Develop and Implement SWMP	Not Started:	In Progress:	Completed: <input type="checkbox"/>
	Section: 4.1.2		
Milestone(s)	Schedule	Frequency	Responsible Party
Revise and update written SWMP document and submit the SWMP to SC DHEC Bureau of Water.	July 1, 2014	Once	County Engineer
Update Stormwater Management Ordinance	Not Started:	In Progress:	Completed: <input type="checkbox"/>
	Section: 4.1.3		
Milestone(s)	Schedule	Frequency	Responsible Party
Review and revise the Stormwater Management Ordinance, or adopt any new ordinances or other regulatory mechanisms that provide adequate legal authority to control pollutant discharges into and from the SMS4, and to meet the requirements of the SMS4 general permit.	January 1, 2015	Once	County Engineer
Enforcement Response Plan (ERP)	Not Started:	In Progress:	Completed: <input type="checkbox"/>
	Section: 4.1.5		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop & Implement an enforcement response plan (ERP).	January 1, 2015	Once	County Engineer
Update Stormwater Management Plan	Not Started:	In Progress:	Completed: <input type="checkbox"/>
	Section: 4.1.10		
Milestone(s)	Schedule	Frequency	Responsible Party
Review and revise the SWMP document as necessary to keep it up to date during the term of the permit.	Throughout the Permit Term	Annually	County Engineer

4.2 Minimum Control Measures

In compliance with SMS4 general permit requirements; this SWMP includes a description of the six minimum control measures (MCMs) and details on the development and implementation of the plan to address MCM requirements. The details on each minimum measure include the measurable goals for each proposed BMP, the implementation schedule for the BMP (implementation date and frequency), and the responsible person(s) to implement the BMP.

4.2.1 Public Education and Outreach (Minimum Measure #1)

4.2.1.1 Minimum Measure #1 Permit Requirements

In order to meet the requirements of Minimum Measure #1, Berkeley County has partnered with Clemson University and utilizes Clemson University Cooperative Extension Service’s

(CUCES) Carolina Clear program to focus on the development and implementation of educational programs designed to inform the public about the impacts that stormwater discharges could have on local waterbodies and the steps that the public can take to reduce pollutants in stormwater runoff. The County will continue its agreement with Clemson University in order to efficiently reach as many citizens as economically possible through public education and outreach efforts. See Appendix G for Contract.

Table 6: Minimum Measure #1 Permit Requirements

<p>4.4.1.1.1 The pollutant(s) of concern (POC) within Berkeley County’s watershed area(s):</p>
<p>ENTERO and ECOLI - Goose Creek Reservoir, Goose Creek, Sawmill Branch-DorchesterCreek HG - Tail Race Canal, Cooper River at Bushy Park; DurhamCreek DO - Foster Creek, Back River Reservoir, Goose Creek, Goose Creek Reservoir PH - Lake Moultrie CHLA - Goose Creek Reservoir TP - Goose Creek Reservoir</p>
<p>4.4.1.1.2 Description of the POC(s) listed above:</p>
<p>Enterococci (ENTERO) and <i>Escherichia coli</i> (ECOLI) impairments can be a result of various sources including but not limited to: Failing Septic and Wastewater Systems and Animal Waste being transported through runoff during storm events.</p> <p>Mercury (HG) Areas with high Mercury levels are typically a result of complex interactions of several natural and manmade factors. These factors include but are not limited to: Coal-fired plant emissions and chemical manufacturing plant emissions that have mercury vapor which is then transported via rain or snow into water, and pesticides/fungicides.</p> <p>Dissolved Oxygen (DO) Areas with low Dissolved Oxygen are typically a result of complex interactions of several natural and manmade factors. These factors include but are not limited to: Temperature, Nutrients/Algae, and Water Flow characteristics.</p> <p>(pH) variations for in-stream pH can be a result of various natural and man-made interactions.</p> <p>Chlorophyll-a (CHLA) impairments of elevated levels of chlorophyll-a in lakes typically reflect excessive algae growth. Elevated chlorophyll-a levels typically indicate excessive loading of the primary growth-limiting algal nutrients nitrogen and phosphorus.</p> <p>Total Phosphorus (TP) impairments can be a result of various sources including but not limited to: Wastewater Treatment Operations, Urban Runoff, Runoff from pastures and croplands, and waterfowl.</p>
<p>4.4.1.1.3 Programs targeted at high priority community issues with the potential to decrease the POC’s effect on water quality:</p>
<p>Berkeley County utilizes Clemson University’s Cooperative Extension Service’s Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.</p>
<p>4.4.1.1.4 The audience(s) that is believed to have an influence on the POC identified and that is believed to have an influence on the goals and objectives identified:</p>
<p>Berkeley County utilizes Clemson University’s Cooperative Extension Service’s Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.</p>

4.4.1.1.5	The message(s) directed at the target audience(s) listed above to achieve the program goals and objectives:
	Berkeley County utilizes Clemson University's Cooperative Extension Service's Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.
4.4.1.1.6	Education campaign(s) and materials:
	Berkeley County utilizes Clemson University's Cooperative Extension Service's Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.
4.4.1.1.7	Distribution of campaign materials:
	Berkeley County utilizes Clemson University's Cooperative Extension Service's Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.
4.4.1.1.8	Quantitative and/or qualitative formative assessment of programs:
	Berkeley County utilizes Clemson University's Cooperative Extension Service's Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.
4.4.1.1.9	Utilization of public input into the development of this program:
	Berkeley County utilizes Clemson University's Cooperative Extension Service's Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.
4.4.1.2.10	Implementation of program goals and objectives:
	Berkeley County utilizes Clemson University's Cooperative Extension Service's Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.
4.4.1.1.11	Process for annual adjustment of program based upon program assessment:
	Berkeley County utilizes Clemson University's Cooperative Extension Service's Carolina Clear Program to assist in meeting the requirements of Minimum Measure 1 and 2. The Contract can be found in Appendix G.

Minimum Measure #1 BMP Implementation

Evaluation of the success of this minimum measure will be through careful analysis of the measurable goals for each BMP included in this minimum measure. Table 7 describes the components of Berkeley County's Public Education and Outreach program:

Table 7: Best Management Practices - Minimum Measure #1

PUBLIC EDUCATION AND OUTREACH BMPS			
Contractual Agreement with Clemson University	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.1.1		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Continue County's Contract with Clemson University to implement a public education/outreach program for Berkeley County's MS4 regulated area.	Throughout Permit Term	Annually	County Engineer and CUCES's Carolina Clear Program
Measurable Goal:			
<ul style="list-style-type: none"> A program that provides public education concerning water quality issues in the MS4 regulated area of Berkeley County. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County is continuing their agreement with Clemson University's Carolina Clear Program to address MCM #1 and MCM #2. The Annual Report includes items completed in 2014 and 2015. This report is in Appendix E of the 2016 Annual Report. 			
Support Ashley-Cooper Stormwater Education Consortium	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.1.1.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Berkeley County will support the Ashley-Cooper Stormwater Education Consortium by: participating in meetings/workshops, promoting/advertising events, distributing water quality awareness campaign items, and providing other general assistance as resources allow.	Throughout Permit Term	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Support Ashley-Cooper Stormwater Education Consortium. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County is continuing to support the Ashley-Cooper Stormwater Consortium to address MCM #1 and MCM #2. The Annual Report includes items completed in 2014 and 2015. This report is in Appendix E of the 2016 Annual Report. 			

4.2.2 Public Involvement/Participation (Minimum Measure #2)

4.2.2.1 Minimum Measure #2 Permit Requirements

Berkeley County will continue partnership with CUCES's Carolina Clear in order to efficiently reach as many citizens as economically possible through public involvement and participation efforts. CUCES's Carolina Clear will provide the citizens of Berkeley County opportunities to participate in activities and events relating to water quality preservation and water quality education.

Table 8: Minimum Measure #2 Permit Requirements

4.2.2.1.1	Create opportunities for citizens to participate in the implementation of stormwater controls:
	Opportunities for citizen participation in the implementation of stormwater controls in Berkeley County will be provided by CUCES's Carolina Clear program.
4.2.2.1.2	Accessing information on this SWMP:
	Berkeley County will include the SWMP on the County's Stormwater Management webpage.
4.2.2.1.3	Incorporate written procedures for implementing the public involvement/participation (PIP) MCM in the SWMP:
	Berkeley County will continue to implement its written procedures (Contract) with Clemson University to Implement a Public Involvement and Participation Program

Minimum Measure #2 BMP Implementation

The measurable goals for each BMP for the Public Participation and Involvement minimum measure will be used to evaluate the success of each BMP. Table 9 describes the components of Berkeley County's Public Involvement/Participation program:

Table 9: Best Management Practices - Minimum Measure #2

PUBLIC INVOLVEMENT/PARTICIPATION BMPS			
Opportunities for Citizen Participation	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.2.1.1		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Contract with Clemson University to implement a public involvement/participation program for Berkeley County.	Throughout Permit Term	Annually	County Engineer and CUCES's Carolina Clear Program
Measurable Goal:			
<ul style="list-style-type: none"> A program that will provide the citizens of Berkeley County opportunities to participate in activities and events relating to water quality preservation and water quality education. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County has continued their contract with Carolina Clear, and is involved with the Ashley-Cooper Stormwater Consortium. Through these resources, the County has provided opportunities for citizen participation. 			
Provide Access to Information for the SWMP	Not Started: In Progress: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.2.1.2		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Ensure the public can easily find information about the SWMP.	Deadline: July 1, 2016	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Berkeley County will include the SWMP on the County's webpage. 			

Measurable Goal Update:			
<ul style="list-style-type: none"> The County has a SWMP section on their website and will have the SWMP uploaded to the website by July 1, 2016. The SWMP information is located at: https://www.berkeleycountysc.gov/drupal/engineering/swmp https://www.berkeleycountysc.gov/drupal/engineering/storm 			
Written Procedures for Implementing MCM#2	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.2.1.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Berkeley County will continue implementing the public education and involvement MCM.	Throughout Permit Term	Annually	County Engineer and CUCES's Carolina Clear Program
Measurable Goal:			
<ul style="list-style-type: none"> Signed Contract with Clemson University/CarolinaClear. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County has continued their contract with Carolina Clear, and is involved with the Ashley-Cooper Stormwater Consortium. Through these resources, the County has provided opportunities for citizen participation. 			

4.2.3 Illicit Discharge Detection and Elimination (Minimum Measure #3)

4.2.3.1 Minimum Measure #3 Permit Requirements

Berkeley County will locate and eliminate illicit discharges by continuing to implement a program in accordance with the SMS4 general permit requirements. The County will develop selection criteria to establish priority areas and identify the priority areas. The basis of for selection of each priority area will be documented. Outfalls located within the priority areas will be visited to check for dry weather flow. Outfalls with dry weather flow will be screened to identify potential illicit discharges. Prior to illicit tracking activities, the County will review and update the existing Standard Operating Procedures for Use in Field Investigation for Illicit Discharges (SOP) document as necessary for illicit tracking procedures.

Table 10: Minimum Measure #3 Permit Requirements

4.2.3.2.1 Development of the storm sewer system map:
In previous years, Berkeley County has developed a storm sewer system map showing the location of known outfalls, and names and locations of all waters of the United States that receive discharges from those outfalls. The storm sewer map will be updated as needed to show new outfalls due to new developments.
4.2.3.2.2 Identification of priority areas:
Berkeley County will develop selection criteria to establish priority areas and identify the priority areas.
The County will document the basis for its selection of each priority area and create a list of all priority areas identified in the system no later than 12 months after the effective date of permit coverage. A list of the priority area will be created and updated <i>annually</i> to reflect changing priorities and be available for review by the permitting authority.

4.2.3.2.3.a Field screening to detect illicit discharges: Conduct Field Screening

Berkeley County will conduct dry weather field screening and / or analytical monitoring, when necessary, to identify the source of illicit discharges. At a minimum, Berkeley County will:

Identify all field screening points within the priority areas where field screening and analytical monitoring will take place. A list of screening points will be developed. The County will also conduct field screening and analytical monitoring outside the priority areas at known non-stormwater discharges. The areas and the schedule for conducting the screening, and field screening points will be identified annually.

Berkeley County will review and update the SOP document for dry weather screening procedures to include:

A description of which screening methods will be used and a description as to why it is appropriate;
A description of field screening equipment with respective methodologies for use; and
All dry weather screening activities will be conducted after 72-hours of continuous dry conditions following at least 0.10 inch of rainfall.

The elimination of all illicit discharges will be documented. SOP document will be reviewed and updated to develop documentation procedures as described in section 4.2.3.2.5/6

4.2.3.2.3.b Field Screening Assessment:

Berkeley County will assess the effectiveness of the Field Screening component of their IDDE program in the third annual report to determine if the level of effort is adequate in attaining the effective prohibition of non-stormwater discharges into the MS4. Where updates are found to be necessary, Berkeley County will make such changes and include them as part of the re-notification required under Part 2.5 of Permit SCR030000.

4.2.3.2.3.c Procedures for notifying another MS4 of an illicit discharge:

For non-traditional MS4 permittees, if illicit connections or illicit discharges are observed related to another operator's municipal storm sewer system then Berkeley County will notify the other operator as soon as practical but no later than 3 business days.

4.2.3.2.3.d Addressing a notification of an illicit discharge by another operator:

Berkeley County will follow appropriate procedures when notified of an illicit discharge by another MS4 operator.

4.2.3.2.4/5 Tracing the source of an illicit discharge:

Berkeley County will review and update SOP document for procedures for conducting illicit tracking and elimination.

After becoming aware of an illicit discharge, Berkeley County will initiate an investigation(s) to attempt to identify and locate the source of any continuous or intermittent non-stormwater discharge on as soon as practical but no later than 3 business days.

Berkeley County will report immediately the occurrence of any dry weather flow believed to be an immediate threat to human health of the environment to SC DHEC Emergency Response, 1-888-481-0125.

Illicit Discharges suspected of being sanitary sewage and/or significantly contaminated will be considered a high priority and will be reported to appropriate public utility owner within 24 hrs.

Investigations of illicit discharges suspected of being cooling water, wash water, or natural flows may be delayed until after all discharges suspected of having the potential for adversely impact either human health or water quality have been investigated, eliminated, and/or resolved.

At a minimum, Berkeley County will document the date(s) the illicit discharge was observed; the results of the investigation; any follow-up of the investigation; and the date the investigation was closed.

4.2.3.2.6 Determining the source of the illicit discharge:

Berkeley County will determine and document through their investigations the source of all confirmed illicit discharges. If the source of the suspected illicit discharge is found to be a suspected non-compliance with an NPDES permit, the appropriate SCDHEC Regional Office will be notified.

- a. If an illicit discharge is found, but within six (6) months of the beginning of the investigation neither the source nor the same non-stormwater discharge has been identified/observed, then Berkeley County will maintain written documentation for review by the permitting authority.
- b. If the observed discharge is intermittent, Berkeley County will document that a minimum of three (3) separate investigations were made to observe the discharge when it was flowing. If these attempts are unsuccessful, Berkeley County will maintain written documentation for review by the permitting authority. However, since this is an ongoing program, Berkeley County will periodically recheck these suspected intermittent discharges.

4.2.3.2.7 Corrective Action plan to eliminate illicit discharges:

Once the source of the illicit discharge has been determined, Berkeley County will:

- a. Notify the responsible party of the problem as soon as practical but no later than 3 business days.
- b. Require the responsible party to conduct all necessary corrective actions to eliminate the non-stormwater discharge within 30 days. When, and if, elimination will take longer than 30 days, Berkeley County will require responsible parties to submit a plan with a schedule for elimination.
- c. Conduct a follow-up investigation and field screening, consistent with Part 4.2.3.4/5 of this SWMP, to verify that the discharge has been eliminated.
- d. Document their follow-up investigations.
- e. Follow the SWMP ERP and include the resulting enforcement actions in the subsequent report.

4.2.3.2.8 Public reporting mechanism:

Berkeley County will establish an illicit reporting hotline for the public and staff to report illicit discharges.

The County will establish and implement citizen request response procedures in the illicit tracking procedures document created for section 4.2.3.2.4/5. This will include:

- a. Development of a written spill/dumping response procedure for responding to public notices of illicit discharges, the various responsible agencies and their contacts, and who would be involved in illicit discharge incidence response.

<p>b. Procedures for inspections in response to complaints and follow-up inspections as needed to ensure that corrective measures have been implemented by the responsible party to achieve and maintain compliance.</p>
<p>4.2.3.2.9 Employee training:</p>
<p>Berkeley County will implement a training program for all appropriate municipal staff, which, as part of their normal job responsibilities, may come into contact with, or otherwise observe, an illicit discharge or illicit connection to the storm sewer system. This BMP will be implemented through training for Pollution Prevention in Section 4.2.6.5</p>

Minimum Measure #3 BMP Implementation

In order to meet the requirements of Minimum Measure #3, Berkeley County has listed BMPs that focus on the detection and elimination of illicit discharges into the SMS4. In order to provide a summative document for the various IDDE permit requirements, Berkeley County will review and update the existing SOP document to include the following sections: map of priority areas, list of screening points in the priority area, dry weather screening procedures, illicit tracking procedures, illicit elimination procedures, and IDDE documentation procedures. Evaluation of the success of this minimum measure will be based on the level of implementation of the BMPs included in this minimum measure. The table describe the components of the County’s Illicit Discharge Detection and Elimination (IDDE) program.

In order to meet the requirements of Minimum Measure #3, Berkeley County will:

- Update the Storm Sewer Map
- Identify Priority Areas for Illicit Discharges
- Identify Screening Points
- Update Field Screening and Illicit Tracking Procedures
- Assess Field Screening Procedures
- Conduct Field Screening (Dry Weather Screening)
- Conduct Illicit Tracking
- Eliminate Illicit Discharges
- Document Illicit Discharge Investigations
- Provide Employee Training on Illicit Discharge Identification

Table 11 describes the components of Berkeley County’s Illicit Discharge Detection and Elimination (IDDE) program.

Table 11: Best Management Practices - Minimum Measure #3

IDDE BMPs			
Update Storm Sewer Map	Not Started:	In Progress:	Completed: <input type="checkbox"/>
	Section: 4.2.3.2.1		
Milestone(s)	Schedule	Frequency	Responsible Party
Update the storm sewer map showing the location of all outfalls and names and locations of all waters of the United States that receive discharge from those outfalls.	Throughout Permit Term	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> To provide a complete inventory of SMS4 outfalls for use in performing illicit discharge detection and elimination and potential stormwater monitoring. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County has an updated storm sewer map. This map will be updated as necessary. 			
Identify Priority Areas	Not Started:	On-going: <input type="checkbox"/>	Completed:
	Section: 4.2.3.2.2		
Milestone(s)	Schedule	Frequency	Responsible Party
<ul style="list-style-type: none"> Develop selection criteria to establish priority areas and document the basis for selection of each priority area. Create list of all priority areas The list will be updated annually. 	January 1, 2015	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> The priority list will be used to set the boundaries for SMS4 Dry-Weather Screening for the given permit year and the County will create prioritized areas. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County has listed illicit discharge priority areas. This list was reviewed and this list will be updated annually. Priority areas are listed below. Priority Area 1: Sawmill Branch Drainage Basin (TMDL issued) Priority Area 2: Cypress Swamp Drainage Basin (Impaired water body and high growth rate) Priority Area 3: Lake Moultrie Drainage Basin (Impaired water body) Priority Area 4: Goose Creek Reservoir Drainage Basin (Impaired water body) Priority Area 5: Cooper River/Back River Drainage Basin (Impaired water body) Priority Area 6: Other areas not covered by the other priority areas 			
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Develop Field Screening & Illicit Tracking Procedures	Not Started: In Progress: Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.3.2.3a/3c/3d/4/5/7/8		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop Illicit section for the ERP. Review and update the SOP document to include: <ul style="list-style-type: none"> • A description of the screening methods to be used • A description of field screening equipment with respective methodologies to be used • Procedures for notifying another MS4 of an illicit discharge • Procedures for addressing notifications from another MS4 of an illicit discharge • A map of the priority area (updated annually) • A schedule for screening • List of outfalls to be screened in priority area (updated annually) • Field screening documentation procedures • Illicit tracking procedures • Illicit discharge elimination procedures • Illicit discharge reporting procedures • Illicit discharge documentation procedures • Procedures for responding to public notices of illicit discharge • Corrective action plan 	January 1, 2015	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • The Field Screening and Illicit Tracking procedures will provide the methodology in which outfall screening and illicit tracking will be conducted. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> • The illicit discharge ERP can be found in Appendix F and the Standard Operating Procedures for Use in Field Investigation for Illicit Discharges can be found in Appendix E. 			
Conduct Field Screening	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.3.2.3a		
Milestone(s)	Schedule	Frequency	Responsible Party
Conduct dry weather flow screening at outfalls in the priority areas and at dry weather discharges.	January 1, 2017	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • The Field Screening activities will be used to identify potential illicit discharges. 			
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Field Screening Assessment	Not Started: <input checked="" type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.3.2.3b		
Milestone(s)	Schedule	Frequency	Responsible Party
Create a report assessing the effectiveness of the Field Screening program in the third annual report.	January 1, 2017	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> The Field Screening Assessment document will determine the effectiveness of the program, and potentially provide recommendations for changes in field screening procedures. 			
Conduct Illicit Tracking	Not Started: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.3.2.4/5		
Milestone(s)	Schedule	Frequency	Responsible Party
Conduct illicit tracking at outfalls identified as potential illicit discharges by the field screening effort	January 1, 2017	As Needed	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Determine source and eliminate illicit discharges. 			
Document Illicit Discharge Investigations	Not Started: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.3.2.5/6		
Milestone(s)	Schedule	Frequency	Responsible Party
Create a document for illicit discharge tracking and elimination activities to include: <ul style="list-style-type: none"> Date(s) the illicit discharge was observed Results of the illicit investigation Results of any follow-up investigations; Date the investigation was closed. Source of illicit discharge Documentation for unresolved illicit tracking investigations in which no source is located. 	January 1, 2017	As Needed	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Document of Illicit Tracking and Elimination activities. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> In 2014, 37 illicit discharge investigations were conducted. In 2015, 25 illicit discharge investigations were conducted. Illicit discharges were eliminated and 7 total enforcement actions were taken. 			
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Develop a Written Spill/Dumping Response Procedure	Not Started: In Progress: Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.3.2.8.a		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop a written spill/dumping response procedure for responding to public notices of illicit discharges, the various responsible agencies and their contacts, and who would be involved in illicit discharge incidence response.	January 1, 2017	Once	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Written spill/dumping response procedures. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> The procedures are included in the Standard Operating Procedures for Use in Field Investigation for Illicit Discharges found in Appendix E. 			
Develop Public Reporting Mechanism	Not Started: In Progress: Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.3.2.8		
Milestone(s)	Schedule	Frequency	Responsible Party
Promote, publicize, and facilitate a reporting mechanism for the public and staff to report illicit discharges and establish and implement citizen request response procedures.	January 1, 2015	Once	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Provide a means for the public to report potential illicit discharges. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County advertises an email address and phone number on their Stormwater Management Program Components webpage. These options allow the public and staff to report potential illicit discharges. 			
Employee Training	Not Started: On-going <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.3.2.9		
Milestone(s)	Schedule	Frequency	Responsible Party
Provide internal staff training for identifying potential illicit discharges.	January 1, 2015	Ongoing	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Provide training to appropriate staff for identifying potential illicit discharges 			
Measurable Goal Updates:			
<ul style="list-style-type: none"> One IDDE and Good Housekeeping training was conducted in 2014. 			

4.2.4 ruction Site Stormwater Runoff Control (Minimum Measure #4)

4.2.4.1 Minimum Measure #4 Permit Requirements

Berkeley County will review and update the existing construction stormwater management program by implementing BMPs in order to meet the SMS4 general permit requirements. The County will update appropriate design requirements, the Stormwater Design Standards Manual, Stormwater Ordinance and corresponding plan review procedures. Site inspection

procedures will be updated to conform to the SMS4 general permit requirements, and an enforcement response plan (ERP) will be developed to determine how the County will use specific type of responses to address various types of violations.

Table 12: Minimum Measure #4 Permit Requirements

4.2.4.4.1 Regulatory requirement for erosion and sediment controls:
<p>Below is a copy of the relevant sections of the existing ordinance which requires erosion and sediment controls as well as sanctions to ensure compliance.</p> <p>Ordinance section requiring erosion and sediment controls can be found in Berkeley County Stormwater Management Ordinance Sec. 3.3 Design and Engineering Standards</p> <p>Ordinance section for sanctions to ensure compliance can be found in Berkeley County Stormwater Management Ordinance Section 6.1 Enforcement.</p> <p>A copy of Berkeley County’s Ordinance can be found in Appendix D.</p>
4.2.4.4.2 Requirements for erosion and sediment controls and soil stabilization practices:
<p>Berkeley County will provide requirements for construction site operators to implement appropriate BMP such as,</p> <ul style="list-style-type: none"> a. Erosion and Sediment Controls, and b. Soil Stabilization Practices
4.2.4.4.3 Requirements for pollution prevention measures:
<p>Berkeley County will provide requirements for the design, installation and maintenance of effective pollution prevention measures for construction site operators to:</p> <ul style="list-style-type: none"> a. Minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water and other wash waters. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge. b. Minimize the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials present on site to precipitation and to stormwater runoff that may cause adverse impacts to water quality, and, c. Minimize the discharge of pollutants from spills and leaks and implement chemical spill and leak prevention and response procedures. d. The following discharges from sites are prohibited: <ul style="list-style-type: none"> i. Wastewater from washout of concrete, unless managed by an appropriate control; ii. Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials iii. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance; and,

iv. Soaps or solvents used in vehicle and equipment washing.

4.2.4.4.4 Requirements for Stormwater Pollution Prevention Plans (SWP3):

Berkeley County will require each operator of a construction activity to prepare and submit a Stormwater Pollution Prevention Plan (SWP3) prior to the disturbance of land for the SMS4 to review and approve.

4.2.4.5 Review of SWP3:

Berkeley County's plan review procedures will at a minimum meet the following:

- a. Make clear to operators of construction activity that they are prohibited from commencing construction activity until they receive of written approval of the plans.
- b. Approve SWP3 that complies with the technical requirements of Berkeley County's Stormwater Design Standards Manual requirements and requirements of the NPDES General Permit for Storm Water Discharges from Construction Activities, SCR100000.
- c. The SWP3 must include the rationale used for selecting control measures, including how the control measure protects a waterway or stormwater conveyance.
- d. Berkeley County will use qualified individuals, knowledgeable in the technical review of SWP3 to conduct reviews.
- e. Document the review of each SWP3 plan using a checklist or similar process.
- f. Procedures for SWP3 review, including the review of pre-construction site plans, for construction activity that discharge pollutant(s) of concern to TMDL waters and to waters on the 303(d) List of Impaired Waters, the SWP3 must identify potential water quality impacts the permitted discharges may have. The SWP3 shall limit sediment discharges to the MEP, shall protect water quality. Procedures for SWP3 review shall:
 - i. Incorporate consideration of potential water quality impacts,
 - ii. Include the review of construction site plans,
 - iii. For construction projects that disturb less than 25 acres, carefully evaluate all selected BMPs and their ability to control the pollutant(s) of concern.
 - iv. For construction projects that disturb 25 acres or more, require a written quantitative and qualitative assessment showing that the selected BMP will control the discharge of the pollutant, or pollutants, of concern from construction and post construction within a TMDL watershed, or to a water on the 303(d) List of Impaired Waters, and,
 - v. Require that SWP3 prepared by construction activity applicants for SMS4 review and approval must demonstrate that stormwater discharges will neither cause nor contribute to a violation of water quality standards.

4.2.4.6 Site inspections:

- a. Berkeley County will maintain an inventory of all active construction projects. The inventory will be continuously updated as new projects are permitted and projects are completed. The inventory will contain relevant contact information for each project (e.g., name, address, phone, etc.), the size of the project and area of disturbance. Berkeley County will make the inventory available to SC DHEC upon request. As part of this inventory,
 - i. Berkeley County will track the number of inspections for the inventoried construction sites throughout the reporting period to verify that the sites are inspected at the minimum frequencies required, and,
 - ii. Document inspections and enforcement activities for each site in the inventory.
- b. Berkeley County will implement procedures for inspecting construction projects in accordance with the frequency listed in the SMS4 General Permit.
- c. Berkeley County will adequately inspect all phases of construction. At a minimum, inspections must occur following installation of initial BMPs, during active construction, and after final site stabilization.
- d. Berkeley County will have trained and qualified inspectors. Berkeley County will also continue to follow, and revise as necessary, written procedures outlining the inspection and enforcement procedures.

Inspections of construction sites must, at a minimum:

- i. Check for coverage under SCR100000 by requesting a copy of any application or Notice of Intent (NOI), the stamped approved stormwater pollution prevention plan or other relevant application form during initial inspections.
- ii. Review the applicable stormwater pollution prevention plan and conduct a thorough site inspection to determine if control measures have been selected, installed, implemented, and maintained according to the plan.
- iii. Assess compliance with Berkeley County's ordinances and permits related to stormwater runoff, including the implementation and maintenance of designated minimum control measures.
- iv. Assess the effectiveness of control measures.
- v. Visually observe and record non-stormwater discharges, potential illicit connections, and potential discharge of pollutants in stormwater runoff.
- vi. Provide a written or electronic inspection report generated from findings in the field.

4.2.4.7 Enforcement Response Plan (ERP):

Berkeley County will develop an Enforcement Response Plan (ERP). The ERP will contain descriptions of how Berkeley County will use specific type of responses to address various types of violations. The ERP will include, but is not limited to:

<p>a. Types of response;</p> <p>i. Verbal warnings,</p> <p>ii. Written notices, and</p> <p>iii. Escalated enforcement measures such as citations, fines, stop work orders, etc.</p> <p>b. Specific strategies for escalating enforcement response, where necessary, to address persistent, repeat or escalating violations.</p> <p>c. Ensure ERP is reasonably effective in reducing pollutant discharges to the MEP and to protect water quality.</p>
<p>4.2.4.8 MS4 staff training:</p>
<p>Berkeley County will ensure that all staff, whose primary job duties are related to implementing the construction stormwater program, including permitting, plan review, construction site inspections, and enforcement, is trained to conduct these activities.</p>
<p>4.2.4.9 Construction site operator and public involvement:</p>
<p>4.2.4.9.a Construction operator education:</p>
<p>Berkeley County will develop and implement an effective communication process with construction contractors to educate them on areas in which improvements are needed and to enforce any required actions.</p>
<p>4.2.4.9.b Public involvement:</p>
<p>Berkeley County will implement procedures for receipt and consideration of information submitted by the public. This will be coordinated with the public participation program.</p>

Minimum Measure #4 BMP Implementation

In order to meet the requirements of Minimum Measure #4, Berkeley County has listed BMPs that focus on the reduction of pollutants in stormwater runoff to the SMS4 from construction activities that result from a land disturbance greater than or equal to one acre, or any land disturbing activity within ½ mile of a receiving waterbody (but not for single family homes which are not part of a subdivision development that result in any land disturbance less than five acres). Evaluation of the success of this minimum measure will be through careful analysis of the measurable goals for each BMP included in this minimum measure. Measurable goals for each BMP were selected by formulating attainable goals for the various BMP implementation steps or tasks. In order to meet the requirements of Minimum Measure #4, Berkeley County will:

- Update Pollution Prevention BMP Requirements
- Review and Update, as necessary, the SWP3 Submittal & Review Requirements
- Update SWP3 Review Procedures for Discharges to Impaired Waters
- Update and Maintain a Construction Site and Site Inspection Inventory

- Update Site Inspection Procedures
- Develop Section of ERP for Construction Activities
- Update the County’s Stormwater Design Standards Manual
- Update the County’s Stormwater Management Ordinance
- Develop and Implement Effective Communication Procedure with Construction Operator
- Develop and Implement Procedures for Receipt and Consideration of Information Submitted by the Public

Table 13 describes the components of the Berkeley County’s construction site stormwater runoff control program:

Table 13: Best Management Practices - Minimum Measure #4

CONSTRUCTION SITE STORMWATER RUNOFF CONTROL BMPs			
Erosion Prevention and Sediment Control (EPSC) Requirements	Not Started:	In Progress:	Completed: <input checked="" type="checkbox"/>
	Section: 4.2.4.4.2		
Milestone(s)	Schedule	Frequency	Responsible Party
Update the Stormwater Management Design Standards Manual to include requirements for Erosion and Sediment Controls and Soil Stabilization Practices.	January 1, 2016	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • Provide a tool to assist construction site operators to implement appropriate EPSC BMPs. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> • Berkeley County’s Stormwater Design Standards Manual was updated in September 2014. Erosion and sediment controls and soil stabilization practices are required, as stated in Section 3.5.2.2. 			
Pollution Prevention Requirements	Not Started:	In Progress:	Completed: <input checked="" type="checkbox"/>
	Section: 4.2.4.4.3		
Milestone(s)	Schedule	Frequency	Responsible Party
Update the Stormwater Management Design Standards Manual to include requirements for Pollution Prevention Measures listed in Section 4.2.4.4.3 of Table 12.	January 1, 2016	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • Provide a tool to assist construction site operators to implement appropriate Pollution Prevention BMPs • Update Stormwater Management Design Standards Manual for Submittal requirement 4.2.4.4.4 			
Measurable Goal Update:			
<ul style="list-style-type: none"> • Berkeley County’s Stormwater Design Standards Manual is in the process of being updated. Pollution Prevention requirements will be located in Section 2.2.2.1.3.z. • The County’s Pollution Prevention/Good Housekeeping Manual is in Appendix I and was adopted in 2011. 			

Update Plan Review Procedures	Not Started: In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.4.5		
Milestone(s)	Schedule	Frequency	Responsible Party
<p>Update the Stormwater Management Design Standards Manual to include SWP3 approval requirements that comply with the technical requirements of the effective NPDES General Permit for Storm Water Discharges from Construction Activities, SCR100000, or establish alternative technical criteria that are equally, or more, protective of water quality.</p> <p>Update the Stormwater Management Design Standards Manual to include procedures for SWP3 review, including the review of pre-construction site plans, for construction activity that discharge pollutant(s) of concern to TMDL waters and to waters on the 303(d) List of Impaired Waters must identify potential water quality impacts the permitted discharges may have. The SWP3 shall limit sediment discharges to the MEP, and shall protect water quality.</p>	January 1, 2016	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Review and update plan review procedures to ensure compliance with stormwater design standards and to address the pollutants of concern for construction activities. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County's Stormwater Design Standards Manual was updated in September 2014. This document includes Plan Review procedures. 			
Develop Construction Site and Site Inspection Inventory	Not Started: On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.4.6(a)		
Milestone(s)	Schedule	Frequency	Responsible Party
<p>Maintain an inventory of all active construction projects to include information for:</p> <ul style="list-style-type: none"> Relevant contact information The size of the project Area of disturbance Number of inspections by Berkeley County for each construction site Inspection results and enforcement activities 	January 1, 2016	Ongoing	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Develop a database for construction sites to provide general site information and ensure appropriate site inspections are conducted by the construction operator. The database will be available for review upon request. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County maintains an inventory of active construction projects in a database. 			

Update Site Inspection Procedures	Not Started: In Progress: Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.4.6(b-d)		
Milestone(s)	Schedule	Frequency	Responsible Party
Update the Stormwater Management Design Standards Manual (or other document) for site inspection procedures to include: <ul style="list-style-type: none"> Updated inspection frequency requirements Procedures for inspecting all phases of construction Ensuring coverage under SCR100000 Determining if control measures have been selected, installed, implemented, and maintained according to the SWP3 Ensuring compliance with Berkeley County's ordinances and design manuals Assessing the effectiveness of control measures Addressing and documenting non-stormwater discharges Electronic inspection documentation procedures 	January 1, 2016	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Update County Stormwater Management Design Standards Manual. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County's Stormwater Design Standards Manual was updated in September 2014. The inspection process and procedures for Berkeley County is in Section 4.1.2. 			
Develop Section of ERP for Construction Activities	Not Started: In Progress: Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.4.7		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop enforcement responses for permit violations, SWP3 violations, and EPSC BMP installation, operation, and maintenance violations.	January 1, 2015	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Develop an enforcement response plan to clearly identify types of violations, response to violations, and enforcement measures. The response plan will be made available to construction site operators and SCDHEC. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County developed an Enforcement Response Plan in December 2014 which includes a section on construction/permitting violations. The ERP can be found in Appendix F. 			
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Update Stormwater Management Ordinance	Not Started: In Progress: Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.4.7		
Milestone(s)	Schedule	Frequency	Responsible Party
Berkeley County will update their Stormwater Management Ordinance to meet the criteria in this MCM.	January 1, 2015	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Update the Stormwater Management Ordinance. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County's Stormwater Management Ordinance provides the appropriate authority to meet and enforce the criteria of this MCM. 			
Train MS4 Staff	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.4.8		
Milestone(s)	Schedule	Frequency	Responsible Party
Berkeley County will ensure that all staff, whose primary job duties are related to implementing the construction stormwater program, including permitting, plan review, construction site inspections, and enforcement, is trained to conduct these activities.	January 1, 2016	Throughout permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Train staff whose primary job duties are related to implementing the construction stormwater program. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> The County's 6 Stormwater Inspectors are CEPSCI certified and are offered CEPSCI Certification or Recertification Training when needed. The goal is for all stormwater engineers to obtain Stormwater Plan Reviewer Certification. The majority of the staff has been certified and certification/recertification is offered to new hires. CEPSCI certified inspectors must be recertified every 5 years. This training is provided by Clemson. 			
Develop Construction Site Operator Education	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.4.9.a		
Milestone(s)	Schedule	Frequency	Responsible Party
Berkeley County will develop and implement an effective communication process with construction contractors to educate them on areas in which improvements are needed and to enforce any required actions.	January 1, 2016	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Implement an effective communication process with construction contractors. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County holds pre-construction meetings with construction site operators. This allows the County to have an open and effective communication process and discuss items that may arise and ways to prevent enforcement actions. 			

Develop Public Involvement Procedures	Not Started: In Progress: Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.4.9.b		
Milestone(s)	Schedule	Frequency	Responsible Party
Berkeley County will implement procedures for receipt and consideration of information submitted by the public.	January 1, 2016	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Implement procedures for receipt and consideration of information submitted by the public. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Berkeley County advertises an email address and phone number on their Stormwater Management Program Components webpage. These allow the public and staff to report information. 			

4.2.5 Post-Construction Stormwater Management for New Development and Redevelopment (Minimum Measure #5)

4.2.5.1 Minimum Measure #5 Permit Requirements

The post construction stormwater management program is designed to give Berkeley County the authority to require structural and non-structural stormwater quality BMPs on sites being developed. Berkeley County currently provides design requirements to control stormwater discharges from new development and redeveloped sites. Berkeley County will review and update the post construction program by developing additional or revising existing site performance standards and ensuring post construction BMPs are inspected and maintained appropriately.

Table 14: Minimum Measure #5 Permit Requirements

4.2.5.1. Post-construction stormwater management program:
Berkeley County will provide water quality design requirements to control stormwater discharges from new development and redeveloped sites that disturb at least one acre (including projects that disturb less than one acre that are part of a larger common plan of development or sale, LCP) that discharge into an SMS4. The requirements apply to private and public development sites, including roads.
4.2.5.2 Site performance standards:
In accordance with Section 4.2.5.2 of the SMS4 general permit, Berkeley County will produce a set of site performance standards which will be applied to all new development and redevelopment sites discharging to Berkeley County's SMS4, which disturb greater than or equal to one acre. These standards will ensure that projects approximate pre-development conditions to the MEP to protect water quality.

4.2.5.3	Site plan review:
<p>To ensure that all applicable new development and redeveloped sites conform to the performance standards required in Section 4.2.5.2, Berkeley County will implement project review, approval, and enforcement procedures.</p> <p>Berkeley County will conduct site plan reviews of all new development and redeveloped sites which will disturb greater than or equal to one acre and discharge to the MS4 (including sites that disturb less than one acre that are part of a LCP). The site plan review will specifically address how the project applicant meets the performance standards and how the project will ensure long-term maintenance of post construction BMP</p>	
4.2.5.4	Long-term maintenance of post-construction stormwater control measures:
<p>All structural stormwater control measures installed and implemented to meet the site performance standards will be maintained in perpetuity. Berkeley County will ensure the long-term maintenance of structural stormwater control measures installed.</p> <p>Berkeley County will require that property owners or operators of any new development or redeveloped site subject to the site performance standards will provide verification of maintenance for the approved structural stormwater control measures used to comply with the performance standards.</p>	
4.2.5.5	Inventory of post-construction stormwater control measures:
<p>Berkeley County will maintain an inventory of all post-construction structural stormwater control measures installed and implemented at new development and redeveloped sites, including both public and private sector sites located within the permit area. At a minimum, the inventory shall contain all BMP constructed since the effective date starting with the effective date of this permit.</p>	
4.2.5.6	Inspections and enforcement:
4.2.5.6.1	Inspection procedures:
<p>To ensure that all stormwater control measures are operating correctly and are being maintained as required consistent with its applicable maintenance agreement, Berkeley County will conduct inspections of each project site covered under the performance standards listed in the Stormwater Design Standards Manual, <i>at least one time during the permit term.</i></p>	
4.2.5.6.2	Post-construction notification:
<p>Within 30 days of completion of construction of any project required to meet the performance standards, Berkeley County will conduct a post construction inspection to verify that BMP have been installed as per approved plans.</p>	
4.2.5.6.3	Inspection reports:
<p>Berkeley County will document its inspection findings in an inspection report. Berkeley County will document and maintain records of inspection findings and enforcement actions and make them available for review by the permitting authority.</p>	

Minimum Measure #5 BMP Implementation

In order to meet the requirements of Minimum Measure #5, Berkeley County will:

- Review and Update Water Quality Design Requirements
- Review and Update Site Performance Standards
- Revise Plan Review Checklist & Stormwater Design Standards Manual for Post Construction SWP3 Submittal Requirements
- Develop Long Term Maintenance Requirements for Post Construction BMPs
- Create Post Construction BMP Inventory
- Develop Post Construction BMP Inspection Procedures
- Conduct Initial Post Construction BMP Installation Inspections
- Conduct Post Construction BMP Maintenance and Operation Inspections
- Document Post Construction BMP Inspections

Table 15 describes the components of Berkeley County's Post-Construction stormwater management plan:

Table 15: Best Management Practices - Minimum Measure #5

POST-CONSTRUCTION STORMWATER MANAGEMENT BMPs			
Develop Water Quality Design Requirements	Not Started: In Progress: Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.5.1		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop post-construction program requirements to be implemented in the Stormwater Design Standards Manual to control stormwater discharges from new development and redeveloped sites.	January 1, 2016	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • Provide design community with design guidance for Post Construction BMPs 			
Measurable Goal Update:			
<ul style="list-style-type: none"> • Berkeley County's Stormwater Design Standards Manual was updated in September 2014. This document addresses post-construction requirements. 			
Develop Site Performance Standards	Not Started <input checked="" type="checkbox"/> In Progress: Completed:		
	Section: 4.2.5.2		
Milestone(s)	Schedule	Frequency	Responsible Party
Update Storm Water Design Standards Manual to include Post Construction Site Performance Standards	January 1, 2017	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • Provide design community with performance and design standards for Post Construction BMPs 			

Revise Plan Review Checklist for Post Construction SWP3 Submittal Requirements	Not Started: <input checked="" type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.5.3		
Milestone(s)	Schedule	Frequency	Responsible Party
Revise the Plan Review Checklist to include SWP3 submittal requirements for Post Construction Site Performance Standards.	January 1, 2017	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Develop SWP3 requirements for Post Construction Site Performance Standards. 			
Develop Long Term Maintenance Requirements for Post Construction BMPs	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.5.4		
Milestone(s)	Schedule	Frequency	Responsible Party
Update the long term maintenance agreement form for post construction BMPs to be signed by the property owner. Develop maintenance verification process to ensure post construction BMPs are properly maintained.	January 1, 2016	Update As Needed	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Develop a post construction BMP maintenance agreement form and a post construction BMP maintenance verification process. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> The County requires a maintenance covenant that can be found on the County's website at: https://www.berkeleycountysc.gov/drupal/sites/default/files/Covenants.pdf The County Stormwater Inspectors schedule periodic post-construction inspections to ensure that privately owned post-construction BMPs are properly maintained. 			
Post Construction BMP Inventory	Not Started: <input type="checkbox"/> On-going: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.5.5		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop an inventory of all County permitted post-construction BMPs constructed since the effective date of permit SCR030000 (January 1, 2014).	January 1, 2015	Annually	County Engineer
Update County permitted post-construction BMP inventory.	Throughout Permit Term Beginning in Year 2	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Develop an inventory of County permitted Post-Construction BMPs. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> The County has an inventory of all County permitted post-construction BMPs constructed since January 1, 2014. This is stored in the County's project management system, Energov and is updated as needed. 			

Post-Construction BMP Inspections Program	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.5.6		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop procedures and forms for post-construction BMP installation inspections.	January 1, 2015	Once during permit term	County Engineer
Conduct post-construction BMP inspections on County permitted post-construction BMPs within 30 days of construction completion to ensure BMP is installed per approved plans.	Throughout Permit Term Beginning in Year 2	Annually	County Engineer
Develop procedures and forms for post-construction BMP maintenance inspections.	January 1, 2015	Once during permit term	County Engineer
Conduct post-construction BMP inspections on County permitted post-construction BMPs to ensure BMPs are maintained properly after the County is notified through a Notice of Termination (NOT).	Throughout Permit Term Beginning in Year 2	Once during permit term	County Engineer
Document and maintain records of inspection findings and enforcement actions and make them available for review by the permitting authority.	Throughout Permit Term Beginning in Year 2	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Develop procedures and forms for Post-Construction BMP installation inspections and include procedures in this document. 			
<ul style="list-style-type: none"> Inspect all County permitted post-construction BMPs within 30 days of construction completion. 			
<ul style="list-style-type: none"> Develop procedures and forms for Post-Construction BMP maintenance inspections and include procedures in this document. 			
<ul style="list-style-type: none"> Inspect appropriate construction sites to ensure County permitted post-construction BMPs are maintained and operating correctly. 			
<ul style="list-style-type: none"> Provide documentation of Post-Construction BMP inspections. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> The County has conducted post-construction BMP inspections. There were 24 inspections conducted in 2014 and 53 inspections conducted in 2015, related to post-construction BMPs. 			

4.2.6 Pollution Prevention / Good Housekeeping (Minimum Measure #6)

4.2.6.1 Minimum Measure #6 Permit Requirements

In order to meet the requirements of Minimum Measure #6, Berkeley County will implement a range of BMPs targeted to reduce pollutants from County-Owned facilities and storm sewer systems. A Countywide inventory of municipal facilities will be developed, and each facility will be assessed for the potential pollutant discharges. Based on the assessment, a list of high priority facilities will be developed, and annual inspections will be conducted at the high priority facilities. Berkeley County will prioritize their owned and /or operated stormwater management systems and implement a maintenance schedule. All County-Owned structural controls (stormwater BMPs) will be inspected and maintained. In addition, the County will

review and update a set of pollution prevention measures for operation and maintenance activities. Berkeley County will provide training to appropriate employees to ensure pollution prevention and good housekeeping activities are practiced throughout the County’s separate departments and that are consistent with the County’s existing Good Housekeeping Manual.

Table 16: Minimum Measure #6 Permit Requirements

4.2.6.1	Development of a municipal facility and stormwater control inventory:
<p>Berkeley County will update and maintain an inventory of municipally-owned and stormwater controls that are not covered under a separate general or individual NPDES permit (i.e. industrial, solid waste, etc.). Examples of these types of facilities may include but are limited to composting facilities, equipment storage and maintenance facilities, landscape maintenance on municipal property, material storage yards, public buildings, golf courses, public work yards, recycling facilities, salt storage facilities, municipally owned and/or maintained structural stormwater controls.</p> <p>Berkeley County will also include a list of industrial facilities owned or operated by the County that are subject to SCDHEC NPDES General Permit for Storm Water Discharges associated with Industrial Activity (SCR000000) or individual NPDES permits for discharges of storm water associated with industrial activity that ultimately discharge to the County’s SMS4. The SCDHEC permit number or a copy of the Industrial NOI form for each facility will be included.</p>	
4.2.6.2	Municipally-owned or operated facility assessment:
4.2.6.2.1	Comprehensive assessment of pollutant discharge potential:
<p>Berkeley County will develop a comprehensive assessment of all County-owned or operated facilities identified in Part 4.2.6.1 at least once during the permit term and include it in the permit reapplication for their potential to discharge pollutants in stormwater.</p>	
4.2.6.2.2	Identification of high priority facilities:
<p>Berkeley County will identify “high-priority” facilities that have a high potential to generate stormwater pollutants.</p>	
4.2.6.2.3	Documentation of comprehensive assessment results:
<p>Berkeley County will document the results of the assessments and maintain copies of all site evaluation checklists used to conduct the comprehensive assessment. The documentation will include the results of Berkeley County’s initial assessment, any identified deficiencies and corrective actions taken.</p>	

<p>4.2.6.3 Annual comprehensive inspections of high priority facilities:</p>
<p>Starting no later than 24 months from the effective date of coverage and at least once per year thereafter, a comprehensive inspection of “high priority” facilities (Part 4.2.6.2.2), including all stormwater controls, must be performed by Berkeley County. Specific attention will be given to waste storage areas, dumpsters, vehicle and equipment maintenance/fueling areas, material handling areas, and similar potential pollutant-generating areas. The yearly inspection results will be documented and records will be maintained by Berkeley County. The inspection report will also include any identified deficiencies and the corrective actions taken to fix the deficiencies.</p>
<p>4.2.6.4 Storm sewer system maintenance activities - MS4 maintenance:</p>
<p>4.2.6.4.1 Assessment/prioritization of stormwater management systems/structures:</p>
<p>Berkeley County will prioritize their owned and /or operated storm water management systems / structures and implement a maintenance schedule.</p>
<p>4.2.6.4.2 Municipal activities and operation:</p>
<p>Berkeley County will review and update a set of pollution prevention measures that, when applied during municipal O&M activities, will reduce the discharge of pollutants in stormwater. Municipal operation and maintenance activities to be considered include but are not limited to; pavement and rights-of-way maintenance, bridge maintenance, cold weather operations, and municipally sponsored events.</p>
<p>4.2.6.4.3 Maintenance of municipally-owned and/or maintained structural stormwater controls:</p>
<p>Berkeley County will inspect, and maintain, wherever and whenever necessary, all County owned or maintained structural stormwater controls. Berkeley County will also maintain all municipally owned green infrastructure practices through regularly scheduled maintenance activities.</p>

4.2.6.5 Employee training and education requirements:

Berkeley County will develop an annual employee training program for appropriate employees involved in implementing pollution prevention and good housekeeping practices.

This annual training will include a general stormwater education component, any new technologies, operations, or responsibilities that arise during the year, and the Permit Requirements that apply to the staff being trained.

A description of the program will be maintained for review by the permitting authority.

Berkeley County will also identify and track all personnel requiring training and records must be maintained.

Training will begin within the first year from the effective date of permit authorization.

4.2.6.6 Requirements for contractor oversight:

Contractors hired by Berkeley County to perform municipal maintenance activities will be contractually required to comply with all of Berkeley County's stormwater control measures, good housekeeping practices, and facility-specific stormwater management procedures.

Berkeley County will provide oversight of contractor activities to ensure that contractors are using appropriate control measures and procedures.

Minimum Measure #6 BMP Implementation

In order to meet the requirements of Minimum Measure #6, Berkeley County will:

- Develop a Municipal Facility Inventory
- Conduct Assessment of Non-Permitted Municipal Facility & Identify High Priority Facilities
- Conduct High Priority Facility Inspections
- Prioritization Stormwater Management Systems/Structures
- Review and Update Pollution Prevention Measures for Operation and Maintenance Activities
- Inspect and Maintain County-Owned Structural Controls (stormwater BMPs)
- Conduct Pollution Prevention and Good House Keeping Employee Training

Table 17 describes the components of Berkeley County's pollution prevention/good housekeeping for municipal operations program:

Table 17: Best Management Practices - Minimum Measure #6

POLLUTION PREVENTION / GOOD HOUSEKEEPING BMPS			
Municipal Facility Inventory	Not Started:	In Progress:	Completed: <input checked="" type="checkbox"/>
	Section: 4.2.6.1		
Milestone(s)	Schedule	Frequency	Responsible Party
Develop an inventory of all County-owned facilities and stormwater controls that are not covered under a separate NPDES permit In addition, develop a list of all municipally owned facilities that are covered under a separate NPDES permit for industrial activities.	January 1, 2015	Once during the permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> An inventory of non-permitted municipal facilities A list of all municipally owned facilities that are covered under a separate NPDES permit for industrial activities. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> An inventory of non-permitted municipal facilities was completed and is stored in an Excel spreadsheet. A list of all municipally owned facilities that are covered under a separate NPDES permit for industrial activities is stored in an Excel spreadsheet. 			
Assessment of Non-Permitted Municipal Facilities	Not Started:	In Progress:	Completed: <input checked="" type="checkbox"/>
	Section: 4.2.6.2		
Milestone(s)	Schedule	Frequency	Responsible Party
Conduct an analysis based on type of facility/use, locations to waterbody, County owned BMPs to rank County facilities.	July 1, 2015	Once during permit term	County Engineer
Based on the results of the analysis, identify high priority facilities.	July 1, 2015	Once during permit term	County Engineer
Create a site evaluation checklist that will be used to conduct an assessment of all facilities.	July 1, 2015	Once during permit term	County Engineer
Conduct facility site inspections with evaluation checklist at each facility identified in the inventory from Section 4.2.6.1.	January 1, 2017	Once during permit term	County Engineer
Document results of facility evaluations.	January 1, 2017	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> An analysis to identify potential high priority facilities. A site evaluation checklist for facility assessment. 			

<ul style="list-style-type: none"> Conduct inspections at municipal facilities and complete site evaluation checklist. 			
<ul style="list-style-type: none"> Documentation of site evaluation checklists. 			
<ul style="list-style-type: none"> A list of high priority facilities. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> Using the comprehensive list of all County-owned municipal facilities and any activities at each location which might harm the water quality of stormwater runoff, a list of high priority facilities was created. 			
<ul style="list-style-type: none"> A site evaluation checklist was created to use during facility inspections and high priority municipal facilities were listed. 			
Conduct High Priority Facility Inspections		Not Started: On-going: <input checked="" type="checkbox"/> Completed:	
Section: 4.2.6.3			
Milestone(s)	Schedule	Frequency	Responsible Party
Create a high priority inspection report template with sections for identified deficiencies and corrective action taken for each site inspection.	January 1, 2016	Once during permit term	County Engineer
Conduct and document annual facility site inspections including evaluations of potential “pollutant generating” areas.	Throughout Permit Term Beginning in Year 3 (January 1, 2016)	Annual	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> A high priority facility inspection report form. 			
<ul style="list-style-type: none"> Conduct annual inspections and determine potential “polluting generating” areas at high priority facilities. 			
<ul style="list-style-type: none"> Documentation of facility inspection report forms. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> A high priority inspection form was created and used during facility inspections. 			
<ul style="list-style-type: none"> Inspections of the high priority facilities were conducted in June of 2015. 			
<ul style="list-style-type: none"> The high priority inspections completed in 2015 were documented and are included in the Berkeley County Facility Inspection report. 			
Prioritization of Stormwater Management Systems/Structures		Not Started: <input checked="" type="checkbox"/> In Progress: Completed:	
Section: 4.2.6.4.1			
Milestone(s)	Schedule	Frequency	Responsible Party
Prioritize storm water management systems / structures and develop and implement a maintenance schedule.	July 1, 2016	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> Create a maintenance schedule based on the prioritization of the storm water management systems / structures 			

Review and Update Pollution Prevention Measures for Operation and Maintenance Activities	Not Started: In Progress: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.6.4.2		
Milestone(s)	Schedule	Frequency	Responsible Party
Review and Update a written set of pollution prevention measures for municipal operation and maintenance activities.	July 1, 2016	Once during permit term	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • Create a set of pollution prevention measures for municipal operation and maintenance activities. 			
Inspect and Maintain County Owned Structural Controls	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.6.4.3		
Milestone(s)	Schedule	Frequency	Responsible Party
Conduct inspections and perform necessary maintenance for County owned structural controls	January 1, 2016	As necessary	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • Conduct inspections and perform maintenance. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> • County owned structural controls are inspected and maintained as necessary. 			
Pollution Prevention and Good House Keeping Employee Training	Not Started: On-going: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.6.5		
Milestone(s)	Schedule	Frequency	Responsible Party
Conduct pollution prevention and good housekeeping employee training.	January 1, 2015	Annually	County Engineer
Measurable Goal:			
<ul style="list-style-type: none"> • Conduct employee training. 			
Measurable Goal Update:			
<ul style="list-style-type: none"> • One IDDE and Good House Keeping training was conducted in 2014. 			

4.5 Reviewing and Updating Storm Water Management Plans

Table 18: Reviewing and Updating SWMP

SWMP REQUIREMENTS			
Update Storm Water Management Plan	Not Started:	In Progress:	Completed: <input checked="" type="checkbox"/>
	Section: 4.5.1 & 4.5.2		
Milestone(s)	Schedule	Frequency	Responsible Party
Review and update the SWMP document to keep it up to date during the term of the permit.	Throughout the permit term	Annually	County Engineer
Storm Water Management Plan Updates Required by SCDHEC	Not Started: <input checked="" type="checkbox"/>	In Progress:	Completed:
	Section: 4.5.3		
Milestone(s)	Schedule	Frequency	Responsible Party
SCDHEC requested changes to the SWMP	January 1, 2019	As Required	County Engineer

This SWMP is a living document and will be updated and revised throughout the permit term. In accordance with Section 4.5.2 of the SMS4 general permit, additions (but not subtracting or replacing) components to the SWMP will be made at any time with a written notification made to SCDHEC.

Any changes intended to replace an ineffective or unfeasible BMP with an alternate BMP will be requested and submitted in written form to SCDHEC at any time. Unless denied SCDHEC, changes proposed in accordance with the criteria below will be deemed approved and may be implemented sixty (60) days from submittal of the request. If request is denied, SCDHEC will send Berkeley County a written response giving a reason for the decision. The modification requests must include the following:

- An analysis of why the BMP is ineffective or infeasible (including cost prohibitive),
- Expectations on the effectiveness of the replacement BMP, and
- An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

Additionally, SCDHEC may request Berkeley County to make changes to the SWMP at any time to:

- Address documented impacts on receiving water quality caused, or contributed to, by discharges from the SMS4;
- Include more stringent requirements necessary to comply with new Federal statutory or regulatory requirements; or
- Include such other conditions deemed necessary by the Department to comply with the goals and requirements of the Clean Water Act.
- Changes requested by SCDHEC must be made in writing, set forth the time schedule for the County to develop the changes, and offer the County the opportunity to

propose alternative plan changes to meet the objective of the requested modification. All changes required by SCDHEC will be made in accordance with South Carolina Water Pollution Control Permits Regulation 61-9 124.5, 122.62, or as appropriate 122.63.

5.3 Reporting

Table 19: Reporting

REPORTING			
1st Report	Not Started:	In Progress :	Completed: <input checked="" type="checkbox"/>
	Section: 5.3		
Milestone(s)	Schedule	Frequency	Responsible Party
Complete and Submit 1 st Report (covering years 1 and 2)	April 1, 2016	Once	County Engineer
2nd Report	Not Started: <input checked="" type="checkbox"/>	In Progress :	Completed:
	Section: 5.3		
Milestone(s)	Schedule	Frequency	Responsible Party
Complete and Submit 2 nd Report (covering years 3 and 4)	July 4, 2018	Once	County Engineer

Unless DHEC requires more frequent reports, reports will be submitted based on the following schedule:

1. The first report covering years 1 and 2 must be submitted to the Department twenty-seven (27) months after the effective date of the permit.
2. The following report, covering years 3 and 4 shall be submitted 180 days before the permit expiration date as part of the renotification.
3. While, and if the expired permit is continued, Reports are due every year on the anniversary date of the expired permit.

All reports shall be sent to the address below unless the Department instructs permittees to submit via alternate mechanisms (i.e. electronic mechanisms):

SCDHEC Bureau of Water
Water Pollution Compliance & Enforcement
2600 Bull Street
Columbia, SC 29201-1708

All reports will include:

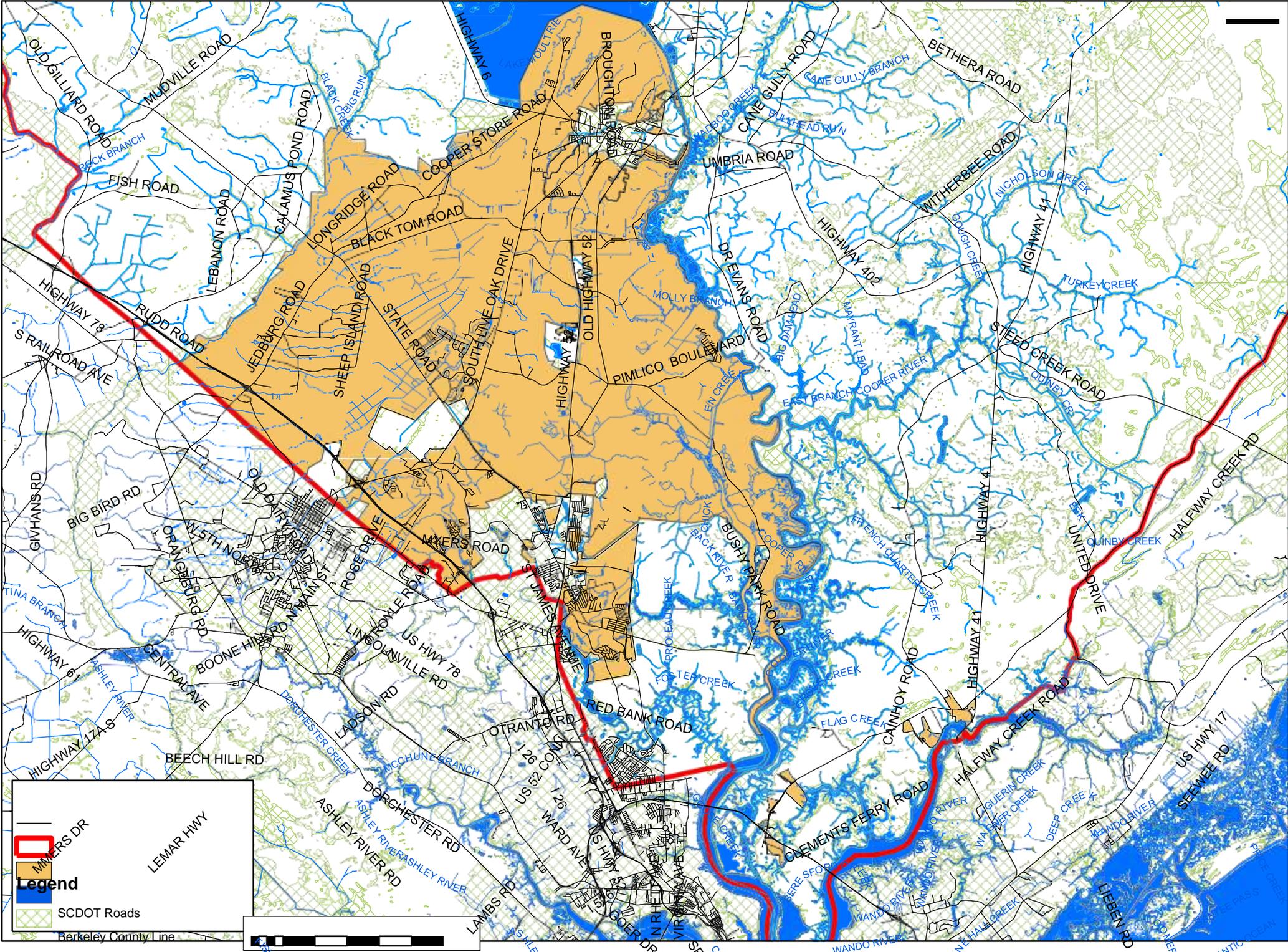
- The status of the County’s compliance with permit conditions, an assessment of the appropriateness of the identified BMP under Part 4, progress towards achieving the

statutory goal of reducing the discharge of pollutants to the MEP, and the measurable goals for each of the minimum control measures;

- Results of information collected and analyzed, if any, during the reporting period, including monitoring data used to assess the success of the plan at reducing the discharge of pollutants to the MEP;
- A summary of the storm water activities the County plans to undertake during the next reporting cycle (including an implementation schedule);
- Proposed changes to the County's SWMP, including changes to any BMP or any identified measurable goals that apply to the plan elements; and
- Notice that the County is relying on another entity to satisfy some of the County's SMS4 general permit obligations (if applicable).
- Information requested in the SMS4 general permit including, but not limited to: sections 1.4.7, 3.1.1.1, 3.2.1.1, 3.2.1.2.2, 3.3.6, 4.1.6 and in the additional conditions applicable to NPDES MS4 permits contained in Appendix B of the SMS4 general permit.

Appendix A
Berkeley County
MS4 Regulated Area

Berkeley County Regulated Area



Berkeley_County_Regulated_Area

Water

Marsh

1 0.5 0 1 2 3 4 5 Miles

ECREEK

Y RIVER
FLYNN DR
I 526

AZALEA DR

OPER RIVER

I 526

LONG POINT RD
LAW LN

BO

HAMLIN RD

HAMLIN SOUND

Appendix B
Berkeley County
SWMP Updates

Date	Description of Update or Revision
April 2016	Updates to the Minimum Measure tables to reflect the current status of each milestone.
	Inserting Measureable Goal Updates to the BMP Minimum Measure tables. These provide descriptions of what items have been completed and what progress has been made in achieving the goal of reducing the discharge of pollutants to the MEP.
	Completed documents were added to the appendices.
	Interim dates that were not set by the permit were adjusted, if needed.
	The impaired stations list was updated from the 2013 303(d) list to the 2014 303(d) list. The changes that were made are listed in the 2016 Annual Report and are reflected in the current SWMP.
	BMPs were adjusted to provide an appropriate description on what has been completed and what will be completed.
	Berkeley County's SWMP implementation list was updated to include the proposed schedule for the remainder of the permit term. This is included in Appendix D of the 2016 Annual Report.

Appendix C
Berkeley County
TMDL Monitoring and Assessment Plans

Berkeley County does not have any WLAs currently assigned to the SMS4 area and therefore are not monitoring and do not have a TMDL Monitoring and Assessment Plan.

Appendix D
Berkeley County
Stormwater Management Ordinance

ARTICLE IV. - STORMWATER MANAGEMENT^[Z]

Footnotes:

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Editor's note—Ord. No. 14-11-36, §§ 1.1—9.4, adopted Nov. 24, 2014, amended Art. IV, §§ 65-981—65-2014, in effect repealing and reenacting said article as set out herein. Former Art. IV pertained to similar subject matter and derived from Ord. No. 07-07-44 adopted July 23, 2007.

DIVISION 1. - GENERAL PROVISIONS

Sec. 65-981. - Title.

This article shall be known as the "Stormwater Management Ordinance of Berkeley County, South Carolina."

(Ord. No. 14-11-36, § 1.1, 11-24-2014)

Sec. 65-982. - Authority.

This article is adopted pursuant to the authority conferred upon Berkeley County by the South Carolina Constitution, Act No. 194 of the Acts and Joint Resolutions of 1971 enacted by the General Assembly of the State of South Carolina, approved April 23, 1971, in S.C. 1976 §§ 4-9-30, 4-9-40, 5-7-30, and 5-7-60.

(Ord. No. 14-11-36, § 1.2, 11-24-2014)

Sec. 65-983. - Jurisdiction.

The boundaries and jurisdiction of this article shall encompass those portions of unincorporated Berkeley County defined as the "regulated area" and such additional areas lying inside the corporate limits of other governments as approved by Berkeley County Council.

(Ord. No. 14-11-36, § 1.3, 11-24-2014)

Sec. 65-984. - Findings.

Berkeley County Council makes the following findings:

- (1) Uncontrolled stormwater runoff may have significant, adverse impact on the health, safety and general welfare of Berkeley County and the quality of life of its citizens. The potential impacts of uncontrolled stormwater can lead to the degradation of water quality and general riverine ecosystem through excessive or illegal pollutant discharges, erosion, and flooding thereby limiting or removing its designated and potential uses.
- (2) Berkeley County is required by federal law [33 U.S.C 1342(p) and 40 CFR 122.26] and by State law [S. C. Code Reg. 61-9 122.32 & 122.33] to obtain a National Pollutant Discharge Elimination System (NPDES) permit from the South Carolina Department of Health and Environmental Control ("SCDHEC") for stormwater discharges from Berkeley County's stormwater systems. The NPDES General Permit for Storm Water Discharges from Regulated Small Separate Storm Sewer Systems (SMS4), SCR030000, requires that Berkeley County develop, implement, and enforce a stormwater management program (SWMP) in its regulated area designed to reduce the discharge of pollutants from its small municipal separate storm sewer systems (SMS4) to the

maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act.

(Ord. No. 14-11-36, § 1.4, 11-24-2014)

Sec. 65-985. - Purpose.

- (a) It is the purpose of this article to protect, maintain, and enhance water quality and the environment of Berkeley County and the short-term and long-term public health, safety, and general welfare of the citizens of Berkeley County. This article is also designed to minimize property damage by establishing requirements and procedures to control the potential adverse effects of increased stormwater runoff and related pollutant loads associated with both future development and existing developed land. Proper management of stormwater runoff will further the purpose of this article to insure a functional drainage system, reduce the effects of development on land and stream channel erosion, attain and maintain water quality standards, enhance the local environment associated with the drainage system, reduce local flooding, maintain to the maximum extent practical pre-developed runoff characteristics of the area in terms of flow rate, volume and pollutant concentration, and facilitate economic development through residential, commercial, and industrial construction and development while mitigating associated pollutant, flooding, erosion, and drainage impacts.
- (b) It is further the purpose of this article to direct the development and implementation of a Stormwater Management Program (SWMP) and to establish legal authority which authorizes or enables Berkeley County at a minimum to:
 - (1) Comply with state and federal requirements related to stormwater management developed pursuant to the Clean Water Act;
 - (2) Prohibit illicit connections and discharges to Berkeley County stormwater management systems and facilities and waters of the state;
 - (3) Control to the maximum extent practical the discharge of spills, dumping, or disposal of materials other than stormwater to Berkeley County stormwater management systems and facilities and waters of the state;
 - (4) Address specific categories of nonstormwater discharges and similar other incidental nonstormwater discharges listed in the SWMP;
 - (5) Require that violators cease and desist illicit discharges of stormwater in violation of any ordinance, permits, contracts or orders;
 - (6) Require installation, implementation, and maintenance of control measures from owners/operators of construction sites, new development and redevelopment to minimize the discharge of pollutants to the MEP and to protect water quality;
 - (7) Require from operators of construction sites, new or redeveloped land, including industrial and commercial facilities information including, but not limited to, specific requirements to control construction and post-construction discharges of pollutants in stormwater;
 - (8) Enforce, penalize, stop work, and require compliance for controlling pollutants from construction sites, new or redeveloped land, including industrial and commercial facilities;
 - (9) Where necessary, require stormwater discharge rate and volume control during and following development, redevelopment, or construction;
 - (10) Define and implement procedures of site plan review and site inspection of all applicable construction projects within regulated areas of Berkeley County;
 - (11) Control the discharge from Berkeley County stormwater management systems and facilities of pollutants in such quantity that water quality standards are met or to otherwise address post-construction, long-term water quality. This includes the necessary means needed to comply with state and federal regulations regarding stormwater management quantity and quality;

- (12) Define procedures for addressing citizen complaints of stormwater-related issues within Berkeley County;
 - (13) Provide for adequate long term operation and maintenance of Best Management Practices (BMPs);
 - (14) Prior to applying for approval of construction activities within the Regulated Area of Berkeley County that require DHEC construction general permit coverage, the county must receive notification from DHEC's Office of Ocean and Coastal Resource Management (OCRM) that states the proposed project is consistent with the coastal zone management plan;
 - (15) Carry out inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions and ordinance requirements including the prohibition on illicit discharges to Berkeley County stormwater management systems and facilities and waters of the state;
 - (16) Enter private property for the purpose of inspecting any facilities, equipment, practices, or operations related to stormwater discharges to determine whether there is compliance with conditions in ordinances, permits, contracts or orders;
 - (17) Encourage the use of nontraditional strategies to control stormwater discharges;
 - (18) Encourage the creation of stream buffers and preservation of natural spaces to provide areas that could be used for flood storage, stormwater treatment and control, and recreation. Such areas may be required in special protection areas needed to protect, maintain, or enhance water quality and protect property from flooding problems;
 - (19) Develop, implement, and enforce action plans to address pollutant load reductions required in impaired waterbodies and to work towards compliance with total maximum daily loads (TMDLs) established by EPA or SCDHEC and to work towards meeting water quality standards.
 - (20) Enable enforcement of all said authorizations.
- (c) It is still further the purpose of this article to establish authority for the county engineer for determining consistency of construction projects with the Berkeley County SWMP.

(Ord. No. 14-11-36, § 1.5, 11-24-2014)

Sec. 65-986. - Construction and scope.

- (a) The provisions of this article shall apply throughout those portions of unincorporated Berkeley County defined as the "regulated area" and such additional areas lying inside the corporate limits of other governments as approved by Berkeley County Council. The county council will approve the designation of the "regulated area".
- (b) The Berkeley County Engineer or his designee shall be primarily responsible for the coordination and enforcement of the provisions of this article and the SWMP.
- (c) The application of this article and the provisions and references expressed herein shall be the minimum stormwater management requirements and shall not be deemed a limitation or repeal of any other ordinances of Berkeley County or powers granted to Berkeley County by the State of South Carolina statues, including, without limitation, the power to require additional or more stringent stormwater management requirements. If site characteristics on new development and/or redevelopment indicate that complying with these minimum requirements will not provide adequate designs or protection for local property, residents, or the environment, the property owner, operator, or person responsible for land disturbing activities shall be required to provide additional and appropriate management practices, control techniques, system design, and engineering methods to attain an adequate level of protection.

(Ord. No. 14-11-36, § 1.6, 11-24-2014)

Sec. 65-987. - Severability.

Should any word, phrase, clause or provision of this article be declared invalid or unconstitutional by a court of competent jurisdiction, such declaration shall not affect this article as a whole or any part hereof except that specific provision declared by such court to be invalid or unconstitutional.

(Ord. No. 14-11-36, § 1.7, 11-24-2014)

Sec. 65-988. - Rules of language and interpretation.

- (a) The word "shall" is mandatory; the word "may" is permissive.
- (b) The particular shall control the general.
- (c) Words used in the present tense shall include the future, and words used in the singular include the plural, and the plural the singular, unless the context clearly indicates the contrary.
- (d) All public officials, bodies and agencies to which reference is made are those of Berkeley County, unless otherwise indicated.

(Ord. No. 14-11-36, § 1.8, 11-24-2014)

Sec. 65-989. - Relationship with other laws, regulations and ordinances.

Whenever the provisions of this article impose more restrictive standards than are required in or under any other law, regulation or ordinance, the requirements contained in this article shall prevail. Whenever the provisions of any other law, regulation or ordinance require more restrictive standards than are required in this article, the requirements of such law, regulation or ordinance shall prevail.

(Ord. No. 14-11-36, § 1.9, 11-24-2014)

Sec. 65-990. - Amendments.

Berkeley County Council, may, in its discretion and following procedures specified by State law, amend or change this article or adopt additional regulations or resolutions to implement this article , implement the SWMP, or to otherwise further the goal of protecting the quality of the waters into which Berkeley County stormwater management systems and facilities outfall.

(Ord. No. 14-11-36, § 1.10, 11-24-2014)

Sec. 65-991. - Conflicting ordinances repealed.

All ordinances or parts of ordinances related to stormwater management in conflict with the provisions of this article are hereby repealed. This article shall prevail in any and all conflicts with guidelines, manuals, or other publications pertaining to stormwater management.

(Ord. No. 14-11-36, § 1.11, 11-24-2014)

Sec. 65-992. - Definitions.

Applicant is a person, firm, governmental agency, partnership, or any other entity who seeks to obtain approval under the requirements of this article and who will be responsible for the land disturbing activity and related maintenance thereof.

As-built drawings are revised construction drawings that show in the installed location of the new facilities on a project, including the stormwater system. This term and "record drawings" shall be synonymous.

Best Management Practices (BMPs) are any structural or nonstructural measure or facility used for the control of stormwater runoff, be it for quantity or quality control. BMPs also includes schedules of activities, prohibitions of practices, maintenance procedures, treatment requirements, operating procedures, and other management practices to control site runoff, spillage or leaks, sludge or waste disposal, drainage from raw material storage, or otherwise prevent or reduce the pollution of waters of the State.

Construction or construction activity is a land-disturbing activity involving clearing, grading, excavating, transporting, filling, or any other activity which results in a change in the natural cover or topography that may cause erosion and contribute to sediment and alter the quality and quantity of stormwater runoff.

Design manual refers to the Berkeley County Stormwater Design Standards Manual.

Developer means any person, or others who act on his own behalf, who is required to submit an application for approval of construction activities and is thereafter responsible for maintaining compliance with this article and conditions of the approved application.

Easement is an authorization by a property owner to the general public, a corporation, or a certain person or persons for the use of any designated part of his property for a specific purpose.

Erosion means the wearing away of the land surface by the action of wind, water, gravity, ice, or any combination of those forces.

Flood/flooding is a temporary rise in the level of water which results in the inundation of areas not ordinarily covered by water.

Hazardous material is any item or agent (biological, chemical, physical) which has the potential to cause harm to humans, other living organisms, or the environment, either by itself or through interaction with other factors.

Illicit connection means a man-made conveyance connecting an illicit discharge directly to a Berkeley County stormwater management system or facility that results in a discharge that is not composed entirely of stormwater runoff except discharges pursuant to an NPDES permit (other than the NPDES MS4 permit for Berkeley County).

Illicit discharge or illegal discharge is defined in South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(2) and refers to any discharge to a Berkeley County stormwater management system or facility or waters of the State that is not composed entirely of stormwater except (a) discharge pursuant to an NPDES permit (other than the NPDES MS4 Permit for Berkeley County) and (b) discharges resulting from the fire-fighting activities.

Improper disposal means any disposal other than through an illicit connection that results in an illicit discharge, including, but not limited to the disposal of used oil and toxic materials resulting from the improper management of such substances.

Low impact development (LID) means an approach to land development (or re-development) that works with nature to manage stormwater as close to its source as possible.

Maintenance means any action necessary to preserve stormwater system component, including conveyances, facilities and BMPs in proper working condition, in order to serve the intended purposes set forth in this article and to prevent structural failure of such components.

MS4 means municipal separate storm sewer system and includes all conveyances or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) which is (a) owned or operated by Berkeley County; (b) designed or used for collecting or conveying stormwater; (c) not a combined sewer system; and (d) not part of a publicly owned treatment works (POTW).

New Development or redevelopment means any of the following actions undertaken by any person, including, without limitation, any public or private individual or entity:

- (a) Division of a lot, tract, or parcels or other divisions by plat or deed;
- (b) The construction, installation, or alteration of land, a structure, impervious surface or drainage facility;
- (c) Clearing, scraping, grubbing or otherwise significantly disturbing the soil, vegetation, mud, sand or rock of a site; or
- (d) Adding, removing, exposing, excavating, leveling, grading, digging, burrowing, dumping, piling, dredging, or otherwise disturbing the soil, vegetation, mud, sand or rock of a site.

NPDES means National Pollutant Discharge Elimination System.

NPDES MS4 permit means the general permit for storm water discharges from regulated small separate storm sewer systems (SMS4), SCR030000, issued by SCDHEC pursuant to the Clean Water Act and the federal stormwater discharge regulations (40 CFR 122.26) that allows for restricting pollutant loads as necessary to meet water quality standards.

Operator means the person who has operational control of the property, including an operator or person who is in charge of any activity related to land disturbance, construction or post construction stormwater quality or quantity.

Outfall or discharge point means a point source as defined by section 122.2 of SC Regulation 61-9 at the point where a Berkeley County stormwater management system or facility discharges to waters of the state and does not include any conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the state and are used to convey waters of the state.

Owner means the property owner, or any person who acts in his own behalf, that submits an application for approval to disturb land or vegetation or encroachment and the person, if so designated by default or on legal documents, as the responsible party for maintenance of a stormwater system(s) and facility(s).

Person means any individual, public or private corporation, political subdivision, association, partnership, corporation, municipality, state or federal agency, industry, firm, trust, estate, any other legal entity whatsoever, or an agent or employee thereof.

Pollutant is defined at §122.2 of SC Regulation 61-9 as dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water. Typical construction site pollutants include sediment, oil and grease, pesticides and fertilizers, pollutants from construction wastes, and pollutants from construction materials.

Property owner means the legal owner of the property.

Receiving waters or receiving water body refers to any lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the State of South Carolina, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt.

Regulated area refers to the boundaries of Berkeley County's urbanized areas as determined by Decennial Census Data from the United States Bureau of the Census. Regulated area also includes any portion of the county that is so designated by Berkeley County Council. The regulated area designated by Berkeley County Council is established by the map, titled "Berkeley County Regulated Area Map", dated November 24, 2014. This map may be amended from time to time by Berkeley County Council. Any amendments to this map for the purpose of removing properties from annexation do not require the approval of county council.

Regulation means any regulation, rule or requirement prepared by and/or adopted by Berkeley County Council pursuant to this article.

Spill means any accidental or purposeful discharge of any pollutants, hazardous materials, or other substance which is otherwise potentially detrimental to the designated use of a receiving water.

SWMP means Berkeley County Stormwater Management Program, which may describe the components to be used by Berkeley County to control stormwater discharges, address flooding, and meet water quality standards discharged from the Berkeley County stormwater management systems and facilities.

Stormwater is defined at South Carolina Water Pollution Control Permits Regulation 61-9 122.26(b)(13) and means stormwater runoff, snowmelt runoff, and surface runoff and drainage.

Stormwater management means the collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner to meet the objectives of this article and its terms, including, but not limited to, measures that control the increased volume and rate of stormwater runoff and water quality impacts caused by manmade changes to the land.

Stormwater management systems and facilities means those natural and man-made channels, swales, ditches, swamps, rivers, streams, creeks, branches, reservoirs, ponds, drainage ways, inlets, catch basins, pipes, head walls, storm sewers, lakes and other physical works, properties, and improvements which transfer, control, convey, or otherwise influence the movement of stormwater runoff, be it for quantity or quality control.

TMDL is a total maximum daily load wasteload allocation designation. It is a regulatory value developed to represent the amount of a pollutant that a waterbody can incorporate while meeting water quality standards. TMDL is further defined as the legal document developed by EPA and SCDHEC designating the pollutant load a permitted discharge is allowed to input into a waterbody. It is a calculation of the maximum amount of a specific pollutant that a waterbody can receive and still meet water quality standards. It is the sum of the allowable loads or allocations of a given pollutant from all contributing point (wasteload allocation (WLA)) and nonpoint (load allocation (LA)) sources. It also incorporates a margin of safety and consideration of seasonal variation. For an impaired waterbody, the TMDL document specifies the level of pollutant reductions needed for waterbody use attainment. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure.

Variance means the modification of the minimum stormwater management requirements contained in this article and the SWMP for specific circumstances where strict adherence to the requirements would result in unnecessary hardship and not fulfill the intent of this article.

Watercourse is any natural or man-made conveyance used to transport runoff from one location to the next.

Watershed is a drainage area or drainage basin contributing to the flow of stormwater to a single point into a receiving watercourse or water body.

Waters of South Carolina, or Waters of the state means lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the state, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt, which are wholly or partially within or bordering the state or within its jurisdiction and all waters of the United States within the political boundaries of the State of South Carolina. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA are not waters of the South Carolina. This exclusion applies only to manmade bodies of water which neither were originally created in waters of South Carolina (such as disposal areas in wetlands) nor resulted from the impoundment of waters of South Carolina.

Waters of the United States, or Waters of the U.S. means:

- (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

- (b) All interstate waters, including interstate "wetlands";
- (c) All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, wet meadows, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
 - (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;
 - (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (3) Which are used or could be used for industrial purposes by industries in interstate commerce;
- (d) All impoundments of waters otherwise defined as waters of South Carolina under this definition;
- (e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;
- (f) The territorial sea; and
- (g) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Water quality means those characteristics of stormwater runoff that relate to the physical, chemical, biological, or radiological integrity of water.

Water quantity means those characteristics of stormwater runoff that relate to the rate and volume of the stormwater runoff.

(Ord. No. 14-11-36, § 1.12, 11-24-2014)

Secs. 65-993—65-1000. - Reserved.

DIVISION 2. - ORGANIZATION AND ADMINISTRATION

Sec. 65-1001. - Berkeley County Stormwater Management Program (SWMP).

The SWMP being developed by Berkeley County to implement the purposes of this article shall serve as the basis for directing Berkeley County's efforts to control stormwater and to comply with all applicable state and federal regulatory and permitting requirements. The SWMP and any modifications and/or revisions to the SWMP are incorporated by reference and is hereby a part of this article. The SWMP requirements and any modifications and/or revisions to the SWMP are to be complied with and shall be enforced in accordance with the provisions of this article.

(Ord. No. 14-11-36, § 2.1, 11-24-2014)

Sec. 65-1002. - Coordination with other agencies.

The county engineer may coordinate Berkeley County's activities with other federal, state, and local agencies that manage and perform functions relating to the protection of receiving waters through written agreement.

(Ord. No. 14-11-36, § 2.2, 11-24-2014)

Sec. 65-1003. - Right of entry.

- (a) The county engineer or his designee shall have right-of-entry on or upon the property of any person subject to this article. The county engineer or his designee shall, upon showing satisfactory credentials, be provided ready access to the necessary parts of the premises for the purposes of inspecting, monitoring, sampling, inventorying, examining and copying of records, and performing any other duties necessary to determine compliance with this article.
- (b) Where the property owner or operator has security measures in force requiring proper identification and clearance before entry onto the premises, the person shall make necessary arrangements with the necessary parties so that, upon presentation of suitable identification, the county engineer or his designee will be permitted to enter without delay for the purposes of performing such responsibilities identified in (a).

(Ord. No. 14-11-36, § 2.3, 11-24-2014)

Secs. 65-1004—65-1010. - Reserved.

DIVISION 3. - STORMWATER QUANTITY AND QUALITY MANAGEMENT REQUIREMENTS

Sec. 65-1011. - Regulations.

- (a) The county engineer shall be responsible for day to day coordination, implementation, and enforcement of this article and the SWMP as well as the long-term management of the county's drainage. Without limitation, the county engineer shall have the following authority:
 - (1) To issue any approval, certification, or license that may be required to comply with this article.
 - (2) To deny a connection to a Berkeley County stormwater management system or facility, if state requirements and this article are not met.
 - (3) To enact and amend the Berkeley County Stormwater Designs Standards Manual (Design Manual). The design manual may be used to convey design and engineering standards, construction management processes and procedures, and other aspects necessary for compliance with this article.

The design manual shall be amended by staff with approval of the county engineer.
 - (4) To require the submittal of an application for all applicable construction activities that result in construction activities with a land disturbance area of greater than or equal to one acre, or other sites as deemed necessary by the stormwater design standards manual.

These applications must include a plan to control stormwater pollutants and other components detailed in Berkeley County's Stormwater Design Standards Manual.
 - (5) To require the development of stormwater management and sediment/erosion control plans for all applicable new and re-development projects and enforcement of these plans.
 - (6) To approve applicable construction activities and to require as a condition of such approvals, structural or nonstructural controls, practices, devices, operating procedures, or other mechanisms to protect public and private property from flooding and erosion and attain TMDL-mandated pollutant load reductions and water quality standards.
 - (7) To require performance bonds as necessary of any person to secure that person's compliance with approval, certificates, licenses, or authorizations issued by the county engineer pursuant to this article, the SWMP and federal and state laws. The county engineer shall develop a process that organizes the closure of bonds and construction projects to accommodate development phases and property ownership transfers.

- (8) To conduct all activities necessary to carry out the SWMP and other requirements included in this article, and to pursue the necessary means and resources required to properly fulfill this responsibility.
- (9) To require appropriate post construction best management practices and appropriate continued maintenance of those best management practices.
- (10) To require maintenance bonds as necessary to ensure the long-term maintenance of stormwater management best management practices.
- (11) To determine appropriate fees, to impose penalties, and to take necessary and appropriate actions to enforce this article.
- (12) To require encroachment permits as necessary.

(Ord. No. 14-11-36, § 3.1, 11-24-2014)

Sec. 65-1012. - Prohibitions and exemptions.

No person shall (1) develop any land; (2) engage in any industry or enterprise; (3) construct, operate or maintain any landfill, hazardous waste treatment, disposal or recovery facility, or any other industrial or related facility; (4) dispose of any hazardous material or toxic substance or other pollutant; or (5) otherwise allow the transport of sediment and other pollutants associated with stormwater runoff beyond their property boundaries without having provided for compliance with this article.

In cases where an imminent threat to the health or safety of the general public or the environment is suspected, the county engineer or his designee shall perform an assessment to determine if immediate action is necessary. Such assessment may be made with or without the consent of the owner or operator. If such consent is refused, the county engineer or his designee may utilize the enforcement measures authorized in this article to remove such threat. In such cases, the owner or operator, as the case may be, shall reimburse the county for its direct and related expenses. If the owner or operator, as the case may be, fails to reimburse the county, the county is authorized to file a lien for said costs against the property, file an action in magistrate or civil court for recovery of incurred expenses, and enforce such actions in magistrate or civil court.

The following development activities are exempt from the provisions of this article.

- (1) Land disturbing activities undertaken on forestland for the production and harvesting of timber and timber products and conducted in accordance with best management practices and minimum erosion protection measures established by the South Carolina Forestry Commission pursuant to S.C. 1976 § 48-18-70, as amended.
- (2) Land disturbing activities on agricultural land for production of plants and animals, including but not limited to: forages and sod crops, grains and feed crops, tobacco, cotton, and peanuts; dairy animals and dairy products; poultry and poultry products; livestock, including beef cattle, sheep, swine, horses, ponies, mules, or goats, including the breeding and grazing of these animals; bees, fur animals, and aquaculture. The construction of an agricultural structure that requires the disturbance of one or more acres, such as, but not limited to, broiler houses, machine sheds, repair shops, coops, barns, and other major buildings shall require the submittal and approval of necessary application materials as outlined in the design manual prior to the start of the land disturbing activity.
- (3) Linear utility installation activities that are covered under their own DHEC approved utility general permit requiring associated assurance of proper stormwater management.
- (4) Activities undertaken by persons who are otherwise regulated by the provisions of Chapter 20 Title 48, the South Carolina Mining Act.
- (5) Discharges of dredged or fill material into waters of the United States which are regulated under section 404 of the Clean Water Act (CWA).

(Ord. No. 14-11-36, § 3.2, 11-24-2014)

Sec. 65-1013. - Design and engineering standards.

Design and engineering standards must define the desired level of quality and performance for stormwater management systems on all applicable construction activities in order to meet the purpose of this article. The standards establish the minimum technical requirements needed to express compliance through calculations, maps and drawings, or others as necessary.

The county engineer is authorized to develop and adopt policies, criteria, specifications, and standards for the proper implementation of the requirements of this article, federal and state laws, and the SWMP, and to provide a sound technical basis for the achievement of stormwater management, including water quality and quantity objectives. These standards may be presented in the stormwater design standards manual.

It shall be the responsibility of the property owner, operator, or person responsible for land disturbing activities to provide adequate controls to meet the design and engineering standards.

(Ord. No. 14-11-36, § 3.3, 11-24-2014)

Sec. 65-1014. - Application approval process.

The entire application process and requirements as described in the design manual must be adhered to for all applicable construction activities.

It shall be the responsibility of the applicant (property owner, operator, or person responsible for construction activities) to provide a complete application package that meets the requirements of this article, the SWMP, and other state and federal regulations.

(Ord. No. 14-11-36, § 3.4, 11-24-2014)

Sec. 65-1015. - Stormwater design standards manual.

The county engineer is authorized to develop and adopt a stormwater design standards manual. The design manual may include design standards, procedures and criteria for conducting hydrologic, hydraulic, pollutant load evaluations, and downstream impact for all components of the stormwater management system. Although the intention of the manual is to establish uniform design practices, it neither replaces the need for engineering judgment nor precludes the use of information not presented. Other accepted engineering procedures may be used to conduct hydrologic, hydraulic and pollutant load studies if approved by the county engineer.

The design manual, shall contain at a minimum the following components:

- (1) Required application and approval procedures for all applicable construction activities;
- (2) Construction completion and closeout processes;
- (3) Hydrologic, hydraulic, and water quality design criteria (i.e., design standards) for the purposes of controlling the runoff rate, volume, and pollutant load. Suggested reference material shall be included for guidance in computations needed to meet the design standards;
- (4) Information and requirements for new and re-development projects in special protection areas necessary to address TMDLs, known problem areas and other areas necessary to protect, maintain, and enhance water quality and the environment of Berkeley County and the public health, safety, and general welfare of the citizens of Berkeley County.
- (5) Construction document requirements;

- (6) Minimum easement requirements;
- (7) Required and recommended inspection schedules and activities for all components of the stormwater management system, including construction-related BMPs.

The design manual shall be updated periodically to reflect the advances in technology and experience gathered with time.

(Ord. No. 14-11-36, § 3.5, 11-24-2014)

Sec. 65-1016. - Ownership and Berkeley County participation.

- (a) Property owners are responsible for maintaining stormwater quantity and quality facilities and all conveyance structures located on their property. Prior to the issuance of any approval of construction plans or applications required by the design manual, the property owner shall execute a legal document entitled "Covenants for Permanent Maintenance of Stormwater Systems". The property owner shall record the covenants in the office of the Berkeley County Register of Deeds. The location of the facility, the recorded location of the covenants document, and a statement of the property owner's responsibility for maintenance shall be included and also shown on a plat. In the case of an operator other than the property owner, a copy of a maintenance agreement between the operator and the property owner shall be included with the covenants, defining the operators' duties and responsibilities and that the property owner shall be responsible for maintenance activities upon the termination of the agreement.
- (b) The property owner shall grant to Berkeley County a perpetual, nonexclusive, transferable easement, beginning or ending at a public street or other access point that allows for public inspection and emergency repair of all components of the drainage system, including all conveyances and all water quantity and quality control facilities. At the request of the county engineer or his designee, the property owner shall grant to Berkeley County right-of-ways.
- (c) Stormwater quantity and quality control facilities shall be located so that required easements can be effectively used and ownership and maintenance responsibility can be clearly defined in deeds and plats.
- (d) Berkeley County shall be responsible for maintenance activities for stormwater collection/conveyance systems associated with county accepted public roads and county projects.
- (e) For projects that are not county accepted public road projects, Berkeley County may in its sole discretion either accept or decline ownership and maintenance of all or part of a stormwater system.
- (f) The minimum maintenance requirements will be performed at necessary intervals by the property owner or operator during construction and for as long as a stormwater management system or component is in use. Failure to perform such activities will constitute a violation of this article.
- (g) If a facility or any portion of the stormwater system is not being maintained as required, the county engineer or his designee will notify the property owner or operator in writing. If the property owner or operator fails to repair or maintain the facility within the allotted time, the county engineer may authorize the work to be performed by the county or others. In such cases, the property owner or operator shall reimburse the county for its direct and related expenses. If the property owner or operator fails to reimburse the county, the county is authorized to file a lien for said costs against the property, file an action in magistrate or civil court for recovery of incurred expenses, and enforce such actions in magistrate or civil court.
- (h) A property owner or operator may hire or contract others to perform necessary maintenance actions, but Berkeley County will hold the person named in the covenants as the responsible party should legal actions described in (g) be necessary.
- (i) When the county engineer or his designee determines that additional storage capacity or pollution reduction beyond that required by the applicant for on-site stormwater management is necessary in order to enhance or provide for the public health, safety and general welfare, to correct unacceptable

or undesirable existing conditions or to provide protection in a more desirable fashion for future development, Berkeley County may:

- (1) Require that the applicant grant any necessary easements over, through or under the applicant's property to provide access to or drainage for such a facility;
- (2) Require that the applicant obtain from the owners of property over, through or under where the stormwater management facility is to be located, any easements necessary for the construction and maintenance of same.

(Ord. No. 14-11-36, § 3.6, 11-24-2014)

Sec. 65-1017. - Maintenance, construction, inspection, and closeout.

Maintenance of the stormwater management system is critical for the achievement of its purpose of controlling stormwater runoff quantity and quality and the short-term and long-term public health, safety, and general welfare of the citizens of Berkeley County.

- (1) A maintenance plan for the stormwater management system shall be included as part of the submittal required by the design manual to perform a construction activity, and must address activities to be conducted during and after construction. As part of the maintenance plan, the property owner or operator of such facility shall specifically agree, through recordation of covenants, to be responsible for keeping the system and facilities in working order. The county engineer shall develop procedures to provide reasonable assurance that maintenance activities are performed for both Berkeley County and privately maintained systems. The county engineer shall also define procedures for transferring maintenance responsibilities to another entity.
- (2) The county engineer shall define procedures for conducting site inspections during construction and after construction until a stormwater management system or facility is no longer in use. Such inspections may be performed by county staff or an approved inspector. Berkeley County has the authority to levy fees for inspections and re-inspections as described in the stormwater design standards manual.
- (3) As required in the design manual, the applicant shall submit his own maintenance and inspection schedules to be implemented during construction and for as long as a stormwater management system or facility is in use. Required and recommended schedules for BMP maintenance and inspection are to be provided in the design manual.
- (4) If the construction is to be phased, no stage work, related to the construction of stormwater management facilities shall commence until the preceding stage of work is completed in accordance with any approved construction plans or applications required by the design manual. The procedure for construction phases beginning and ending and what constitutes such conditions shall be developed.
- (5) The applicant shall notify the county engineer or his designee before commencing any work and upon completion of any phase or designated component of the site. Notification schedules shall be provided for in the design manual. All self-inspections, maintenance actions, BMP replacements, and changes to the approved application shall be documented and presented upon request to the county engineer or his designee.
- (6) The construction project completion and closeout process must be completed prior to any of the following actions, as applicable:
 - a. The use or occupancy of any newly constructed components of the site.
 - b. Final acceptance of any road into the official Berkeley County road inventory or designation of road owner and associated stormwater management system.
 - c. Release of any bond held by Berkeley County.

- d. Approval and/or acceptance for recording of maps, plats, or drawings, the intent of which is to cause a division of a single parcel of land into two or more parcels, and/or acceptable bonding is provided.

(Ord. No. 14-11-36, § 3.7, 11-24-2014)

Sec. 65-1018. - Watercourse protection.

Every person owning or operating property through which a watercourse passes shall keep and maintain that part of the watercourse within the property free of trash, debris, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or operator shall maintain existing privately owned structures within or adjacent to a watercourse so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

To assist in the compliance with state and federal laws and regulations, the county engineer may develop special protection areas which require additional control of stormwater quality and quantity than provided by minimum design standards. Such areas may consist of watersheds corresponding to established TMDLs, known flooding problems and pollution impairments, or other areas necessary to protect, maintain, and enhance water quality and the environment of Berkeley County and the public health, safety, and general welfare of the citizens of Berkeley County. These areas can be expected to change with time as development continues and as federal and state law demands.

New stormwater systems created as the result of any new and re-development project shall be connected to the existing drainage system in a manner so as not to degrade the integrity of the existing system, whether natural or manmade, and shall have demonstrated this prior to project closeout. Discharge points shall be confined to connections with an existing natural or man-made drainage system. When there is a direct stormwater discharge into collection systems not owned and maintained by Berkeley County, the owners of these systems shall maintain the right to disapprove new connections to their system.

(Ord. No. 14-11-36, § 3.8, 11-24-2014)

Sec. 65-1019. - Notification of spills.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or the facility's operation and maintenance, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drain system, or waters of the state, said person shall take all necessary steps to discover, contain, and cleanup any such releases. The person shall also take immediate steps to protect against future recurrences of the discharge. In the event of such a release of hazardous materials, including but not limited to oils, greases, engine fluids and fuels, chemicals, herbicides and pesticides, and fertilizers, said person shall immediately notify all necessary agencies of the occurrence. This shall include E911, Berkeley County Emergency Preparedness, and the county engineer. Such notifications of hazardous spills shall be confirmed by written notice addressed and mailed to the county engineer within five business days of the spill event. In the event of a release of nonhazardous materials, said person shall record an on-site written record of the spill. The owner or operator of such facility shall retain an onsite written record of any and all spills that will include information on cleanup measures taken and the actions to prevent its recurrence. Such records shall be retained for at least five years. Failure to provide notification of a release as provided above is a violation of this article.

(Ord. No. 14-11-36, § 3.9, 11-24-2014)

Sec. 65-1020. - Cleanup procedures.

Berkeley County may develop spill procedures on how spills are cleaned up, and who is responsible for the cleanup in terms of the activities to be performed and cost of such actions.

(Ord. No. 14-11-36, § 3.10, 11-24-2014)

Secs. 65-1021—65-1030. - Reserved.

DIVISION 4. - DETECTION AND ELIMINATION OF ILLICIT CONNECTIONS AND ILLICIT DISCHARGES AND IMPROPER DISPOSAL

Sec. 65-1031. - Illicit connections, illicit discharges, and improper disposal.

- (a) It is unlawful for any person to connect any pipe, open channel, or any other conveyance system that discharges anything except stormwater or other approved discharges into a Berkeley County stormwater management system or waters of the state.
- (b) It is unlawful for any person to continue the operation of any such illicit connection regardless of whether the connection was permissible when constructed. Improper connections in violation of this article must be disconnected and redirected, if necessary, to the satisfaction of the county engineer or his designee and any other federal, state, or local agencies or departments regulating the discharge.
- (c) It is unlawful for any person to throw, drain, or otherwise discharge to a Berkeley County stormwater management system or facility or to waters of the state or to cause, permit, or allow a discharge that is composed of anything except stormwater or unpolluted water which is approved by the county engineer.
- (d) The county engineer shall develop procedures for detecting, tracking, and eliminating illicit discharges and improper disposals to the stormwater system.
- (e) The county engineer or his designee may require controls for or exempt the following discharges from the prohibition provision in (a), (b), and (c) above, provided that a reasonable determination is made that they are not a significant source of pollution:
 - (1) Unpolluted industrial cooling water, but only under the authorization and direction of the county engineer or his designee and if an appropriate industrial NPDES permit is in place.
 - (2) Water line flushing, diverted stream flows, rising ground waters, and uncontaminated pumped ground waters, and uncontaminated ground water infiltration.
 - (3) Discharges from potable water sources, foundation drains, air conditioning condensation, landscape irrigation, springs, water from crawl space pumps, footing drains, lawn watering, individual car washing, dechlorinated swimming pool discharges, flows from riparian habitats and wetlands, and street wash water.
 - (4) Discharges or flows from fire fighting.
- (f) The county engineer may develop procedures for allowing other nonstormwater discharges.

(Ord. No. 14-11-36, § 4.1, 11-24-2014)

Sec. 65-1032. - Detection of illicit connections, illicit discharges, and improper disposal.

- (a) The county engineer shall take appropriate steps to detect and eliminate illicit connections and illicit discharges to Berkeley County stormwater management systems and facilities, including the adoption of a program to screen illicit discharges and identify their source or sources, perform inspections, and levy fines if not removed.

- (b) County staff shall take appropriate steps to detect and eliminate improper disposal. These steps may include programs to screen for disposal, programs to provide for public education and public information, inspection, levying fines, and other appropriate activities to facilitate the proper management and elimination of improper disposal.

(Ord. No. 14-11-36, § 4.2, 11-24-2014)

Sec. 65-1033. - Waste disposal prohibitions.

No person shall throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, left, or maintained, in or upon any public or private property, driveway, parking area, street, alley, sidewalk, component of the storm drain system, or waters of the state, any refuse, rubbish, garbage, litter, pet fecal matter, or other discarded or abandoned objects, articles, and accumulations, so that the same may cause or contribute to pollution. Yard debris, including natural foliage, may be deposited in the public right-of-way but not in or on any stormwater conveyance structures, including inlets and gutters, but only if a collection service is available. Wastes in proper waste receptacles may be placed in the street for collection, but again only if collection by or through Berkeley County is in place. No waste or yard debris shall be placed in the street without such a collection service.

(Ord. No. 14-11-36, § 4.3, 11-24-2014)

Secs. 65-1034—65-1040. - Reserved.

DIVISION 5. - MONITORING AND INSPECTIONS

Sec. 65-1041. - Monitoring.

The county staff may monitor the quantity and concentration of pollutants in stormwater discharges from the areas and/or locations designated in Berkeley County's SWMP.

(Ord. No. 14-11-36, § 5.1, 11-24-2014)

Sec. 65-1042. - Inspections.

- (a) The county engineer or his designee, bearing proper credentials and identification, may enter and inspect all properties for regular inspections, periodic investigations, monitoring, observation measurement, enforcement, sampling and testing, to effectuate the provisions of this article and the SWMP programs. Such inspections may be made at active construction sites or at any stormwater management system or facility in perpetuity. The county engineer or his designee shall duly notify the owner of said property or the representative on site and the inspection shall be conducted at reasonable times.
- (b) Upon refusal by any property owner to permit an inspector to enter or continue an inspection, the inspector shall terminate the inspection or confine the inspection to the areas where no objection is raised. The county engineer or his designee shall document the refusal and the grounds for such and promptly seek appropriate compulsory process.
- (c) In the event that the county engineer or his designee reasonably believes that discharges from the property into a Berkeley County stormwater management system or facility may cause an imminent and substantial threat to human health or the environment, the inspection may take place at any time and without notice to the owner of the property or a representative on site. The inspector shall present proper credentials upon reasonable request by the owner or representative.
- (d) Inspection reports shall be maintained in a file located in the engineering department's office.

- (e) At any time during an inspection or at such other times as the county engineer or his designee may request information from an owner or representative, the owner or representative may identify areas of his facility or establishment, material, or processes that contain or might reveal a trade secret. If the county engineer or his designee has no clear and convincing reason to question such identification, all material, processes and information obtained within such areas shall be conspicuously labeled "CONFIDENTIAL - TRADE SECRET." The trade secret designation shall be freely granted to any material claimed to be such by the owner or representative unless there is clear and convincing evidence for denying such designation. In the event the county engineer or his designee does not agree with the trade secret designation, the material shall be temporarily designated a trade secret and the owner or representative may request an appeal of the engineering department's decision in the manner in which all such appeals are handled in this article.

(Ord. No. 14-11-36, § 5.2, 11-24-2014)

Secs. 65-1043—65-1050. - Reserved.

DIVISION 6. - ENFORCEMENT, PENALTIES, AND ABATEMENT

Sec. 65-1051. - Enforcement.

- (a) The county engineer or his designee may initiate an enforcement action when violations of this article occur, including:
 - (1) When the county engineer or his designee finds that work done for new development and re-development fails to conform to any approved applications or plans as required by the design manual, or finds that the approved work has not been done;
 - (2) When the county engineer or his designee determines that an owner or operator has failed to maintain a stormwater management facility;
 - (3) When the county engineer or his designee determines that an owner of any property is causing or partially causing flooding, erosion, or noncompliance with water quality standards or this article.
- (b) The county engineer or his designee shall direct conformity to approvals and this article by written notice of violation (NOV). The NOV shall serve as a legal requirement to remove the violation(s). The written NOV shall be provided to the owner or the person responsible for land disturbing activities, illicit connections, illicit discharges, and improper disposals, stating the nature of the violation, the amount of time in which to correct deficiencies, the date on which an inspection will be made to make sure that corrective action has been performed, and the proposed penalty structure if corrective action is not taken by the inspection date. It shall be sufficient notification to deliver the notice to the person to whom it is addressed, or to deposit a copy of such in the United States Mail, properly stamped, certified and addressed to the address used for tax purposes or the address provided on submittals required by the design manual. The NOV may address the entire site or a specific portion of the site so as not to unduly impede the development of areas being managed for the control of stormwater runoff and associated pollutants.
- (c) After the issuance of the NOV, the county engineer or his designee is hereby given the authority to proceed with enforcement actions which may include:
 - (1) Issuing a written order to comply, to suspend work, or to revoke the approval issued;
 - (2) Seeking redress through legal action;
 - (3) Withholding the release of permanent electric power to the site or certificate of occupancy;
 - (4) Withholding or revoking other permits related to the site; and/or
 - (5) Levying fines.

- (d) The county attorney is hereby directed to take all legal actions necessary to correct situations described in (a), (b) and (c), including actions that are necessary to remove from the property such objectionable conditions constituting noncompliance with this article.
- (e) Nothing contained in this article shall impair the right or ability of the county attorney to exercise any and all other remedies available, of-law or in equity, including without limitation, the pursuit of injunctive relief, under emergency circumstances where there exists the danger of bodily injury or death.
- (f) The authorized enforcement agency or its appointed agent may obtain injunctive relief to enjoin violations of the provisions of this article, and any person damaged as a result of such violations may, upon a proper showing of such damages, obtain payment therefore by a civil action.
- (g) This article may be enforced by any other remedy of law or equity that the county attorney is authorized to pursue, to include the authorities and powers conferred to local governments by the General Assembly of South Carolina. The penalties and other remedies provided in this article are cumulative and not exclusive, and may be independently and separately pursued against the same person for the activity constituting a violation of this article. The enforcement of any remedy provided herein shall not prevent the enforcement of any other remedy or remedies in other provisions of this Code or other laws and regulations.

(Ord. No. 14-11-36, § 6.1, 11-24-2014)

Sec. 65-1052. - Fines.

Any person violating any provision of this article shall be subject to a fine of not more than \$1,000.00 for each violation. Each separate day of violation constitutes a new and separate violation. Notice of civil penalty shall be provided via the issuance of a uniform summons.

(Ord. No. 14-11-36, § 6.2, 11-24-2014)

Sec. 65-1053. - Additional legal measures.

- (a) Where Berkeley County is fined and/or placed under a compliance schedule by the state or federal government for a violation(s) of its NPDES permit, and Berkeley County can identify the person(s) who caused such violation(s) to occur, Berkeley County may pass through the penalty and cost of compliance to that person(s).
- (b) The county attorney may institute injunctive, mandamus or other appropriate action or proceedings at law or equity, including criminal conviction, for the enforcement of this article or to correct violations of this article, and any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

(Ord. No. 14-11-36, § 6.3, 11-24-2014)

Sec. 65-1054. - Criminal penalties.

In addition to any applicable civil penalties, any person who willfully, with wanton disregard, or intentionally violates any provision of this article shall be guilty of a misdemeanor and upon conviction shall pay a fine of not more than \$500.00 or imprisoned for not more than 30 days. Each day of violation shall constitute a new and separate offense.

(Ord. No. 14-11-36, § 6.4, 11-24-2014)

Sec. 65-1055. - Corrective action.

In the event a violation of this article has not been corrected within the applicable time period for correction, Berkeley County, or its contractor, may enter upon the lot or parcel of land and correct the violation, and the costs incurred as a result of such action (including inspection, administration, labor and equipment costs) shall be collected from the bond, if in place and sufficient to cover such costs, or shall become a lien upon the property and shall be collected in the same manner as Berkeley County taxes are collected.

(Ord. No. 14-11-36, § 6.5, 11-24-2014)

Sec. 65-1056. - Stop work order.

The county engineer, his designee, or other authorized personnel may issue a stop work order if it is found that a construction activity is being conducted in violation of this article.

The stop work order may allow or require correction of notice of violation (NOV) issues, but shall otherwise stop all other construction related activities. A stop work order may carry with it civil penalties as well. Any person in violation of a stop work order is subject to payment of all fees, bonds, and penalties prior to the lifting of the stop work order.

(Ord. No. 14-11-36, § 6.6, 11-24-2014)

Sec. 65-1057. - Approval suspension and revocation.

Any approved plans or applications required by the design manual may be suspended or revoked if one or more of the following violations have been committed:

- (1) Violations of the conditions in any approved plans or applications required by the design manual;
- (2) Construction is not in accordance with the approved plans;
- (3) Noncompliance with correction notice(s) or stop work order(s);
- (4) The existence of an immediate danger to a downstream area (in the judgment of the county engineer or his designee);
- (5) Other violations of this article.

(Ord. No. 14-11-36, § 6.7, 11-24-2014)

Secs. 65-1058—65-1080. - Reserved.

DIVISION 7. - VARIANCES

Sec. 65-1081. - Variance criteria.

The county engineer may grant a variance only upon a determination that:

- (1) The variance will not be detrimental to the public health, safety, and general welfare of the county, and
- (2) The variance will not adversely affect the reasonable development of adjacent property, and
- (3) The variance is justified because of topography or other special conditions unique to the property involved, and the variance is not requested due to mere inconvenience or financial disadvantage, and
- (4) The variance is consistent with the objectives of this article and will not have the effect of nullifying the intent or purpose of this article, or any other pertinent county or state regulations.

A written request for a variance shall be required and shall state the specific variance sought and the reasons, with supporting data, a variance should be granted. The request shall include all information necessary to evaluate the proposed variance.

(Ord. No. 14-11-36, § 7.1, 11-24-2014)

Secs. 65-1082—65-2000. - Reserved.

DIVISION 8. - APPEALS

Sec. 65-2001. - Appeals process.

Any person aggrieved by a decision, notice of violation, or denial of a variance by the county engineer or his designee may appeal the same by filing a written notice of appeal with the Berkeley County Council within 15 days of the issuance of said decision, notice of violation, or denial of a variance. The Berkeley County Council will review the appeal and will either reverse or preserve the previous decision. In either case, a notice of appeal from the Berkeley County Council will state the reason for their appeal decision.

The Berkeley County Council shall hear such appeals in a quasi-judicial capacity within 45 days, at the next regularly scheduled meeting or such other time as may be mutually agreed upon and will render a decision within ten working days after the appeal has been heard.

If Berkeley County Council fails or neglects to repeal the said decision, notice of violation, or denial of a variance within 60 days of the appeal request, the appeal of the said decision, notice of violation, or denial of a variance is automatically granted.

Any person aggrieved by the decision of the Berkeley County Council may appeal the decision to the Berkeley County Circuit Court in accordance with its rules and procedures.

(Ord. No. 14-11-36, § 8.1, 11-24-2014)

Secs. 65-2002—65-2010. - Reserved.

DIVISION 9. - CHARGES AND FEES

Sec. 65-2011. - Stormwater management utility fee.

Berkeley County has implemented a stormwater management utility and established stormwater management utility fees and classifications to help fund implementation of this stormwater management ordinance and its associated programs.

(Ord. No. 14-11-36, § 9.1, 11-24-2014)

Sec. 65-2012. - Stormwater plan review fee.

Costs associated with stormwater plan review of land development construction documents other than those routinely performed by the county staff will be assessed a fee to compensate for the cost in labor, equipment, and materials expended in the conduct of the review. Stormwater plan review fees have been established by resolution and revision of such fees shall be approved by Berkeley County Council.

(Ord. No. 14-11-36, § 9.2, 11-24-2014)

Sec. 65-2013. - Stormwater inspection fee.

Costs associated with stormwater inspection and re-inspections for land development or construction activities other than those routinely performed by the county staff as part of compliance monitoring will be assessed a fee to compensate for the cost in labor, equipment, and materials expended in the conduct of the inspection. In addition, post-construction maintenance inspection fees may be assessed by the county engineer. Stormwater inspection and re-inspection fees have been established by resolution and revision of such fees shall be approved by Berkeley County Council.

(Ord. No. 14-11-36, § 9.3, 11-24-2014)

Sec. 65-2014. - Connection to conveyances.

The county shall have the right to establish a schedule of appropriate fees for any person or property owner establishing a new discharge to Berkeley County stormwater management systems or facilities. Application fees shall be established on the basis of facility classes relating to the quantity and quality of approved discharge. Establishment and revision of such fees shall be established by resolution and revision of such fees shall be approved by Berkeley County Council

(Ord. No. 14-11-36, § 9.4, 11-24-2014)

Secs. 65-2015—65-2020. - Reserved.

ARTICLE V. - STORMWATER MANAGEMENT UTILITY

Sec. 65-2021. - Findings of fact.

Berkeley County Council makes the following findings:

- (1) Berkeley County is a regulated municipal separate storm sewer system (MS4) community and must be in compliance with the State of South Carolina NPDES General Permit for stormwater discharges from regulated small municipal separate storm sewer systems. Compliance with the NPDES MS4 permit requires substantial resources that cannot be supported without the adoption and implementation of a stormwater management utility program.
- (2) The management of stormwater runoff is necessary to reduce pollutants, siltation, sedimentation, flooding, inflow and infiltration into the Berkeley County MS4 and receiving waters, all of which adversely impact land and water resources and the health, safety, property, and welfare of the citizens of the county.
- (3) Berkeley County maintains, or must ensure maintenance of, a system of stormwater management facilities, including but not limited to, inlets, conduits, manholes, channels, ditches, drainage easements, retention and detention basins, infiltration facilities, and other components as well as natural waterways.
- (4) The stormwater management facilities of the county must be regularly maintained, rehabilitated, upgraded or expanded in order to satisfy the NPDES MS4 permit requirements, and additional stormwater management best management practices (BMP's) and measures will need to be installed or implemented in order to satisfy the NPDES MS4 permit requirements.
- (5) There is no comprehensive mapping system, monitoring system, or base line data to assist the county in the analysis, design, development, and implementation of the stormwater management program, and there is no long term comprehensive stormwater infrastructure and facility maintenance program/plan in Berkeley County.
- (6) There is a lack of resources (equipment, manpower, funds) in Berkeley County to adequately implement the stormwater management program comprehensively and within the time frame required by the NPDES MS4 permit.

- (7) Current and anticipated growth within Berkeley County will contribute to the need for improvements in and maintenance of the stormwater management system.
- (8) Berkeley County needs to enhance the ability to maintain existing and future stormwater management facilities and measures.
- (9) Every built upon parcel of real property in Berkeley County either uses or benefits from the stormwater management system and the improvement of existing facilities and construction of additional facilities in the system will directly benefit the owners of all real property.
- (10) In Berkeley County the extent of use of the stormwater management system by each classification of real property is dependent on a variety of factors that influence runoff, such as land use, topography, intensity of development, amount of impervious surface, and location in a particular watershed or basin.
- (11) In Berkeley County property owners and users should finance the stormwater management system to the extent they contribute to the need for the system and benefit from the system, and charges therefore should bear a reasonable relationship to the cost of the service, and every effort should be made to fairly and reasonably spread the cost of the system to all property owners and users.
- (12) It is in the best interests of the citizens of this county and, most specifically, the owners of real property, that a stormwater management utility with a program of interim fees and classifications be established by ordinance and implemented as part of the county's utility enterprise system as authorized by S.C. Code 1976 §§ 48-14-10 to 48-14-150 (Supp. 1991); § 5-7-30 (Supp. 1991); and other relevant laws and regulations of the State of South Carolina.
- (13) Creating a permanent stormwater management utility rate structure and schedule of fees is a difficult, time consuming and costly endeavor, and Berkeley County is committed to such an undertaking but finds it is necessary to provide for a program of interim stormwater management utility fees and classifications until to the completion of a stormwater management utility rate study. Thus, county council finds that a stormwater management utility with a three-year program of interim fees and classifications should be established with the intent of establishing permanent stormwater management utility fees and classifications based on the results of further study, to include determination of impervious surface areas throughout the county.
- (14) The program of interim stormwater management utility fees and the permanent stormwater management utility fees will not be imposed on agricultural lands, forestlands, or undeveloped lands pursuant to S.C. Code 1976 § 6-1-330 (Supp. 2009).

(Ord. No. 14-07-21, § 1, 7-28-2014)

Sec. 65-2022. - Article designation and authority.

This article may be cited as the stormwater management utility ordinance and is adopted pursuant to S.C. Code 1976 § 8-14-10, et.seq.; S.C. Code 1976 § 4-9-25; and South Carolina Ann. R72-300, et.seq.

(Ord. No. 14-07-21, § 2, 7-28-2014)

Sec. 65-2023. - Definitions.

Unless the context specifically indicates otherwise, the meanings of words and terms used in this article shall be as set forth in S.C. Code 1976 § 48-14-20 (Supp. 1991) and S.C. Code 1976 R72-301, (Supp. 1992).

(Ord. No. 14-07-21, § 3, 7-28-2014)

Sec. 65-2024. - Establishment of a stormwater management utility; administration; duties and powers.

County council hereby establishes a stormwater management utility (utility) to carry out the purposes, functions, and responsibilities herein set forth. The governing body of the utility shall be county council. The county engineer shall administer the utility under the Berkeley County Stormwater Management Department. The utility shall have the duties and powers set forth below, which powers are not necessarily exclusive to the utility, to wit:

- (1) Development and implementation of the county stormwater management program.
- (2) Development and implementation of the minimum control measures (mcm's), best management practices (BMP's) and other regulatory requirements as contained in the NPDES MS4 permit
- (3) Stormwater management planning and preparation of comprehensive watershed master plans for stormwater management.
- (4) Regular inspections of public and private stormwater management facilities and measures and the construction thereof.
- (5) Maintenance and improvement of stormwater management facilities that have been accepted by the county for that purpose.
- (6) Plan review and inspection of sediment control and stormwater management measures, and practices.
- (7) Retrofitting existing stormwater management facilities to reduce existing flooding problems or to improve water quality.
- (8) Acquisition of interests in land, including easements.
- (9) Design and construction of stormwater management facilities and measures and acquisition of equipment.
- (10) Water quantity and water quality management, including monitoring and surveillance.
- (11) Billing and collecting stormwater management utility fees pursuant to this ordinance.
- (12) Any and all duties and powers delegated or granted to it as a local government implementing agency under the laws and regulations of the State of South Carolina, and the ordinances of this county.

(Ord. No. 14-07-21, § 4, 7-28-2014)

Sec. 65-2025. - Boundaries and jurisdiction.

The boundaries and jurisdiction of the stormwater management utility shall encompass all those portions of the unincorporated county, as they may exist from time to time and such additional areas lying inside the corporate limits of those jurisdictions within the county as shall be approved by Berkeley County Council.

(Ord. No. 14-07-21, § 5, 7-28-2014)

Sec. 65-2026. - Stormwater management utility fees.

County council shall establish amounts and classifications for stormwater management utility fees to be implemented to help fund the stormwater management utility and its' programs and projects. County council shall consider, among other things, the following criteria in establishing fees:

- (1) The fee system must be reasonable and equitable so that property owners and users pay to the extent they contribute to the needs for and benefit from the utility. County council recognizes that these benefits, while substantial, in many cases cannot be measured directly.
- (2) Development and implementation costs of the stormwater management program, costs associated with compliance with the NPDES MS4 permit, stormwater maintenance costs, construction costs and the overall operational costs of the stormwater system should be borne equally by all classifications of property owners in the county in that all will enjoy the direct and indirect benefits of an improved and well-maintained system;
- (3) The components of the calculations used to establish fees shall be based on whatever is determined to be reasonable and fair, to be approved by county council and may include, but shall not be limited to, the cost factors of administration, duties and powers found in section 65-2024;
- (4) The practical difficulties and limitations related to establishing, calculating, and administering such fees.

(Ord. No. 14-07-21, § 6, 7-28-2014)

Sec. 65-2027. - Stormwater management utility rates.

Creating a permanent stormwater management utility rate structure and schedule of fees is a difficult, time consuming and costly endeavor, and Berkeley County is committed to such an undertaking but finds it is necessary to provide for a program of interim stormwater management utility fees and classifications until the completion of a stormwater management utility rate study. Thus, county council finds that a stormwater management utility with a program of interim stormwater management utility fees and classifications for the next three years shall be established with the intent of establishing permanent stormwater management utility fees and classifications based on the results of further study, to include determination of impervious surface areas throughout the county.

County council shall establish the permanent stormwater management utility fees and classifications following the completion of the stormwater management utility rate study and shall amend the interim stormwater management utility fees and classifications through the Berkeley County Annual Budget Ordinance. Thereafter, the permanent stormwater management utility fees and classifications will be reviewed, and may be amended as necessary, by county council through the budget ordinance.

The interim fees shall be as follows:

- (1) Year 1: FY 2014/2015
 - a. For all parcels containing a single family residence an annual fee of \$36.00 per parcel shall be assigned. Parcels containing multiple residences on the parcel an annual fee of \$36.00 per unit shall be assigned.
 - b. For all parcels containing multi-family residences, excluding mobile home parks, an annual fee of \$18.00 per unit shall be assigned.
 - c. For all parcels containing mobile homes, an annual fee of \$18.00 per unit shall be assigned to every mobile home maintained onsite.
 - d. For all developed parcels containing nonresidential land use (commercial or industrial), an annual fee of \$216.00 per parcel shall be assigned.
 - e. For all developed tax-exempt and non-profit properties an annual fee of \$72.00 per parcel shall be assigned.
- (2) Year 2: FY 2015/2016

- a. For all parcels containing a single family residence an annual fee of \$42.00 per parcel shall be assigned. Parcels containing multiple residences on the parcel an annual fee of \$42.00 per unit shall be assigned.
- b. For all parcels containing multi-family residences, excluding mobile home parks, an annual fee of \$21.00 per unit shall be assigned.
- c. For all parcels containing mobile homes, an annual fee of \$21.00 per unit shall be assigned to every mobile home maintained onsite.
- d. For all developed parcels containing nonresidential land use (commercial or industrial), an annual fee of \$252.00 per parcel shall be assigned.
- e. For all developed tax-exempt and non-profit properties an annual fee of \$84.00 per parcel shall be assigned.

(3) Year 3: FY 2016/2017

- a. For all parcels containing a single family residence an annual fee of \$48.00 per parcel shall be assigned. Parcels containing multiple residences on the parcel an annual fee of \$48.00 per unit shall be assigned.
- b. For all parcels containing multi-family residences, excluding mobile home parks, an annual fee of \$24.00 per unit shall be assigned.
- c. For all parcels containing mobile homes, an annual fee of \$24.00 per unit shall be assigned to every mobile home maintained onsite.
- d. For all developed parcels containing nonresidential land use (commercial or industrial), an annual fee of \$288.00 per parcel shall be assigned.
- e. For all developed tax-exempt and non-profit properties an annual fee of \$96.00 per parcel shall be assigned.

(Ord. No. 14-07-21, § 8, 7-28-2014)

Sec. 65-2028. - Credit policy.

The Berkeley County engineer is authorized by this ordinance to establish a credit policy for certain parcels within the county that meet established criteria (i.e. self-containment of runoff, documented stormwater facility maintenance practices, implementation of water quality education programs, etc.) at the time a permanent stormwater management utility fee structure is established.

(Ord. No. 14-07-21, § 8, 7-28-2014)

Sec. 65-2029. - Investment and reinvestment of funds and borrowing.

Funds generated for the stormwater management utility from fees, bond issues, other borrowing, and other sources shall be utilized only for those purposes for which the utility has been established, including but not limited to: planning; acquisition of interests in land including easements; design and construction of facilities; maintenance of stormwater system, billing, and administration; and water quality and water quantity management, including monitoring, surveillance, private maintenance inspection, construction inspection, and other activities which are reasonably required. Such funds shall be invested and reinvested pursuant to the same procedures and practices established by the county for investment and reinvestment of funds. County council may use any form of borrowing authorized by the laws of the State of South Carolina to fund capital acquisitions or expenditures for the stormwater management utility.

(Ord. No. 14-07-21, § 9, 7-28-2014)

Sec. 65-2030. - Stormwater management utility fee billing, delinquencies and collection.

- (a) The stormwater management utility fee bill may be sent through the United States mail, or by alternative means, notifying the property owner of the amount of the bill, the date the payment is due, and the date when past due. These fees may be levied, collected and paid in the same manner as user fees applied to annual tax bills. The stormwater management utility fee may also be billed and collected along with other charges, including but not limited to other county assessments, fees, or property taxes, as deemed most effective and efficient. Failure to receive a bill is not justification for nonpayment. Nevertheless, if a property owner is underbilled or if no bill is sent for developed land, the county may backbill for a period of up to one year.
- (b) In addition to any other penalties or remedies provided in this ordinance, the county, upon the recommendation of the County Attorney and approval of the county supervisor, may institute a civil action in the appropriate court to obtain compliance with the provisions of this chapter or remedy or prevent the violation or threatened violation of any provision of this chapter.

(Ord. No. 14-07-21, § 10, 7-28-2014)

Sec. 65-2031. - County liability.

Nothing in this article and no action or failure to act under this article shall or may be construed to:

- (1) Impose any liability on the county, or its departments, agencies, officers, or employees for the recovery of damages; or
- (2) Relieve any person engaged in a land disturbing activity of duties, obligations, responsibilities, or liabilities arising from or incident to operations associated with such activity or imposed by the provisions of this article or the laws and regulations pursuant to which it was adopted.

(Ord. No. 14-07-21, § 11, 7-28-2014)

Sec. 65-2032. - Requests for reconsideration.

- (1) A utility customer may request a reconsideration of any determination or interpretation by the county engineer in the operation of the stormwater management utility. Such request must be in writing specifically explaining the grounds for the request and filed with the county engineer.
- (2) The county engineer shall review the application and make a decision on the request within 30 working days.
- (3) The request shall be made upon such forms and be accompanied by such information as the county engineer, by written policy, shall require.

(Ord. No. 14-07-21, § 12, 7-28-2014)

Sec. 65-2033. - Appeals.

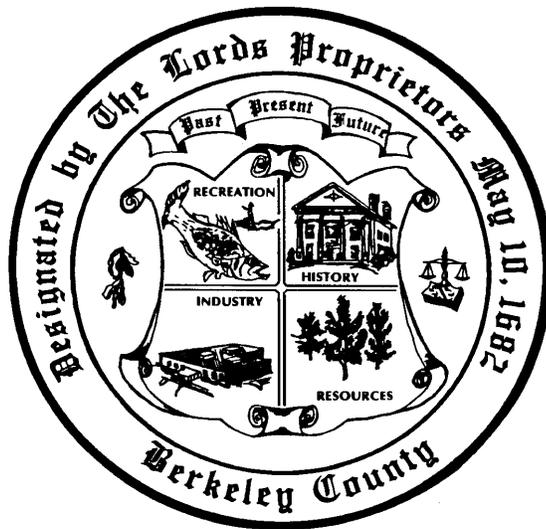
Any person aggrieved by the stormwater management utility fee charged with respect to property in which he has an interest or against whom a civil penalty is imposed may appeal the fee or penalty by filing a written explanation of the grounds of the appeal with the county engineer within 30 days of the mailing or delivery of the notification of the fee or penalty to the utility customer, real property owner, or person. The county engineer shall render his decision on the appeal in writing within 30 days after receipt of the written appeal. Any person aggrieved by the decision of the county engineer may appeal, pursuant to the foregoing procedures, to county council, whose decision is final with respect to utility fees and civil penalties. At each level of appeal, the reviewing official or body shall conduct a de novo review of the fee or civil penalty,

provide the appellant with notice of the review, and allow the appellant an opportunity to be heard orally or in writing upon request.

(Ord. No. 14-07-21, § 13, 7-28-2014)

Appendix E
Berkeley County
Standard Operating Procedures for Use in Field Investigations for Illicit Discharges

**BERKELEY COUNTY
STANDARD OPERATING PROCEDURES
FOR USE IN FIELD INVESTIGATIONS FOR
ILLICIT DISCHARGES**



June 2010

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1. INTRODUCTION

An understanding of the nature of illicit discharges in urban watersheds is essential to find, fix and prevent them. This document presents Berkeley County’s initial plan for illicit discharge detection and elimination in compliance with requirements for NPDES Phase II Municipal Separate Storm Sewer Systems (MS4) communities. The NPDES Phase II MS4 permit requires that Berkeley County develop an Illicit Discharge Detection and Elimination (IDDE) program that contains a set of standard investigative procedures to identify the source of illicit connections or discharges and enforce their removal. Although the permit does not specifically dictate these procedures, the IDDE program must, to the maximum extent practical (MEP), increase knowledge of the County’s stormwater collection system and pollutants of concern.

The remaining portion of this chapter provides the specific requirements from the NPDES Phase II permit and definitions. Chapter 2 provides a summary of the County’s IDDE program processes and procedures. There are also appendices which provide supplemental and detailed information for sampling procedures, GIS applications, reporting forms, and technical references.

1.1 Permit Requirements

In the regulation, EPA recommends that the plan to detect and address illicit discharges include procedures for:

- Locating priority areas likely to have illicit discharges (which may include visually screening outfalls during dry weather and conducting field tests of selected pollutants) (Section 2.2).
- Tracing the source of an illicit discharge (Section 2.3).
- Removing the source of the discharge (Sections 2 and 3).
- Program evaluation and assessment.

Table 1 outlines the NPDES Phase II MS4 permit requirements.

Requirement Description
• Develop, implement and enforce a program to detect and eliminate illicit discharges.
• Develop a storm sewer system map.
• Procedures for identifying priority areas within the MS4.
• Field screening to detect illicit discharges.
• Procedures for tracing the source of an illicit discharge

1.2 Important Terminology and Key Concepts

Pollutants of Concern

The three major categories of illicit discharges most commonly found are as follows:

The *pathogenic and toxic pollutants* should be considered the most severe since contact or consumption of stormwater contaminated by these pollutants could cause illness and significant water treatment problems for downstream users. These pollutants may originate from:

- Sanitary, commercial, and industrial wastewater;
- Inappropriate household toxicant disposal;
- Automobile engine de-greasing; and
- Excessive use of chemicals (pesticides, herbicides, and fertilizers).

Nuisance pollutants may contribute to aquatic life threatening conditions in the storm drainage system. These pollutants can cause excessive dissolved oxygen depletions, tastes, odors, and colors in downstream water supplies, algal blooms, offensive floatables, and noticeably turbid water. These pollutants may originate in residential areas from:

- Sanitary wastewaters;
- Laundry wastewaters;
- Lawn irrigation runoff;
- Automobile wash waters;
- Construction site dewatering; and
- Washing of concrete trucks.

Clean water discharged through a storm drainage system is commonly found during an outfall inventory. Clean water discharges can originate from the following:

- Natural springs in urban areas that have been piped to a nearby creek or stream;
- Infiltrating groundwater; and
- Infiltration from potable waterline leaks.

Pathogenic and nuisance pollutants should be prioritized in a manner that ensures prompt action in the source identification process as these types of pollutants have the most potential for harmful effects to the environment. Any future outfall inventories or illicit tracking efforts should make use of the following illicit tracking procedures. Additional outfall inventory or illicit tracking projects, already in progress, can enter the procedural flowchart at anytime and work towards completion.

Allowable Discharges

Non-stormwater discharges (e.g. non-commercial or charity car washes, etc.) that discharge less than significant sources of pollutants to the MS4, due to either the nature of the discharges or because there are conditions Berkeley County has established for allowing these discharges to their MS4 (e.g., a charity car wash with appropriate controls on frequency, proximity to sensitive water bodies, BMPs on the wash water, etc.), are allowed. The County is authorized (in their Phase II MS4 Permit) to discharge the following non-stormwater sources provided that DHEC has not determined these sources to be substantial contributors of pollutants to the County's MS4:

- water line flushing
- landscape irrigation
- diverted stream flows
- rising ground waters
- uncontaminated ground water infiltration (as defined at 40 CFR §35.2005(20))
- uncontaminated pumped ground water
- discharges from potable water sources
- foundation drains
- air conditioning condensation
- irrigation water (not consisting of treated, or untreated waste water)
- springs
- water from crawl space pumps
- footing drains
- lawn watering
- individual residential car washing
- natural flows from riparian habitats and wetlands
- dechlorinated swimming pool discharges
- street wash water

- discharges or flows from fire fighting activities

Illicit Discharge

“Illicit Discharge” or “Illegal discharge” means any activity which results in a discharge to a Berkeley County stormwater management system or facility or receiving waters that is not composed entirely of stormwater except (a) discharge pursuant to an NPDES permit (other than the NPDES MS4 Permit for Berkeley County) and (b) discharges resulting from the fire-fighting activities.

MS4

“MS4” means municipal separate storm sewer system and includes all conveyances or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) which is (a) owned or operated by Berkeley County; (b) designed or used for collecting or conveying stormwater; (c) not a combined sewer system; and (d) not part of a Publicly Owned Treatment Works (POTW).

Regulated Area

The Berkeley County regulated area refers to the boundaries of Berkeley County’s urbanized areas as determined by Decennial Census Data from the United States Bureau of the Census. Regulated Area also includes any portion of the County that is so designated by Berkeley County Council. The Regulated Area designated by Berkeley County Council coincides with the area defined as “Service Zone 1” by the “Transportation Impact Fee Ordinance for Unincorporated Berkeley County” (Ordinance No. 06-11-75).

Partner MS4

Any municipality in which Berkeley County agrees to do all or part of the municipality’s stormwater management program through a legal contract.

Receiving System Owner

The County MS4, Partner MS4, other MS4 (i.e. SCDOT), State and/or Federal Facility or Entity which receives an illicit discharge.

Source Identification

These are the office and field tasks used to track potential illicit discharges to the source, and determine if the discharge is in fact an illicit based on an analysis of samples taken.

Discharge Frequency

The **frequency** of dry weather discharges in storm drains is important and can be classified as *continuous, intermittent or transitory*.

Continuous discharges occur most or all of the time, are usually easier to detect, and typically produce the greatest pollutant load.

Intermittent discharges occur over a shorter period of time (e.g., a few hours per day or a few days per year). Because they are infrequent, intermittent discharges are hard to detect, but can still represent a serious water quality problem, depending on their flow type.

Transitory discharges occur rarely, usually in response to a singular event such as an industrial spill, ruptured tank, sewer break, transport accident or illegal dumping episode. These discharges are

extremely hard to detect with routine monitoring, but under the right conditions, can exert severe water quality problems on downstream receiving waters.

Discharge Flow Types

Dry weather discharges are composed of one or more possible **flow types**:

- *Sewage and septage* flows are produced from sewer pipes and septic systems.
- *Washwater* flows are generated from a wide variety of activities and operations. Examples include discharges of gray water (laundry) from homes, commercial carwash wastewater, fleet washing, commercial laundry wastewater, and floor washing to shop drains.
- *Liquid wastes* refers to a wide variety of flows, such as oil, paint, and process water (radiator flushing water, plating bath wastewater, etc.) that enter the storm drain system.
- *Tap water* flows are derived from leaks and losses that occur during the distribution of drinking water in the water supply system. Tap water discharges in the storm drain system may be more prevalent in communities with high loss rates (i.e., greater than 15%) in their potable water distribution system. (source of 15% is from National Drinking Water Clearinghouse)
- *Landscape irrigation* flows occur when excess potable water used for residential or commercial irrigation ends up in the storm drain system.
- *Groundwater and spring water* flows occur when the local water table rises above the bottom elevation of the storm drain (known as the invert) and enters the storm drain either through cracks and joints, or where open channels or pipes associated with the MS4 may intercept seeps and springs.

Water quality testing is used to identify flow types found in storm drains. Testing can distinguish illicit flow types (sewage/septage, washwater and liquid wastes) from cleaner discharges (tap water, landscape irrigation and ground water). Each flow type has a distinct chemical fingerprint. The chemical fingerprint for each flow type can differ regionally, so it is a good idea to develop your own “fingerprint” library by sampling each local flow type.

Mode of Entry

Illicit discharges are classified based on the owner of the system to which the potential illicit discharge drains and how the discharge enters the storm drain system. The **mode of entry** can either be **direct** or **indirect**.

Direct entry means that the discharge is directly connected to the storm drain pipe through a sewage pipe, shop drain, or other kind of pipe. Direct entry usually produces discharges that are continuous or intermittent. Direct entry usually occurs when two different kinds of “plumbing” are improperly connected. The three main situations where this occurs are:

1. Sewage cross-connections: A sewer pipe that is improperly connected to the storm drain system produces a continuous discharge of raw sewage to the pipe. Sewage cross-connections can occur in catchments where combined sewers or septic systems are converted to a separate sewer system, and a few pipes get “crossed.” The term “Straight pipe” refers to relatively small diameter pipes that intentionally bypass the sanitary connection or septic drain fields, producing a direct discharge.
2. Industrial and commercial cross connections: These occur when a drain pipe is improperly connected to the storm drain system producing a discharge of wash water, process water or other inappropriate flows into the storm drain pipe. Older industrial areas tend to have a higher potential for illicit cross-connections.

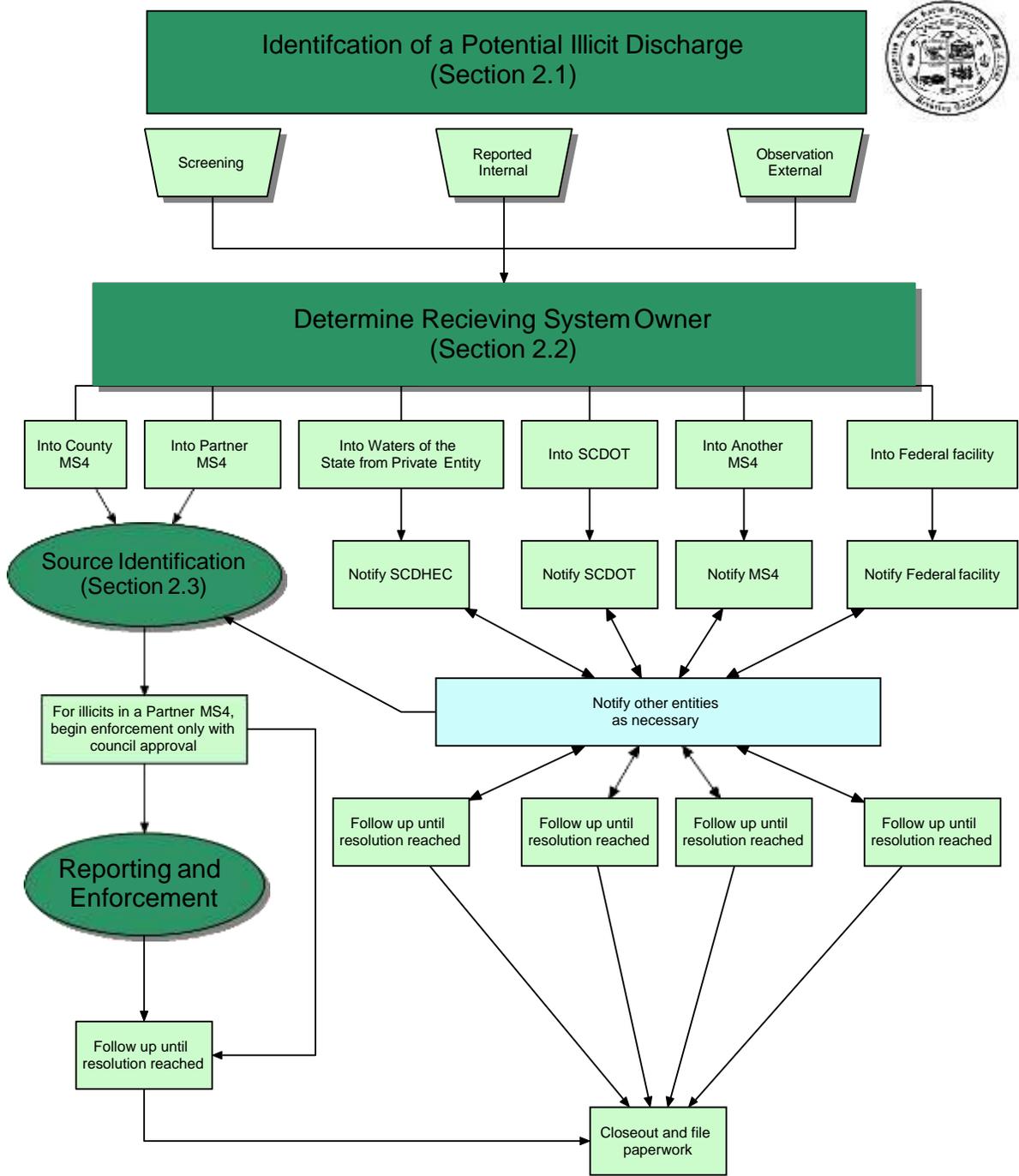
Indirect entry means that flows generated outside the storm drain system enter through storm drain inlets or by infiltrating through the joints of the pipe. Generally, indirect modes of entry produce intermittent or transitory discharges, with the exception of groundwater seepage. The five main modes of indirect entry for discharges include:

1. Groundwater seepage into the storm drain pipe: Seepage frequently occurs in storm drains after long periods of above average rainfall. Seepage discharges can be either continuous or intermittent, depending on the depth of the water table and the season. Groundwater seepage usually consists of relatively clean water that is not an illicit discharge by itself, but can mask other illicit discharges. If storm drains are located close to sanitary sewers, groundwater seepage may intermingle with diluted sewage.
2. Spills that enter the storm drain system at an inlet: These transitory discharges occur when a spill travels across an impervious surface and enters a storm drain inlet. Spills can occur at many industrial, commercial and transport-related sites. A very common example is an oil or gas spill from an accident that then travels across the road and into the storm drain system.
3. Dumping a liquid into a storm drain inlet: This type of transitory discharge is created when liquid wastes such as oil, grease, paint, solvents, and various automotive fluids are dumped into the storm drain. Liquid dumping occurs intermittently at sites that improperly dispose of rinse water and wash water during maintenance and cleanup operations. A common example is cleaning deep fryers in the parking lot of fast food operations.
4. Outdoor washing activities that create flow to a storm drain inlet: Outdoor washing may or may not be an illicit discharge, depending on the nature of the generating site that produces the wash water. For example, hosing off individual sidewalks and driveways may not generate significant flows or pollutant loads. On the other hand, routine washing of fueling areas, outdoor storage areas, and parking lots (power washing), and construction equipment cleanouts may result in unacceptable pollutant loads.
5. Non-target irrigation from landscaping or lawns that reaches the storm drain system: Irrigation can produce intermittent discharges from over-watering or misdirected sprinklers that send tap water over impervious areas. In some instances, non-target irrigation can produce unacceptable loads of nutrients, organic matter or pesticides. The most common example is a discharge from commercial landscaping areas adjacent to parking lots connected to the storm drain system.

2. SUMMARY OF COUNTY IDDE PROCEDURES

This section provides a summary of the County's IDDE program. There are several major topics that will be discussed that provide a systematic approach to eliminating illicit discharges. These include notification to the Engineering Department of a potential illicit discharge, determination and notification of the owner of the system receiving the discharge, source identification of the discharge, and enforcement. Figure 1 provides a flowchart summarizing the County's IDDE program.

Figure 1: Berkeley County IDDE Program



2.1 Report of Potential Illicit Discharges to the County Stormwater System

The process begins through the identification of a potential illicit discharge. Identification is expected to be achieved through outfall screening by Engineering Department personnel, internal reporting from other County personnel, external reporting/citizen complaints, or other watershed planning efforts by the field investigations of prioritized land uses.

2.1.1 Outfall Screening

The Engineering Department is expected to find some potential illicit discharges through system inventory efforts for the County's MS4 Permit.

2.1.2 Internal Reporting

The Engineering Department also expects to find some potential illicit discharges through various County Departments (e.g. Public Works maintenance crews, Buildings and Codes, etc.).

2.1.3 External Observation

County citizens, visitors, and others are also expected to notify the Engineering Department of some potential illicit discharges. Suspected illicit discharges can be reported to the Engineering Department at 843-719-4127.

2.1.4 Watershed-Based Planning

The County is currently exploring other potential ways of identifying possible illicit discharges. These would include watershed planning and prioritization tasks to systematically address potential illicit discharges at perceived "hotspots" such as restaurants, dry cleaners, auto shops, and car washes.

2.2 Determination of Receiving System Owner

Once a potential illicit is made known to the Engineering Department through one of the above referenced methods, field operations will commence to first determine the owner of the system receiving the potential illicit discharge. There are several potential owners.

If the receiving system owner is the County or a partner MS4, a Source Identification operation will begin to determine the source and if the discharge is truly an illicit, as defined in this manual (see Section 2.3). Enforcement procedures will be implemented if necessary, to include follow-up field visits.

If the system receiving the identified potential illicit is owned by another MS4 or a federal facility, that owner will be notified by a letter of the discharge. The County will implement follow-up procedures for the potential illicit discharges. See Section 2.2.1 below for more detail.

If the receiving system is a Water of the State, SCDHEC/EQC will be notified by a letter. See Section 2.2.1 below for more detail.

Given the topography of the County and interconnectivity of the various drainage systems, the County expects some illicit discharges to flow through multiple systems and therefore effect multiple owners. By first establishing the receiving system owner, the enforcement process can then begin, either by the County, SCDHEC, or other MS4s. If a discharge is tracked by one of these parties, it is possible that eventually the responsibility for the discharge will fall back on the County or yet another party. This may cause in some cases a roundabout approach, but is systematic and contributes to communication among the various MS4s.

2.2.1 Notification to Other MS4s, SCDHEC, and Federal Facilities

If the receiving system owner of the potential illicit discharge is neither Berkeley County nor one of its partner MS4s, then the Engineering Department will notify the determined owner through a letter. The list below provides contact information for the potential entities. If the potential illicit discharge is a Water of the State, SCDHEC-EQC is to be contacted.

Templates for illicit discharge notification letters are provided in Appendix C.

MS4s

City of North Charleston

1021 Aragon Ave,
North Charleston, SC 29405
(843) 745-1026
Emergency (843) 554-5700
John Peckham

Town of Summerville

Department of Public Works
104 Civic Center
Summerville, SC 29483
(843) 851-4226
Russell Cornette

Charleston County

County Stormwater Division
4045 Bridge View Dr
North Charleston, SC 29405
843-202-7600
Chuck Jarman

City of Charleston

75 Calhoun Street
Charleston, SC 29401
Phone (843) 724-3754
Fax (843) 973-7261
Fowler Del Porto

Dorchester County

2120 East Main Street,
Dorchester, SC 29437
(843) 832-0087
Kelly Billbrough

Georgetown County

2236 Browns Ferry Rd
PO Box 421270
Georgetown, SC 29442
(843) 545-3438
Tracy Jones

SCDOT

P.O. Box 191
Columbia, SC 29202
803.737.6378
Ray Vaughn

Federal Facilities

N/A

Discharges to Waters of the State

SCDHEC- EQC

1362 McMillian Avenue, Suite, 300
Charleston, SC 29405
(843) 953-0150

Follow-up Procedures

The Engineering Department will routinely follow-up on notifications sent to other entities. Follow-up procedures will include a periodic check of the potential IDDE location database to see which locations may need to be addressed, phone calls to the appropriate entities to check for resolution, and if necessary, re-visiting locations to clarify ownership and/or source. For more detail, see Section 2.3.4.

2.3 Illicit Source Identification

The next step has three primary components: illicit tracking to identify the source, dry weather flow screening to determine if the discharge is truly an illicit and to assist with source identification, and finally illicit elimination through enforcement or notification. These steps apply only to the instances in which the potential illicit discharge is flowing into the MS4 owned either by Berkeley County or a partner MS4.

Figure 2 is a flowchart summarizing the illicit discharge source identification procedures.

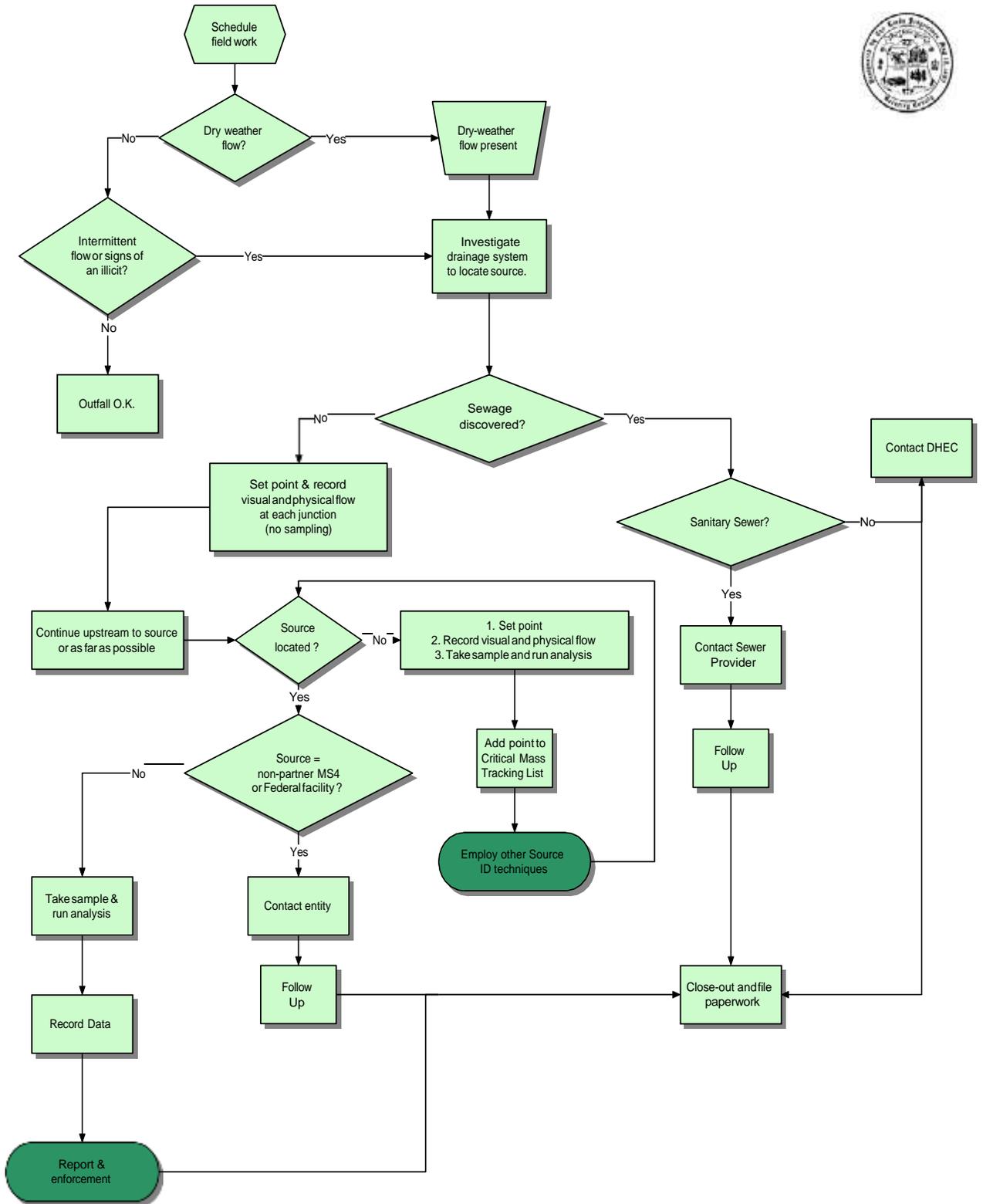
2.3.1 Potential Illicit Discharge Tracking

The first step in the source identification process is to track the discharge up to the source. The source can either be the actual pollution causing event (e.g. sanitary sewer overflow or leak, illegal connection of car wash drain to storm system) or a system owned by another entity. If another entity is encountered, refer to Section 2.2.1 for notification procedures.

Field crews will begin the tracking process at the potential illicit discharge during a dry weather condition. The procedure is the same regardless of how the discharge was discovered (screening, internal, or external reporting). A dry weather condition is defined as one in which no rain event exceeding 0.1” of precipitation has occurred in the past 72 hours. The following steps should be generally followed:

1. At an outfall in which a dry weather flow was found or at the initial point of discovery of the discharge, field crews will record physical data from visual inspections. Field crews should note algae, scum, solids, or oil sheen, as well as odor, color, flow depth, and flow quantity.

Figure 2: Flowchart for Source Identification Procedures



2. If the discharge continues upstream and can be tracked, move upstream in the direction of the discharge. Repeat step 1 at each intersection until 1) the source is found, 2) the discharge can no longer be tracked upstream (e.g. underground), or 3) another entity is encountered.

No sample should be taken at any intermediate point if the discharge can be tracked further upstream.

3. If the source is raw sewage, and this should be immediately apparent, tracking will hopefully lead to a determination of whether the source is a sanitary sewer system or a septic tank. If the source is a sanitary sewer system,, a phone call should be placed as soon as possible to the proper sewer authority. Below is a list of potential contacts.

Berkeley County Water and Sanitation

212 Oakley Plantation Drive
PO Box 1529
Moncks Corner, SC 29461
(843) 761-8817
<http://bcws.sc.gov>

Mount Pleasant Waterworks

1619 Rifle Range Road
Mt. Pleasant, SC 29464
(843) 884-9626
<http://www.mountpleasantwaterworks.com>

Summerville CPW

135 West Richardson Ave
Summerville, SC 29483
(843) 871-0810
www.summervillecpw.com

North Charleston Sewer District

7225 Stall Rd.
North Charleston, SC 29406
(843) 764-3072
<http://www.ncsd-sc.com>

Charleston Water Systems (CWS)

6296 Rivers Avenue (Suite 104)
North Charleston, SC 29418
(843) 727-6800
<http://www.charlestoncpw.com>

Moncks Corner Water Works

118 Carolina Avenue
Moncks Corner, SC 29461
843-719-7900

If the source is a septic system, SCDHEC-EQC should be contacted. See Section 2.2.1 for contact information.

4. Once the discharge has been tracked as far upstream as possible, the discharge should be identified by field observation if possible. If field observations do not suffice to identify the sample, it must be sampled and analyzed to determine the pollutant levels and if the flow is truly an illicit discharge.

2.3.2 Illicit Discharge Detection

Once a potential illicit flow has been tracked up either to the source or where no further visual evidence can be collected, field crews must determine if the flow is an illicit discharge. Below is an overview of the illicit discharge investigation procedures.

1. Obtain appropriate equipment and data from office assessment.
2. Make sure no rain has occurred in the last 72 hours and locations are inspected to the extent practicable during “dead low” to mid-incoming tides if the location is tidally influenced.

3. At the source of the illicit discharge or last accessible area with dry weather flow, record visual inspection information, and take the first grab sample, using a clean sample bottle. Procedures for collecting the sample are provided in Appendix B.
4. Perform the analysis of the sample taken for water temperature, pH, Total Chlorine, Total Copper, Surfactants/Detergents, and Phenols. Procedures for collecting the sample are provided in Appendix B. Record all analysis results.

Typically it will be more efficient to take samples from several different locations and then perform the analysis on all of the samples at once. This is due to the long holding time required for analysis for Phenols and Surfactants, as well as lab setup and safety precautions. However, the analysis should occur no longer than 4 hours after the sample was taken.

5. Compare the analysis results to the allowable limits and note any exceedances of the limits of the various parameters set in Appendix A.
6. Go back to the sample location and take a second sample using another clean sample bottle. This should be taken no sooner than 6 hours from the previous sample time and no more than 24 hours after the first sample. Rerun the chemical analysis on this second sample. Record all analysis results.
7. If both sample analyses resulted in an exceedance of the limits in Appendix A for the same parameters, then the flow is considered an illicit. Begin enforcement procedures (see Section 2.3.4).
8. If either sample analysis contained an exceedance of the set limits, but not for the same parameter, then a third sample and analysis needs to be performed.
9. If two exceedances of the set limits were observed in any of the three sample analyses for any one parameter, then the flow is considered an illicit. Begin enforcement procedures (see Section 2.3.4).

2.3.3 Additional Illicit Tracking Efforts - Dry Weather Screening

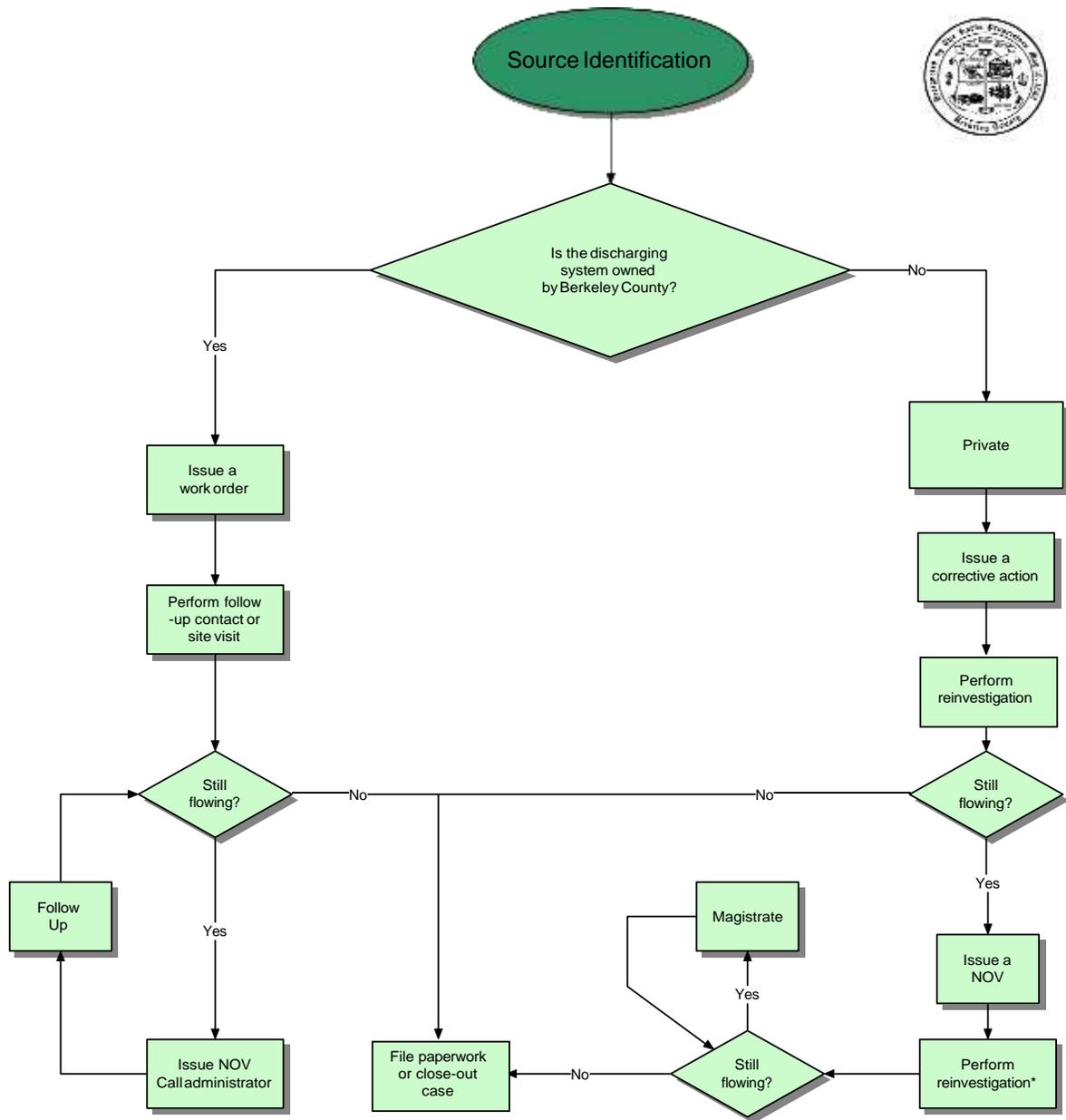
If a given discharge has been identified as an illicit, some additional illicit tracking options should be considered. These include the use of a crawler, tracer dyes, or smoke tests.

2.3.4 Reporting and Enforcement

Reporting and enforcement are the final steps to removing illicit discharges. At this point, a discharge is known to be an illicit and the source has been positively identified or the discharge was tracked as far as possible. Procedures are split amongst the receiving system owner(s) of the potential or determined illicit discharge. Template notification letters are provided in Appendix C.

Figure 3 is a flowchart summarizing the illicit discharge reporting and enforcement procedures.

Figure 3: Flowchart of Reporting and Enforcement



Source = Berkeley County MS4

The following steps outline the procedures to be conducted if the source is from County MS4 area.

1. Determine owner(s) contact information and generate corrective action letter discussing County illicit requirements.
2. Generate a report of sample analysis data (see Appendix C).
3. Submit letter and report to the owner.
4. Schedule a follow-up visit to the site approximately 2 weeks later to determine if illicit discharge has been removed.
5. If flow is still present, issue a Notice of Violation (NOV) (see Appendix C) and schedule another follow-up visit.
6. If flow is still present after third visit, report case to County Code Enforcement Officer with all paperwork.
7. Once illicit discharge has been removed, file paperwork and close case.

Source = Partner MS4

At the time of publication of this manual, Berkeley County does not have any Partner MS4s; however, this section is included as Partner's may be added at a future time.

If enforcement procedures need to be conducted for an illicit discharge located in a partner MS4, then approval from Town or City Councils, as appropriate, is needed prior to beginning. Initial contact information for these entities is provided below. If permission is granted, perform steps in Section 2.3.4.

Source = County Non-partner-MS4s or Federal Facilities

Enforcement procedures for illicit discharges determined to come from other entities will essentially be notification and follow-up steps. These are listed below.

1. Determine owner name(s) and address(s) and generate corrective action letter discussing County illicit requirements.
2. Generate a report of sample analysis data (see Appendix C).
3. Submit report to entity. See Section 2.2.1 for contact information.
4. Schedule a follow-up phone call and/or site visit approximately 2 weeks later to determine if illicit discharge has been removed.
5. Continue step 4 until illicit resolved.
6. Once illicit discharge has been removed, file paperwork and close case.

Appendix A

Selection of Trace Parameters

A.1 Selection of Tracer Parameters

Chemical Parameters

As previously mentioned, Regulation 61-9 122.26(d)(1) requires that only major outfalls with observed dry weather flow be sampled. It has been determined that the following chemical parameters are sufficient in helping to detect the major pollutants found in the stormwater runoff from the major land use categories, and thus enabling identification of sources of polluted stormwater.

- pH;
- Phenols;
- Fluoride;
- Total chlorine;
- Copper; and
- Surfactants.

pH

The normal pH of ground water typically ranges from 6.6 to 8.8. Values outside of this range are an indicator of an illicit discharge. Water with values less than 6.6 are acidic and may indicate discharges from textile mills, pharmaceutical manufacturers, metal fabricators and companies that produce resins, fertilizers, or pesticides. Wastes containing sulfuric, hydrochloric, or nitric acids are a common source of contamination. Water with values greater than 8.8 may indicate discharges from industries such as the following: textile mills, metal plating facilities, steel mills, and producers of rubber and plastic. Wash water used to clean floors and industrial machinery may also produce alkaline wastewater.

Copper

Elevated levels of copper may indicate discharges from cooling, boiler, or industrial re-circulation systems. Copper sulfate is typically used as an algacide in all of these systems. Copper can also be an indicator of discharges from an automobile manufacturing or maintenance facility.

Phenols

Are defined as hydroxy derivatives of benzene and its condensed nuclei, may occur in domestic and industrial wastewaters, natural waters, and potable water supplies. Chlorination of such waters may produce odorous and objectionable-tasting chlorophenols. Phenols removal processes in water treatment include super chlorination, chlorine dioxide or chloramine treatment, ozonation, and activated carbon adsorption. Caution should be exercised, however, since phenols may also be present in other waste streams. Phenols should be considered in relation to other parameters in determining the potential source.

Surfactants/Detergents

Typically, the presence of surfactants and detergents will indicate a connection to either an automobile wash facility or a laundry facility. High surfactants/detergents and elevated temperatures are a good indicator of laundry facilities. Lower levels of surfactants/detergents may indicate a connection to a residential laundry or industrial facility. Per the SCDHEC, normal ranges of surfactants/detergents are 0.0 to 5.0 mg/l.

Chlorine

The absence of chlorine may indicate a natural water source. However, due to chlorine's ability to quickly dissipate, caution should be used when making judgements based on its absence. Generally, only potable water sources will contain chlorine. Therefore, the presence of chlorine insures that the source is not a natural water source. Very high levels (above 5.0mg/l) of chlorine typically indicate connection to a swimming pool or other potable water source.

Fluoride

Past field testing procedures did not include testing for the presence of Fluoride in stormwater discharge. It is recommended that any field testing in the future include testing for Fluoride, which is a good indicator of potable water where fluoride levels in the raw water supply are adjusted to consistent levels and where groundwater has low to non-measurable natural fluoride levels. It is common practice for communities to add fluoride to their drinking water in order to improve dental health. Typical fluoride levels in fluoride treated potable waters are usually in the range of 1.0 to 2.5 mg/L. Fluoride can be tested in the field using a field spectrophotometer (HACH DR/2000/2010™ and AccuVac™ ampules using SPADNS reagent, without distillation).

Table 3 is a list of additional chemicals that may be associated with a variety of different industrial activities. If the industrial activities in an outfall are known, it may be possible to examine the dry-weather (non-stormwater) flow for specific chemicals to identify which industrial activities may be responsible for the dry-weather flow. This will be conducted on a case-by-cases basis.

A.2 Physical Parameters

Furthermore, the detection of a variety of other parameters during the physical inspection can be useful indicators of outfall problems. The following is a description of these *physical parameters*:

Odor

The odor of stormwater discharges will vary widely. Odor can be a good indicator of the type of pollutant in the water. For instance, stormwater discharges may smell like sewage, oil, gasoline, or may contain a chemical smell. Decomposition of organic materials can also cause a distinctive sulfur odor. Odors may vary greatly with changes in temperature and time of year.

Color

Color can also be an important factor in determining the source of an illicit discharge. The particular color should be noted and tracked upstream as far as possible. Sewage will typically have a gray or brown color, whereas industrial wastes may have a variety of colors.

Turbidity

Turbidity is a measure of the amount of suspended matter in the water and affects the clarity of the discharge. Discharges from industrial facilities are often highly turbid. Although erosion can also create highly turbid water, this should not be the case during dry weather flows. Each inspection should note the relative degree of turbidity.

Floatables

Floatables are solids and liquids that float on the surface of the water. Floatables may include substances such as animal fats, food products, trash, oils, plant materials, solvents, foams, or gasoline. Floatables can often lead directly to the manufacturing process or other source of the illicit discharge. A full description of the type and quantity of the floatables and a photograph of the discharge should be included in the report.

Residue

Residue left on the conveyance system can be an indicator of an illicit discharge. Discoloration of the pipe or channel should be tracked upstream. It is also important to note the location of the discoloration or stain within the conveyance system. For example, is it just a line of residue half way up the pipe or is the pipe completely stained for some depth?

Vegetation

Vegetation growing in the immediate discharge area should be noted in relation to vegetation growing in the general vicinity of the outlet. Certain discharges can cause substantial changes in plant growth. Discharges containing a high nutrient content may cause increased growth while discharges with severe changes in pH may cause a decrease in growth. Although vegetation patterns may serve as an indicator of non-stormwater discharges, they are also difficult to interpret. Time of year, rainfall patterns, exposure to sun all affect plant growth and may be contributing factors to the changes in vegetation patterns. Caution should be used when considering vegetation as an indicator of an illicit discharge.

Structural Damage

Like residue, structural damage to the conveyance system can also be an indicator of an illicit discharge. Structural damage is typically more noticeable in concrete pipes. Acidic discharges may cause cracking, spalling, or deterioration of the concrete. The location of the damage within the pipe and the distance upstream will be important in determining the type of pollutant and the source of the discharge.

Temperature

Water temperature that varies greatly from the ambient air temperature is a good indicator that there is an illicit discharge to the system.

A.3 Further Descriptions of Physical Parameters

Table A.1 provides additional information on the physical characteristics that should be recorded. Interpretive information is also provided.

Table A.1: Interpretations of Physical Observation Parameters and Likely Associated Flow Sources

Physical Observation Parameter	Description
Odor	Most strong odors, especially gasoline, oils, and solvents, are likely associated with high responses to the toxicity screening test. Typical obvious odors include: gasoline, oil, sanitary wastewater, industrial chemicals, decomposing organic wastes, etc.
Sewage:	Smell associated with stale sanitary wastewater, especially in pools near outfall.
Sulfide (*rotten eggs*):	Industries (e.g. meat packers, canneries, dairies, etc.); and stale sanitary wastewater.
Oil and gas:	Petroleum refineries or facilities associated with vehicle maintenance and operation or petroleum product storage.
Rancid-sour:	Food preparation facilities (e.g. restaurants, hotels, etc.)

Physical Observation Parameter	Description
<p>Color – Important indicator of inappropriate industrial sources. Industrial dry-weather discharges may be of various colors, but dark colors, such as brown, gray, or black, are most common.</p>	
Yellow:	Chemical, textile, and tanning plants.
Brown:	Meat packers, printing plants, metal works, stone and concrete works, fertilizer application, and petroleum refining facilities
Green:	Chemical plants, and textile facilities
Red:	Meat packers
Gray:	Dairies
<p>Turbidity – Often affected by the degree of gross contamination. Dry-weather industrial flows with moderate turbidity can be cloudy, while highly turbid flows can be opaque. High turbidity is often a characteristic of undiluted dry-weather industrial discharges.</p>	
Cloudy:	Sanitary wastewater, concrete or stone operations, fertilizer facilities, and automotive dealers.
Opaque:	Food processors, lumber mills, metal operations, and pigment plants
<p>Deposits and Stains – Refer to any type of coating near the outfall and are usually of a dark color. Deposits and stains often will contain fragments of floatable substances. These situations are illustrated by the grayish-black deposits that contain fragments of animal flesh and hair which often are produced by leather tanneries, or the white crystalline powder which commonly coats outfalls due to nitrogenous fertilizer wastes.</p>	
Sediment:	Construction site erosion
Oily:	Petroleum refineries or storage facilities and vehicle service facilities
<p>Vegetation – Vegetation surrounding an outfall may show the effects of industrial pollutants. Decaying organic materials coming from various food product wastes would cause an increase in plant life, while the discharge of chemical dyes and inorganic pigments from textile mills could noticeably decrease vegetation. It is important not to confuse the adverse scouring effects of high stormwater flows on vegetation with highly toxic dry-weather intermittent flows.</p>	
Excessive growth:	Food product facilities
Inhibited growth:	High stormwater flows, beverage facilities, printing plants, metal product facilities, drug manufacturing, petroleum facilities, vehicle service facilities and automobile dealers.
<p>Damage to Outfall Structures – Another readily visible indication of industrial contamination. Cracking, deterioration, and spalling of concrete or peeling of surface paint, occurring at an outfall are usually caused by severely contaminated discharges, usually of industrial origin. These contaminants are usually very acidic or basic in nature. Primary metal industries have a strong potential for causing outfall structural damage because their batch dumps are highly acidic. Poor construction, hydraulic scour, and old age may also adversely affect the condition of the outfall structure which are not indications of upstream contaminating entries.</p>	
Concrete cracking:	Industrial flows
Concrete spalling:	Industrial flows
Peeling paint:	Industrial flows
Metal corrosion:	Industrial flows

A.3.1 Treated Potable Water

A number of tracer parameters may be useful for distinguishing treated potable water from natural waters:

- Major ions or other chemical/physical characteristics of the flow components can vary substantially depending upon whether the water supply sources are groundwater or surface water, and whether the sources are treated or not. Specific conductance may also serve as a rough indicator of the major water source.
- Fluoride can often be used to separate treated potable water from untreated water sources. Untreated water sources can include local springs, groundwater, regional surface flows or non-portable industrial waters. If the treated water has no fluoride added, or if the natural water has fluoride concentrations close to potable water fluoride concentrations, then fluoride may not be an appropriate indicator.
- Hardness can also be used as an indicator if the potable water source and the baseflow are from different water sources. An example would be if the baseflow is from hard groundwater, and the potable water is from softer surface supplies.
- If the concentration of chlorine is high, then a major leak of disinfected potable water is likely to be close to the outfall. Because of the rapid dissipation of chlorine in water (especially if some organic contamination is present) it is not a good parameter for quantifying the amount of treated potable water observed at the outfall.

Water from potable water supplies (that test positive for fluorides, or other suitable tracers) can be relatively uncontaminated, e.g., potable waterline leakage or irrigation runoff, or heavily contaminated, e.g., sanitary wastewater.

A.3.2 Sanitary Wastewater

In areas containing no industrial or commercial sources, sanitary wastewater is probably the most severe dry-weather contaminating source of storm drain flows. The following parameters can be used for quantifying the sanitary wastewater components of the treated potable water portion:

- Surfactant analysis may be used in determining the presence of sanitary wastewaters. However, surfactants present in water originating from potable water sources could indicate sanitary wastewaters, laundry wastewaters, car washing wastewater, or any other waters containing surfactants. If surfactants (or fluorescence) are not present, then the potable water could be relatively uncontaminated (potable waterline leaks or irrigation runoff).
- The presence of fabric whiteners (as measured by fluorescence using a fluorometer in the laboratory or field) can also be used in distinguishing laundry and sanitary wastewaters.
- Sanitary wastewaters often exhibit predictable trends during the day in flow and quality. In order to maximize the ability to detect direct sanitary wastewater connections into the storm drainage system, it would be best to survey the outfalls during periods of highest sanitary wastewater flows (mid to late morning hours).
- The ratio of surfactants to ammonia or potassium concentrations may be an effective indicator of the presence of sanitary wastewaters or septic tank effluents. If the surfactant concentrations are high, but the ammonia and potassium concentrations are low, then the contaminated source may be laundry wastewaters. Conversely, if ammonia, potassium, and surfactant concentrations are all high, then sanitary wastewater is the likely source. Some researchers have reported low surfactants in septic tank effluents. Therefore, if

surfactants are low, but potassium and ammonia are both high, septic tank effluent may be present.

- Obviously, odor and other physical characteristics, e.g. turbidity, coarse and floating solids, foaming, color, and temperature would also be very useful in distinguishing sanitary wastewater from washwater or laundry wastewater sources. However, these indicators may not be very obvious for small levels of sanitary wastewater contamination.

Appendix B

Water Quality Sampling Procedures

B.1 Overview of Dry Weather Screening/Sampling Procedures

A one-liter sample should be taken in a clean Nalgene bottle. Temperature, and the pH should be taken in the field using a Hach SensIon pH/Temperature meter, or equivalent, as soon after the sample is taken as possible. Odor, color, turbidity, scum, oil sheen, and flow rate are also observed and recorded on site. The samples should be tested for Total Chlorine, Total Copper, Phenols, and Surfactants/Detergents using a HACH DR/2000/2010 Spectrophotometer, or equivalent, in a mobile laboratory.

B.2 Dry Weather Screening/Sampling Procedures

B.2.1 Prior to Starting Point Collection

pH Calibration (Every Monday morning before entering the field.)

1. Make sure the meter is in pH mode.
2. Remove the dust cover from the pH probe.
3. Rinse pH probe with DI water and dry by gently blotting with a soft tissue.
4. Press the CAL key.
5. Place the pH probe into 4.00 buffer solution, press the dispenser button, and then the read button. When reading stabilizes, the meter will beep and a small padlock will appear on the screen of the meter to indicate the reading is locked.
6. Rinse pH probe with DI water and dry by gently blotting with a soft tissue.
7. Place the pH probe into 7.00 buffer solution, press the dispenser button, and then the read button. When reading stabilizes, the meter will beep and a small padlock will appear on the screen of the meter to indicate the reading is locked.
8. Rinse pH probe with DI water and dry by gently blotting with a soft tissue.
9. Place the pH probe into 10.00 buffer solution, press the dispenser button, and then the read button. When reading stabilizes, the meter will beep and a small padlock will appear on the screen of the meter to indicate the reading is locked.
10. The slope will appear in the display. It should be 59.0 plus/minus 3 (mV/decade). Press Enter to accept this slope.
11. Rinse pH probe with DI water and dry by gently blotting with a soft tissue.
12. Replace the dust cover on the pH probe with the cotton inside saturated with pH buffer 7.00.

pH Calibration Check (Prior to entering the field)

1. Rinse the probe with DI water and dry by gently blotting with a soft tissue.
2. Place the probe in QC standard of pH 10.00; depress the dispenser button once and then the read button.
3. Let the pH reading stabilize and when a lock is achieved it should read the pH of the known QC standard.
4. If the reading does not match the pH QC standard then calibrate pH meter.
5. Always remember to rinse the probe with DI water when done.

B.2.2 Grab Sampling

1. Using the 1000ml-sample bottle, rinse the sample bottle 3 times with stormwater.
2. Fill the sample bottle from the horizontal and vertical center of the stormwater stream, being careful not to pick up sediment from the bottom.

B.2.3 pH

1. Rinse the probe with DI water and dry gently by blotting with a tissue.
2. Immerse the pH probe into the sample, press the dispenser button once and then press the read button. Be careful not to let the probe touch the bottoms or sides of the sample container.
3. The meter will beep and a small padlock will appear on the screen when the pH and temperature are locked.
4. Rinse the probe with DI water and replace dust cover with pH buffer 7.00 on cotton ball in dust cover.
5. At the end of the day store the clean pH probe with dust cover in place.

Operational Check: Once per sampling day, check the calibration against 7.0 pH, if the reading is not between 6.95 and 7.05 then you must recalibrate the meter.

pH Range	Comment	Possible Causes
<6.6	Acidic	Textile mills, pharmaceutical manufactures, metal fabricators and companies that produce resin, fertilizers, or pesticides
6.6 – 8.8	Normal	N/A
>8.8	Alkaline	Textiles mills, metal plating facilities, steel mills, producers of rubber and plastic, and wash water used to clean floors or industrial machinery

B.2.4 Total Residual Chlorine

1. Enter the stored program number **80 ENTER** for total chlorine. The display will show **Dial nm to 530**.
 2. Rotate the wavelength dial until the small display shows **530 nm**. When the correct wavelength is dialed in, the display will quickly show **Zero Sample** then **mg/L Cl₂**.
 3. Rinse the chlorine sample cell with stormwater 3 times.
 4. Fill the sample cell with 10 ml of stormwater.
 5. Empty the contents of **one** total chlorine DPD reagent packet into the sample cell.
 6. Stopper the sample cell and shake for 20 seconds. Remove the stopper.
 7. Press SHIFT TIMER; a 3-minute reaction period will begin.
 8. When the timer beeps, the display will show: **mg/L Cl₂**. Place a 10mL blank sample into the cell holder (be sure to wipe the outside of the sample cell with a kimwipes).
 9. Press **Zero** and the display will show **Zeroing ...** then **0.00 mg/L Cl₂**.
 10. Within three minutes of the timer beeping, put the sample into the cell holder (be sure to wipe the outside of the sample cell with a kimwipe) and press **Read**. The display will show **Reading**, then the result in mg/L will be shown.
- **Note:** DPD reagent packets deteriorate in the presence of moisture. The packets should be discarded if they have caked or turned brown.

Chlorine Range (mg/L)	Comment	Possible Causes
>5.0	High	Swimming pool or potable water sources

B.2.5 Total Copper

1. Enter the stored program number **135 ENTER** for copper (Cu) bicinchoninate powder pillows; the display will show **Dial nm to 560**.
2. Rotate the wavelength dial until the small display shows **560 nm**. When the correct wavelength is dialed in, the display will quickly show **Zero Sample**, then **mg/L Cu Bcn**.
3. Rinse the copper sample cell with stormwater 3 times.
4. Fill the sample cell with 10 ml of stormwater.
5. Empty the contents of **one** Cu Ver 1 Copper reagent packet into the sample cell and swirl to mix.
6. Press **SHIFT TIMER** and a two-minute reaction period will begin.
7. When the timer beeps the display will show **mg/L Cu Bcn**.
8. Place the blank (filled with sample water) into the cell holder, after wiping the outside of the sample cell with a kimwipes, and close the light shield.
9. Press **Zero**, the display will show **Zeroing...** then **0.00 mg/L Cu Bcn**.
10. Within thirty minutes after the timer beeps, place the prepared sample into the cell holder and close the light shield.
11. Press **Read**, and the display will show **Reading**. Then the result in mg/L will be shown.

Total Copper Range (mg/L)	Comment	Possible Causes
>0.5	High	Manufacturing/Industrial discharges

B.2.6 Total Phenols

1. Measure 300mL of deionized water in a 500-mL graduated cylinder.
2. Pour the measured DI water into a 500-mL separatory funnel (the blank).
3. Measure 300mL of sample into a 500-mL graduated cylinder.
4. Pour the measured sample into a second 500-mL separatory funnel (the sample).
5. Add 5mL of Hardness 1 Buffer to each separatory funnel, stopper, and shake to mix.
6. Add the contents of one Phenol Reagent Powder Pillow to each separatory funnel, stopper, and shake to mix.
7. Add the contents of one Phenol 2 Reagent Powder Pillow to each separatory funnel, stopper, and shake to mix.
8. Add 30mL of chloroform to each separatory funnel and stopper.
9. Invert each funnel and temporarily vent. Shake each funnel briefly and then vent. Then shake each funnel vigorously for 30 seconds.
10. Remove the stoppers and allow the funnels to stand until the chloroform settles to the bottom of the funnel.
11. Insert a pea size cotton plug into the delivery tube of each funnel.
12. Drain the chloroform layer into separate 25-mL sample cells.
13. Enter the stored program number for phenols: **470 ENTER**. The display will show **Dial nm to 460**.
14. Rotate the wavelength dial until the small display shows **470 nm**. When the correct wavelength is dialed in, the display will quickly show **Zero Sample** then **mg/L PHENOL**.
15. Place the blank (filled with sample water) into the cell holder, after wiping the outside of the sample cell with a kimwipes, and close the light shield.
16. Press **ZERO** the display will show **Zeroing ...** then **0.00 mg/L PHENOL**.
17. Place the prepared sample into the cell holder and close the light shield.
18. Press **READ**. The display will show **Reading**, then the results in mg/L will be shown.

****Note:** When venting a separatory funnel be sure to point the funnel away from people.

Total Phenol Range (mg/L)	Comment	Possible Causes
>0.399	High	Industrial Process Water/Rinse Water

B.2.7 Surfactants/Detergents

1. Enter the stored program number **710 ENTER** for anionic surfactants powder pillows. The display will show **Dial nm to 605**.
2. Rotate the wavelength dial until the small display shows **605 nm**. When the correct wavelength is dialed in, the display will quickly show **Zero Sample** then **mg/L SURF.ANION**.
3. Measure out 300mL of sample with a 500-mL graduated cylinder and pour into a 500-mL separatory funnel.
4. Add 10mL of Sulfated Buffer Solution, stopper, and shake the funnel for five seconds.
5. Add the contents of one Detergents Reagent Powder Pillows to the funnel, stopper, and shake to dissolve the powder.
6. Add 30mL of benzene to the funnel, stopper, and shake gently for one minute.
7. Place the separatory funnel in a support stand and then press **SHIFT TIMER**. A thirty-minute reaction period will begin.
8. When the timer beeps, the display will show **mg/L SURF.ANION**.
9. Remove the stopper, drain off the bottom water layer and discard it.
10. Drain the top benzene layer into a clean 25-mL sample cell (the sample).
11. Fill a second 25-mL sample cell with pure benzene (the blank).
19. Place the blank, after wiping the outside of the sample cell with a kimwipes, into the cell holder and close the light shield.
12. Press **ZERO**. The display will show **Zeroing ...** then **0.00 mg/L SURF.ANION**.
13. Place the prepared sample into the cell holder (after wiping the sample cell with kimwipes) and close the light shield.
14. Press **READ**. The display will show **Reading**, then the results in mg/L will be shown.

Surfactants/Detergents Range (mg/L)	Comment	Possible Causes
0 – 5.0	Normal	N/A
> 5.0	High	Automobile wash or Laundry Facility

B.2.8 Cleaning Procedures

1. Rinse with tap water.
2. Scrub with non-phosphate detergent and tap water rinse.
3. Tap water rinse.
4. Rinse with deionized water.
5. Air dry.

B.2.9 End of the Day

1. Do a pH meter check by running a pH test with the pH 10 buffer.
2. Make sure all equipment has been cleaned (glassware with non-phosphate detergent) and set out to dry, especially the sample cells.
3. Charge the batteries for all equipment.
4. Prepare for the next day of sampling.

Appendix C

Standard IDDE Notification Letters

Date:

Re: Illicit Discharge Removal Letter

Dear :

The purpose of this letter is to inform you that Berkeley County has determined that an illicit discharge is occurring into your stormwater system at (insert address or other positional information). This location is beyond the scope of the County's Stormwater Management Ordinance, and the County cannot therefore enforce its removal. However, the illicit discharge must be removed since it eventually finds its way into the County-owned system. Please find the attached report that provides greater detail on the investigation and/or results of water sample analyses. A copy of this letter and investigation report has also been sent to SCDHEC-EQC.

If you have questions concerning this violation, you can contact our office at 843-719-4127.

Sincerely,

Date:

Re: Illicit Discharge Removal Letter

Dear :

The purpose of this letter is to inform you that Berkeley County has determined that an illicit discharge is occurring at (insert address or other positional information). This location is beyond the scope of the County's Stormwater Management Ordinance, and the County cannot therefore enforce its removal. The County is hereby releasing responsibility of removing this illicit discharge to you or another entity that you identify.

Please find the attached report that provides greater detail on the investigation and/or results of water sample analyses. A copy of this letter and investigation report has also been sent to (insert municipal name).

If you have questions concerning this violation, you can contact our office at 843-719-4127.

Add additional text as necessary.

Sincerely,

Date:

Re: Illicit Discharge Corrective Order

Dear :

The purpose of this letter is to serve notice that you are in violation of Berkeley County's Stormwater Management Ordinance at (list address or other positional information) due to an illicit discharge. Add text.

This violation is a first offense based on an inspection conducted on X/X/2013. The Berkeley County Engineering Department requests that you promptly remove the illicit discharge before additional action is necessary. Berkeley County Engineering personnel will revisit the referenced site location in approximately two weeks (or sooner if a hazardous condition warrants it) to see if you have removed the illicit discharge.

Failure to comply with this Corrective Order may result in a court proceeding issued to you and/or a **civil penalty of up to \$1,000/day for each deficiency.**

If you have questions concerning this violation, you can contact our office at 843-719-4127.

Add additional text as necessary

Sincerely,

Date:

Re: Notice of Violation

Dear :

The purpose of this letter is to serve notice that you are in violation of Berkeley County's Stormwater Management Ordinance at (list address or other positional information) due to an illicit discharge. Add text.

This violation is due to failure to comply with a past corrective order resulting from an inspection conducted on X/X/2013. The Berkeley County Engineering Department requests that you promptly remove the illicit discharge before additional action is necessary. Berkeley County Engineering personnel will revisit the referenced site location in approximately two weeks to see if you have removed the illicit discharge.

Failure to comply with this Notice of Violation prior to the re-inspection will result in an immediate report to the Magistrate's office and/or a **civil penalty of up to \$1,000/day for each deficiency.**

If you have questions concerning this violation, you can contact our office at 843-719-4127.

Add additional text

Sincerely,

Appendix D

Additional Illicit Tracking Procedures

Illicit discharges are not uniformly distributed across a community, but tend to be clustered within certain land uses, subwatersheds, and sewage infrastructure areas. The office procedures helps narrow the search for the most severe illicit discharge problems through rapid analysis of existing mapping and water quality monitoring data. Office procedures for IDDE are referred to as a desktop assessment. A simple desktop assessment method can rapidly determine the severity of illicit discharge problems in a community. The desktop assessment also provides insight on how to narrow your illicit discharge search, and is helpful when designing a discharge tracking system to best suit your needs. The desktop assessment method has five basic elements:

1. Delineate subwatersheds or other drainage units within your community.
2. Compile available mapping and data for each drainage unit (e.g., land use, age, outfalls, infrastructure history).
3. Derive subwatershed discharge screening factors using GIS analysis.
4. Screen and rank illicit discharge potential at the subwatershed and community level.
5. Generate maps to support field investigations.

The desktop assessment is used to guide initial field screening, and support initial IDDE program decisions. Key outcomes include:

- Screening problem catchments or subwatersheds.
- Creation of GIS or other database system to track outfalls.
- Gaining an overall assessment as to the severity of illicit discharge problems in the community.
- Generation of basic mapping for subsequent field work.

D.1 Data Collection & Development

In order to narrow the illicit discharge search, certain GIS shapefiles are needed to provide the necessary information to design an illicit discharge tracking system. Table D.1 provides a list of data that is useful when performing the desktop assessment. Maps generated from this data can be as simple as the hydrological, land use, and road layers which can be beneficial to field crews. Additional information regarding the classification of subwatersheds may be found in Section D.2 (Mapping) and examples of sources of industrial non-stormwater entries into storm drainage systems can be found in Table D.2. In addition to the files recommended below, additional data collected in the field from previous outfall inventories, flood studies, etc. Digital format suggests but are not limited to GIS based shape files. Each of the following layers should be imported into the data collector if possible for the use of field crews when searching for or tracking illicit discharges to the water of the state.

Table D.1 Useful Data for the Desktop Assessment

	Data	Likely Format
Recommended	Aerial photos or orthophotos	Digital
	Subwatershed or catchment boundaries	Digital
	Hydrology including piped streams	Digital
	Land use or zoning	Digital or hardcopy map
	NPDES stormwater permittees	Digital data or map
	Outfalls	Digital
	Sewer system, 1" = 200' scale or better	Digital
	Standard Industrial Classification codes for all industries	Digital or hardcopy data
	Strom drain system, 1" = 200' scale or better	Digital

	Data	Likely Format
	Street map or equivalent GIS layers	Digital
	Topography (5 ft contours or better)	Digital
Optional	Age of development	Narrative data
	As-builts or construction drawings	Hardcopy map
	Condition of infrastructure	Narrative data
	Field inspection records	Hardcopy or digital data
	Depth to water table and groundwater quality	Digital data or maps
	Historical industrial uses or landfills	Narrative data or hardcopy map
	Known locations of illicit discharges (current and past)	Narrative data or digital map
	Outfall and stream monitoring data	Digital data
	Parcel boundaries	Digital or hardcopy map
	Pollution complaints	Narrative data
	Pre-development hydrology	Narrative data or hardcopy map
	Sanitary sewer infiltration and inflow surveys (I/I)	Hardcopy or digital data
	Septic tank locations or area served by septic systems	Hardcopy or digital map
Sewer system evaluation surveys	Hardcopy or digital data	

D.1.1 Outfall Catchment Areas

The drainage area for each outfall must be delineated on all maps used in the illicit tracking process. Adding the facility inventory information to the drainage areas will enable potential pollutant source locations to be assigned to the correct outfall. Land use coverages can also be of use when determining which kind of pollutants can populate individual watershed areas. Ultimately, maps should be produced having the following information:

- Drainage areas with complete descriptions;
- Outfall locations;
- NPDES permittees;
- Critical land uses;
- Drainage boundaries for each outfall;
- City/County limits;
- Major streets; and
- Streams.

D.2 Mapping

Once subwatersheds or catchments are delineated, Berkeley County should begin to acquire and compile existing data for each drainage area which will allow the analyses and manipulation of spatial data, update and creation of data layers, and attribute data with each map layer. Maps created in GIS can help manage the entire IDDE program and demonstrate compliance in annual reports. The maps are also very useful to help communicate with the public.

Once an illicit source is located by Berkeley County field crews, a map should be created to show the exact location of the discharge and the source. The map should include hydrological data, roads, buildings, outfalls, and the pollutant(s) that are not within the set parameters. This map should be included in any letter or correspondence sent to SCDHEC and the persons/ owners at fault.

D.2.1 Mapping and Preliminary Watershed Evaluation

The data collected during the mapping process is important as it forms the basis for the rest of the more detailed field investigations. Maps with information such as watershed boundaries and land usage can help to provide a basis to prioritize the outfalls and watersheds by potential to contribute non-stormwater entries into the storm drainage system. When preparing the maps, full advantage

should be taken of any existing and available information, specifically data listed in Table 1. The receiving waters and stormwater drainage outfalls must be identified and accurately located on the appropriate maps. Possible sources of documented information include:

- County records, drainage maps, and storm drainage maps;
- Previous surveys, e.g., sanitary sewer infiltration/inflow (I/I) and sewer system evaluation survey (SSES) studies;
- Topographic maps;
- Existing GIS data;
- Pre-development stream locations;
- City/County department personnel having knowledge of the area; and
- Aerial surveys.

D.3 Prioritization

The desktop assessment shapes the overall direction of a local IDDE program. For example, if the desktop assessment indicates that the risk of illicit discharges is low in the community, program managers may want to shift resources to other minimum management measures and integrate them into a broader watershed assessment and restoration effort. By contrast, if the desktop assessment reveals significant potential for severe discharges, program managers will need to allocate significant program resources to find and fix the discharge problems. Table 2 can be used to identify the local industries in each drainage area most likely to contribute non-stormwater entries into the storm drainage system. The categories considered in this table include loading and unloading of dry bulk or liquid materials, outdoor storage or processing, water usage (cooling and process waters), dust or particulate generating processes, and illicit or inadvertent industrial connections. The likelihood of an industry producing dry weather or wet weather discharges in each of these categories was rated on the basis of high (H), moderate (M), or low (L) potential and not applicable if there was no relationship evident.

A research effort should draw on existing background data and anecdotal information to initially characterize illicit discharge potential at the subwatershed level. Subwatersheds are then screened based on their composite score, and are diagnosed as having a low, medium, or high risk:

- Low - no known illicit discharge problems in the subwatershed.
- Medium - problems are confined to a few stream reaches, outfalls or specific generating sites in the subwatershed.
- High - problems are suspected to be severe throughout the subwatershed.

Table D.2: Sources of Industrial Non-Stormwater Entries Into Storm Drainage System

Industrial Categories			Loading/ Unloading		Outdoor Storage/ Processing	Water Usage		Particle Gener. Process	Illicit/ Inadvertent Connections
Major Class.	SIC Group	Industrial Description	Dry Bulk	Liquid		Cooling	Process		
Primary Industries									
20		Food & Kindred Products							
20	201	Meat Products	H	L	H	H	H	L	H
20	202	Dairy Products Processing Industry	H	H	N/A	H	H	N/A	H
20	203	Canned & Preserved Fruits & Vegetables	H	H	H	H	H	M	H
20	204	Grain Mill Products	H	H	L	H	H	H	H
20	205	Bakery Products	H	M	N/A	N/A	H	M	L
20	206	Sugar & Confectionery Products	H	M	N/A	L	M	H	L
20	207	Fats & Oils	H	H	N/A	M	H	N/A	M
20	208	Beverages	H	H	N/A	H	H	M	L
21		Tobacco Manufactures	H	M	N/A	N/A	M	H	M
22		Textile Mill Products	H	L	N/A	H	H	M	H
23		Apparel & Other Finished Products Made from Fabrics	H	L	N/A	N/A	M	M	L
Material Manufacture									
24		Lumber & Food Products	H	L	H	N/A	M	H	L
25		Furniture & Fixtures	H	M	N/A	N/A	L	M	L
26		Paper & Allied Products	H	H	H	H	H	H	H
27		Printing, Publishing, & Allied Industries	H	M	N/A	N/A	M	H	L
31		Leather & Leather Products	H	H	L	L	H	H	H
32		Stone, Clay, Glass, & Concrete Products	H	M	H	L	H	H	L
33		Primary Metal Industries	H	M	H	H	H	H	H
34		Fabricated Metal Products	H	H	L	H	H	H	H
37		Transportation Equipment	L	H	L	H	H	L	H

Table D.2: Sources of Industrial Non-Stormwater Entries Into Storm Drainage System (Continued)

Industrial Categories			Loading/ Unloading		Outdoor Storage/ Processing	Water Usage		Particle Gener. Process	Illicit/ Inadvertent Connections
Major Class.	SIC Group	Industrial Description	Dry Bulk	Liquid		Cooling	Process		
Chemical Manufacture									
28	Chemicals & Allied Products								
	281	Industrial Inorganic Chemicals	H	H	N/A	H	H	H	H
	282	Plastic Materials & Synthetics	H	H	L	H	M	L	H
	283	Drugs	L	L	N/A	H	M	L	L
	284	Soaps, Detergents, & Cleaning Preparations	H	H	N/A	H	H	H	H
	285	Paints, Varnishes, Lacquers, Enamels & Allied Products	H	H	N/A	L	H	H	L
	286	Industrial Organic Chemicals	H	H	N/A	H	H	H	M
	287	Agricultural Chemicals	L	L	N/A	H	L	L	L
29	Petroleum Refining & Related Industries								
	291	Petroleum Refining	L	H	H	H	L	N/A	H
	295	Paving & Roofing Materials	H	H	H	N/A	M	M	L
30		Rubber & Misc. Plastic Products	H	H	N/A	H	H	H	M
Transportation & Construction									
15		Building Construction	M	L	H	N/A	L	H	L
16		Heavy Construction	M	L	H	N/A	L	H	L
Retail									
52		Building Materials, Hardware Garden Supply, & Mobile Home Dealers	H	L	H	N/A	L	N/A	L
53		General Merchandise Stores	H	M	L	N/A	L	N/A	L
54		Food Stores	H	H	N/A	N/A	M	L	L
55		Automotive Dealers & Gasoline Service Stations	H	H	H	N/A	M	L	M
56		Apparel & Accessory Stores	H	L	N/A	N/A	L	N/A	L
57		Home Furniture, Furnishings and Equipment Stores	H	L	L	N/A	L	N/A	L
58		Eating & Drinking Places	H	M	N/A	N/A	M	N/A	M
Other									
		Coal Steam Electric Power	H	L	H	H	L	H	L
		Nuclear Steam Electric Power	N/A	L	N/A	H	L	N/A	N/A

NOTE: H: High potential M: Medium potential L: Low potential N/A: Not applicable

The industrial categories listed in Table D.2 were defined according to the 1987 Standard Industrial Classification Manual codes (SIC code). The industries were classified according to six main categories. The category for “Primary Industries” includes facilities involved in the production of food products and other basic goods. The category of “Material Manufacturing” includes those industries producing materials such as lumber, paper, glass, and leather. Similarly, the “Chemical Manufacturing” category includes those industries making products such as plastics, paints, detergents, fertilizers, pesticides, and other related substances. “Transportation and Construction” primarily concerns the discharge of contaminants from building or other types of outdoor development. The “Retail” category includes establishments engaged in the selling of merchandise or offering merchandise related services. Finally, all other industries, which did not fit into any of the above classifications, were placed into a “General” category. Those industries, which are not specifically listed, should have characteristics resembling the industries of the major groups with which they are classified by SIC code.

Using data from the maps and desktop assessment, initial characterization of subwatersheds can allow field techs to prioritize their investigations. In addition to the low, medium, high characterization, land use can provide information and guidance where generating sites are found within the subwatershed.

Land Use and Potential Generating Sites

Land use can predict the potential for indirect discharges, which are often intermittent or transitory. Many indirect discharges can be identified and prevented using the concept of “generating sites,” which are sites where common operations can generate indirect discharges in a community. Both research and program experiences indicate that a small subset of generating sites within a broader land use category can produce most of the indirect discharges. Consequently, the density of potential generating sites within a subwatershed may be a good indicator of the severity of local illicit discharge problems. Some common generating sites within major land use categories are listed in Table 3.

Residential Generating Sites: Failing septic systems were the most common residential discharge reported in 33% of IDDE programs surveyed (CWP, 2002). In addition, indirect residential discharges were also frequently detected in 20% of the IDDE programs surveyed, which consisted of oil dumping, irrigation overflows, swimming pool discharges, and car washing. Many indirect discharges are caused by common residential behaviors and may not be classified as “illicit” even though they can contribute to water quality problems. With the exception of failing septic systems and oil dumping, most communities have chosen education rather than enforcement as the primary tool to prevent illicit discharges from residential areas.

Commercial Generating Sites: Illicit discharges from commercial sites were reported as frequent in almost 20% of local IDDE programs surveyed (CWP, 2002). Typical commercial discharge generators included operations such as outdoor washing; disposal of food wastes; car fueling, repair, and washing; parking lot power washing; and poor dumpster management. Recreational areas, such as marinas and campgrounds, were also reported to be a notable source of sewage discharges. It is important to note that not all businesses within a generating category actually produce illicit discharges; generally only a relatively small fraction do. Consequently, on-site inspections of individual businesses are needed to confirm whether a property is actually a generating site.

Industrial Generating Sites: Industrial sites produce a wide range of flows that can cause illicit discharges. The most common continuous discharges are operations involving the disposal of rinse water, process water, wash water and contaminated, noncontact cooling water. Spills and leaks,

ruptured pipes, and leaking underground storage tanks are also a source of indirect discharges. Illicit discharges from industry were detected in nearly 25% of the local IDDE programs surveyed (CWP, 2002). Industries are classified according to hundreds of different standard Industrial Classification (SIC) codes. The SIC coding system also includes commercial, institutional and municipal operations. Many industries are required to have stormwater pollution prevention and spill response plans under EPA’s Industrial Stormwater NPDES Permit Program.

Institutional Generating Sites: Institutions such as hospitals, corporate campuses, colleges, churches, and cemeteries can be generating sites if routine maintenance practices/operations create discharges from parking lots and other areas. Many large institutional sites have their own areas for fleet maintenance, fueling, outdoor storage, and loading/unloading that can produce indirect discharges.

Municipal Generating Sites: Municipal generating sites include operations that handle solid waste, water, wastewater, street and storm drain maintenance, fleet washing, and yard waste disposal. Transport-related areas such as streets and highways, airports, rail yards, and ports can also generate indirect discharges from spills, accidents and dumping.

Table D.3: Land Uses, Generating Sites and Activities That Produce Indirect Discharges

Land Use	Generating Site	Activity that Produces Discharge
Residential	<ul style="list-style-type: none"> • Apartments • Multi-family • Single Family Detached 	<ul style="list-style-type: none"> • Car Washing • Driveway Cleaning • Dumping / Spills (e.g. leaf litter and RV/boat holding tank effluent) • Equipment Washdowns • Lawn/Landscape Watering • Septic System Maintenance/Overflow • Swimming Pool Discharges
Commercial	<ul style="list-style-type: none"> • Campgrounds/RV parks • Car Dealers/Rental Car Companies • Car Washes • Commercial Laundry / Dry Cleaning • Gas Stations/ Auto Repair Shops • Marinas • Nurseries and Garden Centers • Oil Change Shops • Restaurants • Swimming Pools 	<ul style="list-style-type: none"> • Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Vehicle Fueling • Vehicle Maintenance / Repair • Vehicle Washing • Washdown of greasy equipment and grease traps
Industrial	<ul style="list-style-type: none"> • Auto recyclers • Beverages and brewing • Construction vehicle washouts • Distribution Centers • Food processing • Garbage truck washouts • Marinas, boat building and repair • Metal plating operations • Paper and wood products • Petroleum storage and refining • Printing 	<ul style="list-style-type: none"> • All commercial activities • Industrial process water or rinse water • Loading and un-loading area washdowns • Outdoor material storage (fluids)
Institutional	<ul style="list-style-type: none"> • Cemeteries • Churches 	<ul style="list-style-type: none"> • Building Maintenance (e.g. power washing) • Dumping/Spills

	<ul style="list-style-type: none"> • Corporate Campuses • Hospitals • Schools and Universities 	<ul style="list-style-type: none"> • Landscaping/Grounds Care (irrigation) • Parking Lot Maintenance (power washing) • Vehicle Washing
Municipal	<ul style="list-style-type: none"> • Airports • Landfills • Maintenance Depots • Municipal Fleet Storage Areas • Ports • Public Works Yards • Streets and Highways 	<ul style="list-style-type: none"> • Building Maintenance (e.g. power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Road Maintenance • Spill Prevention/Response • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing

Preventing Illicit Discharges / Resolution

Preventing illicit discharges from neighborhoods: Outreach programs and public education are some of the more effective practices to influence neighborhoods to become more aware of their runoff potential.

- Storm drain stenciling
- Septic system maintenance
- Vehicle fluid changing / recycling
- Car washing
- Household hazardous waste storage and disposal
- Swimming pool draining

Included in Table D.4 is the list of activities that originates from land uses above and it provides the potential pollutant and ways to help educate or prevent these activities from discharging harmful pollutants to the waters of the state. When Berkeley County field crews detect an illicit discharge from one of the following sources, the flow chart should be used to determine how to resolve or eliminate the discharge. Once the field operations have been successful in locating a source of the illicit discharge, the office personnel should contact the following groups appropriately:

- All (MS4s) – Send letter to appropriate City, County, or SCDOT and copy SCDHEC department
- Non MS4s – Send letter to appropriate department and to SCDHEC
- Private Citizens – send a letter to the appropriate party and to SCDHEC

Table D.4: Pollution Causing Activities

Activity	Pollutant	Resolution / Prevention
Car Wash	<ul style="list-style-type: none"> • Surfactants / detergents • Oil and grease • Metals • Xylene 	<ul style="list-style-type: none"> • Nozzles with shut off valves • Storm drain plug and wet vacuum provisions for charity carwash events • Water bill inserts promoting environmentally safe car washing products • Promote car wash on grass vs. pavement or in the street • Require a permit • Include a kit of environmental safe soap, etc.
Driveway Cleaning / Parking log maintenance	<ul style="list-style-type: none"> • Oil and grease • Chemicals • Hydrocarbons • Ethylene glycol 	<ul style="list-style-type: none"> • Installation and maintenance of filters
Lawn / Landscape Watering and Maintenance	<ul style="list-style-type: none"> • Fecal coliform • Sediment • Nutrients 	<ul style="list-style-type: none"> • Public education indicating importance of site specific application rather than broad casting pesticides, herbicides and fertilizers • Signs and public pet waste bags with disposal cans
Swimming Pool Discharges	<ul style="list-style-type: none"> • Chlorine • Back flush water 	<ul style="list-style-type: none"> • Educational kiosks at retail outlets selling chemicals • Changes in local plumbing codes to require discharge to sanitary sewer systems
Building Maintenance (power-washing)	<ul style="list-style-type: none"> • Oil and Grease • Chemicals • Fecal coliform 	<ul style="list-style-type: none"> • Educational brochures
Dumping / Spills	<ul style="list-style-type: none"> • Hydrocarbons, • Oil and grease • Metals • Xylene • Ethylene glycol 	<ul style="list-style-type: none"> • Community recycling centers • Pollution hotlines • Fines • Outreach material at auto parts stores
Vehicle Fueling	<ul style="list-style-type: none"> • Oil and Grease • Hydrocarbons • Xylene 	<ul style="list-style-type: none"> • Educational posted signs at fueling stations • Fueling area must be covered
Vehicle Maintenance / Repair	<ul style="list-style-type: none"> • Oil and Grease • Hydrocarbons • Ethylene glycol 	<ul style="list-style-type: none"> • Outreach materials at auto parts stores and service stations • Community oil recycling stations • Directories of used oil collection stations • Pollution hotlines

Activity	Pollutant	Resolution / Prevention
Outdoor Fluid Storage	<ul style="list-style-type: none"> • Oil and Grease • Hydrocarbons 	<ul style="list-style-type: none"> • Posted signs of potential hazard • Covered with secondary containment
Road Maintenance	<ul style="list-style-type: none"> • Hydrocarbons • Oil and Grease • Trash and pollution 	<ul style="list-style-type: none"> • Education information
Septic System Maintenance/Overflow	<ul style="list-style-type: none"> • Surfactants • Fecal coliform 	<ul style="list-style-type: none"> • Water bill inserts informing the need for routine visual inspections
Loading and Unloading Areas	<ul style="list-style-type: none"> • Oil and Grease • Hydrocarbons 	<ul style="list-style-type: none"> • Spill prevention and response training • Identification of potential spill areas • Inventory of harmful materials • Employee training
Industrial Process Water / Rinse Water	<ul style="list-style-type: none"> • Temperature • Surfactants • Phenols • Chlorine 	<ul style="list-style-type: none"> • Business outreach and education • Spill prevention and response training • Employee training • Site inspections

Appendix E

Visual Inspection Form Complaint Form



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

1003 Highway 52 Post Office Box 6122
Moncks Corner, SC 29461-6120
843.719.4127 843.723.3800 843.567.3136
843.719.4695 fax

ILLICIT DISCHARGE INSPECTION FORM

Inspection Date: _____

Inspected By: _____

CAA# (If applicable): _____

I. Background Information:

Reason for Inspection: Random; Citizen Complaint; Re-inspection

Location/Address of the Discharge: _____

Weather Conditions: Dry; Wet

Photos taken? Yes; No

II. Nature of Discharge:

Estimated Flow: · Trickle; · Light; · Moderate; · Heavy;
Odor: · None; · Rotten Eggs; · Musty; · Fuel;
· Sewage; · Other: _____
Water Clarity: · Clear; · Cloudy; · Other: _____
Floatables: · None; · Suds; · Oily Sheen; · Trash;
· Sewage; · Other: _____
Deposits/Stains: · None; · Sediments; · Oily; · Other: _____
Biological: · None; · Bacterial/Algae; · Other: _____
Materials Observed: · Paint; · Construction Waste: _____;
· Automotive fluids (antifreeze, fuel, motor oil, lubricants, etc.)
· Vehicle cleaning wash waters;
· Industrial Waste (solvents, metal, chemicals, corrosive, etc.);
· Other: _____

III. Nearest Waterbody (if known):

IV. Source of Discharge:

V. Comments:



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

1003 Highway 52 Post Office Box 6122
 Moncks Corner, SC 29461-6120
 843.719.4127 843.723.3800 843.567.3136
 843.719.4695 fax

COMPLAINT FORM

Date:

Complaint's Information	
Name of person reporting problem:	
Address:	
Phone Number:	
Email:	

Location of Problem (address, subdivision, etc.):

Description of Problem:

For Inspector's Use Only	
Location checked? <input type="checkbox"/> yes <input type="checkbox"/> no	Date:
Pictures taken**? <input type="checkbox"/> yes <input type="checkbox"/> no	
Problem observed? <input type="checkbox"/> yes <input type="checkbox"/> no	Briefly explain.
Action(s) taken:	
Follow up inspection scheduled? <input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> N/A	Date:
Name of person completing inspection:	

**** Inspection is invalid without pictures**

Appendix F
Berkeley County
Enforcement Response Plan

ENFORCEMENT RESPONSE PLAN

(ERP)

Berkeley County

South Carolina

December 2014



ENFORCEMENT RESPONSE PLAN
Berkeley County
South Carolina

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I. INTRODUCTION

This Enforcement Response Plan (ERP) document was developed as a guidance manual for identifying specific violation types and defining Berkeley County's response to violations of the Stormwater Management Ordinance of Berkeley County, SC (Ordinance No. 07-07-44), the Berkeley County Stormwater Design Standards Manual, or site specific stormwater management plans. The goals of the Enforcement Response Plan are to:

- 1) Deter future noncompliance by the violator and other members of the regulated community,
- 2) Ensure that violators do not obtain economic benefit or advantage over competitors through noncompliance, and
- 3) Apply fair and consistent enforcement actions to the regulated community throughout the County.

Upon determination that a violation of any provisions referenced above has occurred, the County will notify the responsible party and may choose to assess and make a written demand for payment of a Civil Penalty. In addition to any applicable Civil Penalties (See Stormwater Management Ordinance Sec. 6):

- Any person(s) or entity that negligently or intentionally violates any provision of the above shall be guilty of a misdemeanor and punished within the jurisdictional limits of the magistrate's court.
- Berkeley County may withhold the release of permanent electric power to the site.
- Berkeley County may withhold or revoke permits related to the site.
- If Berkeley County performs corrective action due to continued non-compliance, then the costs incurred as a result of such action shall be reimbursed to Berkeley County by the owner or operator.
- If Berkeley County is fined and/or placed under a compliance schedule by the state or federal government for a violation(s) of its NPDES permit, and can identify the person(s) or entity who caused such violation(s) to occur, then Berkeley County may pass through the penalty and cost of compliance to that person(s) or entity.

This Enforcement Response Plan (ERP) document is for the use of Berkeley County personnel. Berkeley County reserves the right to change this document at any time, without prior notice, or to act at variance to this document. This document does not create any rights, implied or otherwise, to any third parties.

II. ENFORCEMENT ACTION DEFINITIONS

Correction Order:

(Stormwater Design Standards Manual Sec. 4.3.1)

The Correction Order is a written or verbal notice for first offenses of non-compliance with the County Stormwater Management Ordinance or the approved stormwater management plan. The purpose of the Correction Order is to give notice of the deficiencies, identify expected corrective results and provide a reasonable timeframe to the contractor prior to the County taking further action to get a problem resolved.

Notice of Violation (NOV):

(Stormwater Management Ordinance Sec. 6.1.b)

The Notice of Violation is a written notice which serves as a legal requirement to remove the violation(s) to the County Stormwater Management Ordinance or the approved stormwater management plan. It shall include the nature of the violation, the amount of time in which to correct deficiencies, the date on which an inspection will be made to make sure that corrective action has been performed, and the proposed penalty structure if corrective action is not taken by the inspection date.

Stop Work Order:

(Stormwater Management Ordinance Sec. 6.6 and Stormwater Design Standards Manual Sec. 4.3.3)

The Stop Work Order may allow or require correction of Notice of Violation (NOV) issues, but shall otherwise stop all other construction related activities. A Stop Work Order may carry with it Civil Penalties as well. Any person in violation of a Stop Work Order is subject to payment of all fees, bonds, and penalties prior to the lifting of the Stop Work Order.

Civil Penalty:

(Stormwater Management Ordinance Sec. 6.2 and Stormwater Design Standards Manual Sec. 4.3.3)

Any person violating any provision of the Stormwater Management Ordinance or approved stormwater management plan shall be subject to a Civil Penalty of not more than one thousand dollars (\$1000) for each violation. Each separate day of a violation constitutes a new and separate violation. Notice of Civil Penalty shall be provided via the issuance of a uniform summons.

Criminal Penalty:

(Stormwater Management Ordinance Sec. 6.4)

In addition to any applicable Civil Penalties, any person who willfully, with wanton disregard, or intentionally violates any provision of the Stormwater Management Ordinance or approved stormwater management plan shall be guilty of a misdemeanor and upon conviction shall pay a fine of not more than \$500.00 or imprisoned for not more than thirty (30) days. Each day of violation shall constitute a new and separate offense.

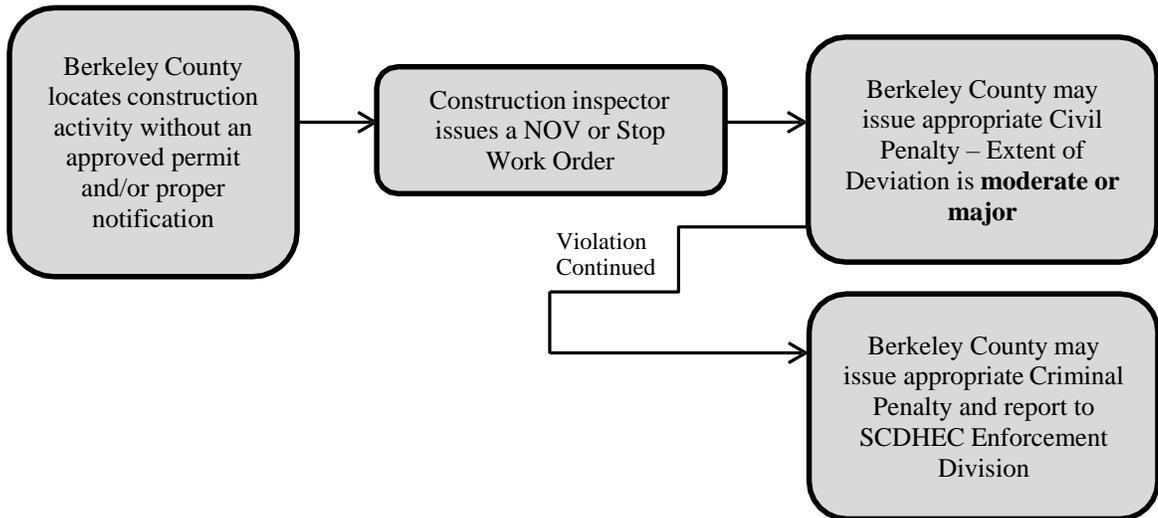
III. VIOLATION CATEGORIES

A. Construction/Permitting Violations

1. Initiation of construction activity without a site development/land disturbing/grading permit and/or proper notification.

Berkeley County response:

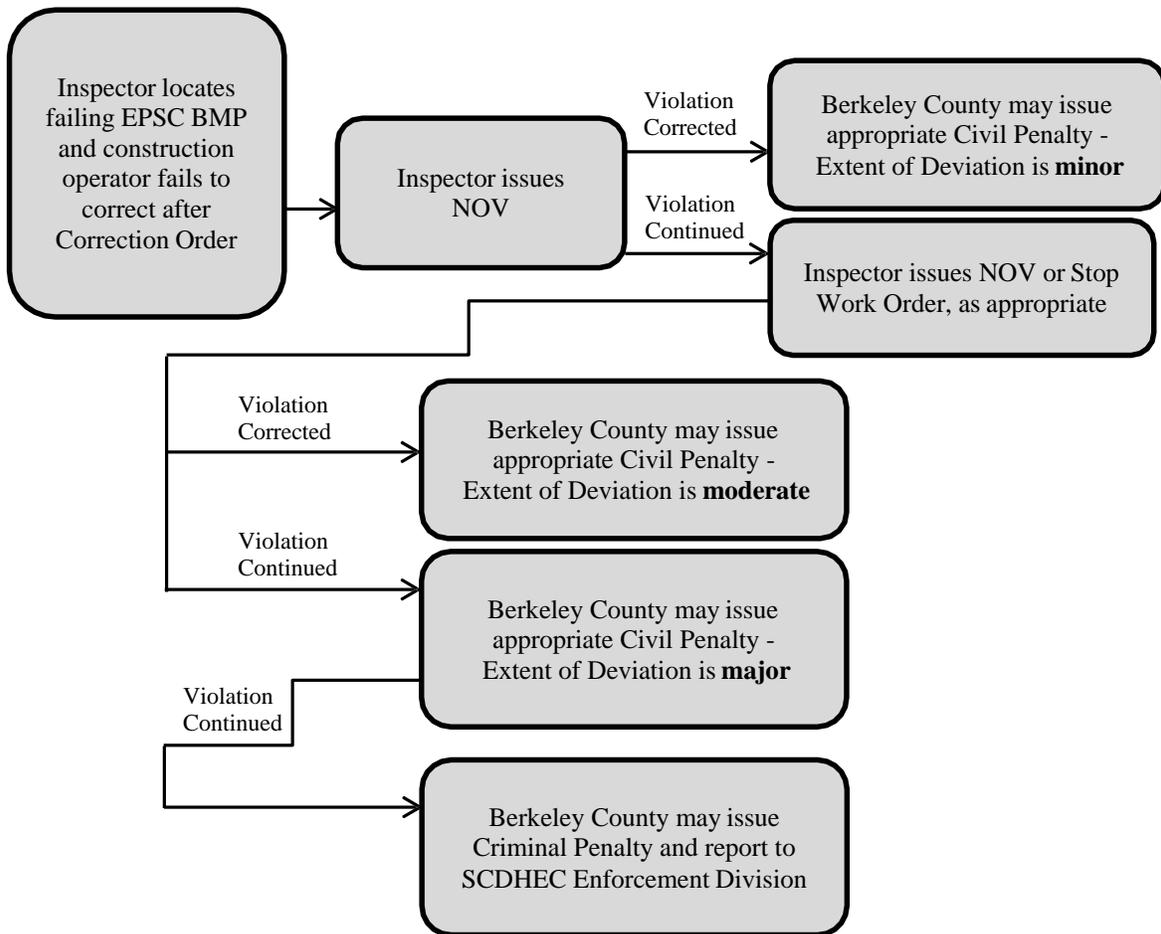
Berkeley County may issue a Notice of Violation (NOV) or Stop Work Order, as appropriate, for all violations involving initiation of construction activity without a site development/land disturbing/grading permit and proper notification. Appropriate Civil or Criminal Penalties may be issued. A repeat offense of failure to obtain the correct permit and notify the County prior to beginning construction will be considered a major offense. If non-compliance continues, the County may report the violation to SCDHEC Enforcement Division.



2. Failure to properly operate and/or maintain all BMPs, components, facilities, and equipment associated with site Erosion Prevention and Sediment Control (EPSC).

Berkeley County response:

In cases of minor violations for operation and maintenance of EPSC BMPs, the construction inspector may issue a verbal Correction Order prior to issuing written notifications. Berkeley County may issue a Notice of Violation (NOV) if the construction operator fails to correct deficiency after a Correction Order. Berkeley County will conduct follow-up inspections to ensure corrective action is provided. A Stop Work Order or additional NOV may be issued if corrective action is not provided. Appropriate Civil or Criminal Penalties may be issued. If non-compliance continues, the County may report the violation to SCDHEC Enforcement Division.



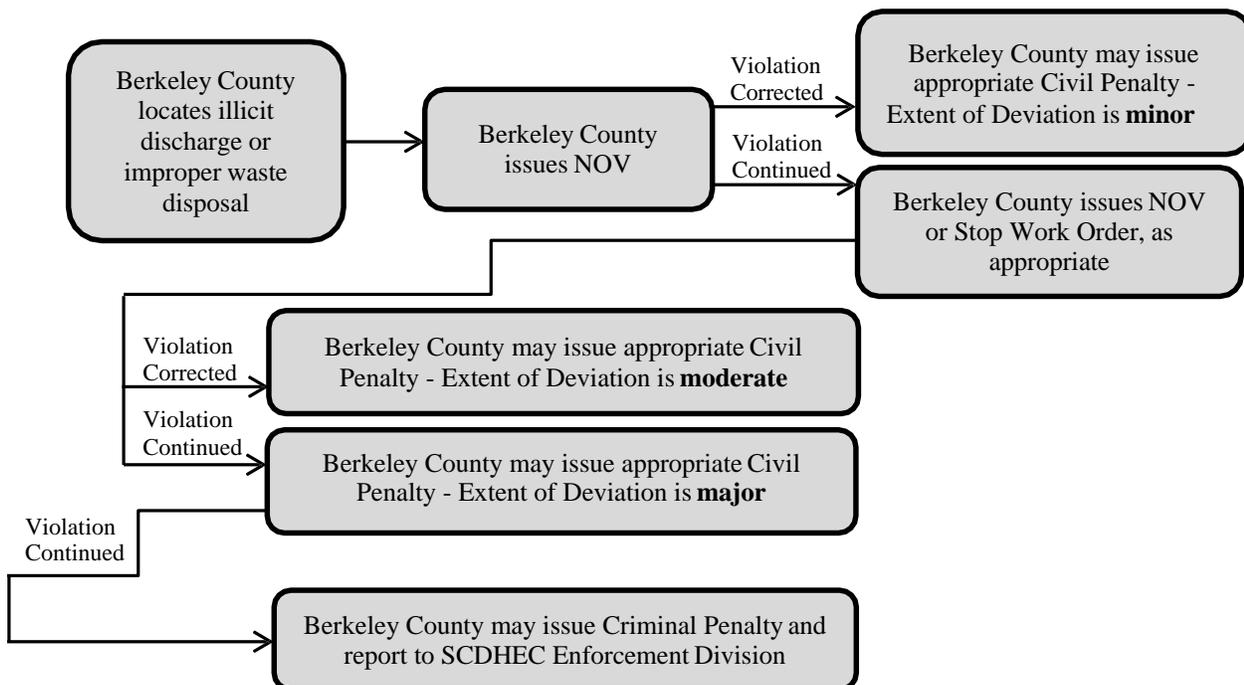
B. Illicit Discharge/ Illicit Connection/ Improper Waste Disposal

Berkeley County response:

Berkeley County must report immediately the occurrence of any dry weather flows believed to be an immediate threat to human health or the environment to SCDHEC Emergency Response, 1-888-481-0125. If the source of the suspected illicit discharge is found to be a suspected non-compliance with an NPDES permit, the appropriate SCDHEC Regional Office must be notified.

Once the source of the illicit discharge has been determined, Berkeley County will notify the responsible party of the discharge as soon as practicable but not later than three (3) days after that determination. The County will require the responsible party to conduct all necessary corrective actions to eliminate the non-stormwater discharge within 30 days. If elimination takes longer than 30 days, Berkeley County will require responsible parties to submit a plan with a schedule for elimination. Berkeley County will conduct a follow-up investigation to verify that the discharge has been eliminated upon being notified by responsible parties that the discharge has been eliminated.

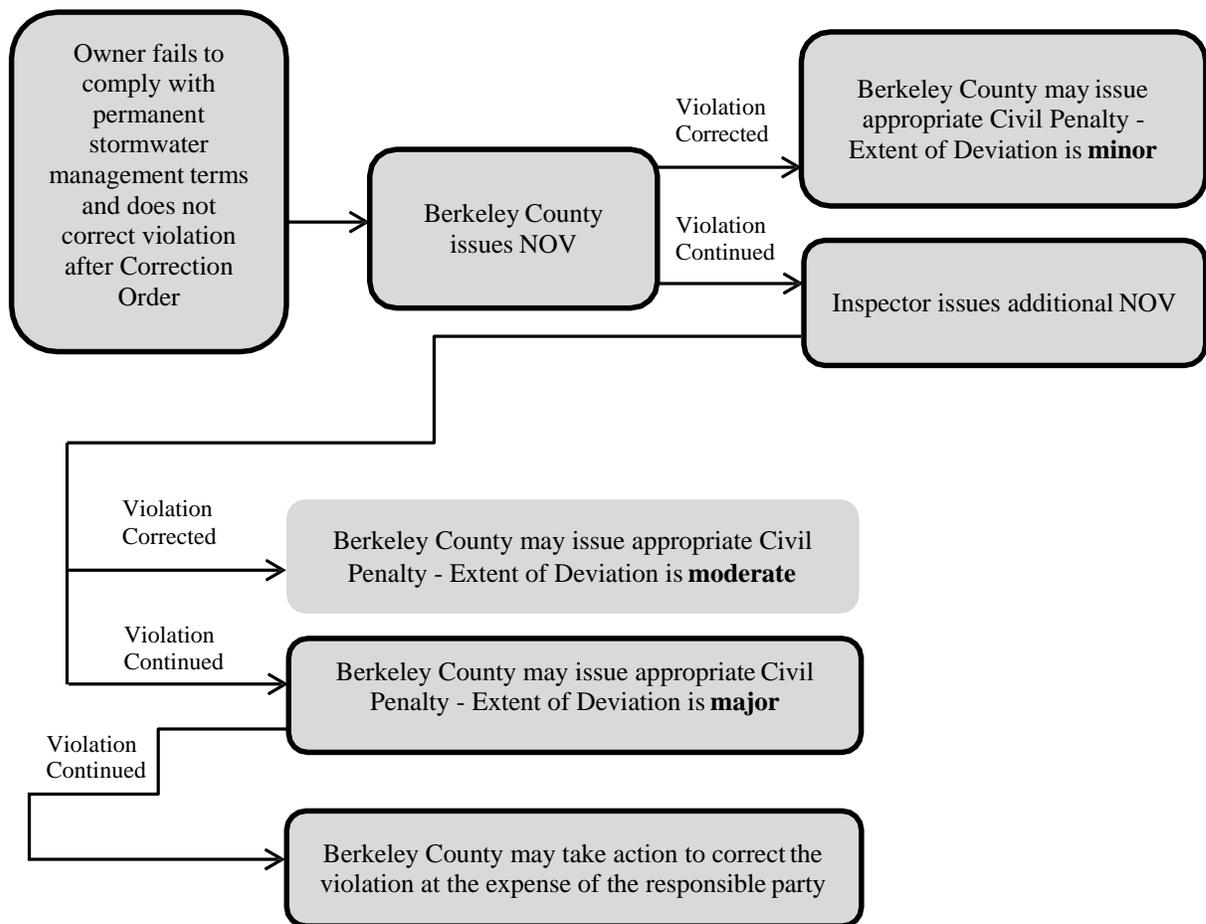
Berkeley County may issue a Correction Order prior to the initial Notice of Violation (NOV). Berkeley County will issue an additional NOV or Stop Work Order, as appropriate, after 30 days if the illicit discharge has not been eliminated and no schedule for elimination has been submitted. Berkeley County will conduct follow-up inspections to ensure corrective action is provided. Appropriate Civil or Criminal Penalties may be issued. If non-compliance continues, the County may report the violation to SCDHEC Enforcement Division.



C. Failure to Comply with Permanent Stormwater Management Requirements

Berkeley County response:

Berkeley County may issue a verbal Correction Order upon initial discovery of a permanent stormwater management violation. Berkeley County may issue a Notice of Violation (NOV) if the construction operator fails to correct deficiency after a Correction Order. Berkeley County will conduct follow-up inspections to ensure corrective action is provided. An additional NOV may be issued if corrective action is not provided. Appropriate Civil or Criminal Penalties may be issued.

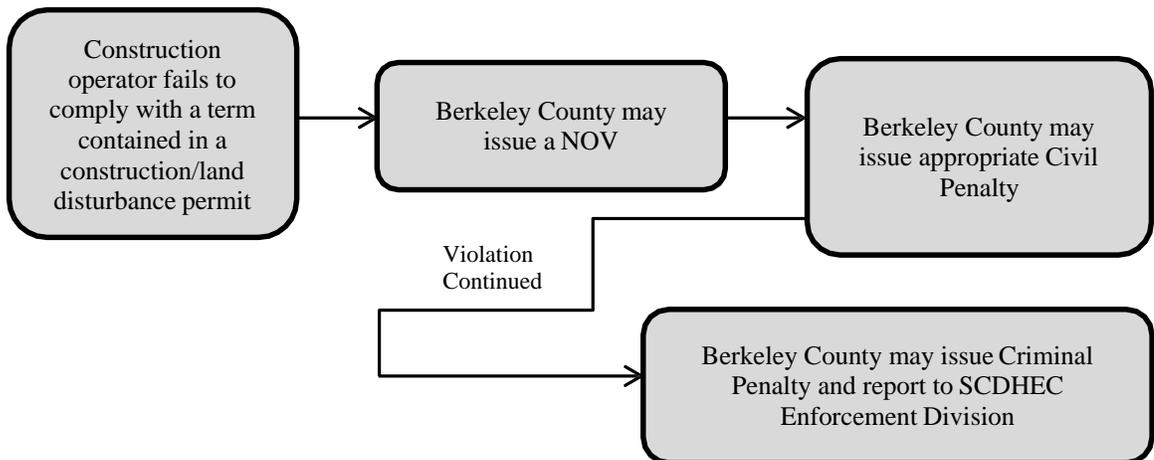


D. Failure to Comply with Permit

Failure to comply with a requirement, condition, or term contained in a construction permit, site development, land disturbance, or grading permit.

Berkeley County response:

Berkeley County may issue Notice of Violation (NOV) upon initial discovery of violation. Berkeley County will conduct follow-up inspections to ensure corrective action is provided. Appropriate Civil or Criminal Penalties may be issued. If non-compliance continues, the County may report the violation to SCDHEC Enforcement Division.

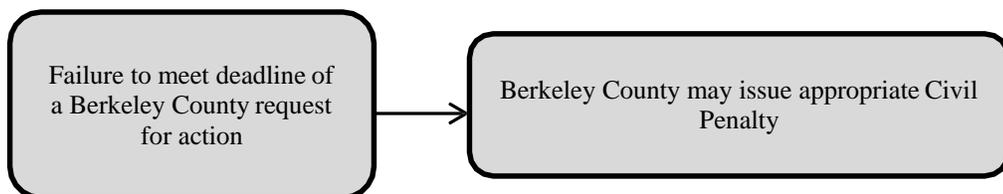


E. Failure to Comply with a County Request

Failure to comply with each requirement, term, or condition of a County request for action.

Berkeley County response:

For instances in which there is a failure to comply with a condition of a County request for action, Berkeley County may issue Civil Penalties when deadlines are not met.



IV. PENALTY CALCULATION RATIONALE

The total penalty calculation will include consideration of the following factors at the discretion of Berkeley County:

- 1) Degree of harm or potential for harm to the public health, safety, private property, or the environment.
- 2) Extent of Deviation* from the requirements of the regulation, standard, or permit.
- 3) Frequency or duration of the violation.
- 4) Economic benefit as a result of noncompliance.
- 5) Cost of restoration of the environment or abatement of the environmental harm.
- 6) Past performance record or past history of noncompliance.
- 7) Degree of willfulness or negligence.

*Extent of Deviation for Civil Penalty comes from flow charts for each violation category. When not specified, the maximum Civil Penalty is to be determined by Berkeley County. Suggested Civil Penalties are as follow:

Extent of Deviation	Suggested Maximum Civil Penalty (per day)
Minor	\$500
Moderate	\$750
Major	\$1000

When a violation is determined to involve criminal action, an additional Criminal Penalty of \$500 per day may be assessed.

A total penalty assessment rationale will be developed and outlined in writing for each enforcement action for which a penalty is assessed. Penalties for long-lasting and/or continuing violations (such as, but not limited to, unauthorized discharges or poor operation and maintenance) and recovery of economic benefit may be assessed per occurrence, per month, or per week.

Appendix G
Berkeley County
Contract with Clemson University/Carolina Clear

Berkeley County SWMP – MCMs 1 and 2 language provided by Clemson Carolina Clear – June 2014

Berkeley County has selected to partner with the Clemson Carolina Clear program to implement public education/outreach and public involvement and participation measures of the NPDES SMS4 permit. This is a regional stormwater outreach and involvement effort, the Ashley Cooper Stormwater Education Consortium, that includes the following communities at the time of submission.

- Berkeley County
- Charleston County
- Dorchester County
- City of Charleston
- City of Folly Beach
- City of Goose Creek
- City of Isle of Palms
- Town of James Island
- Town of Lincolnton
- Town of Mount Pleasant
- City of North Charleston
- Town of Sullivan's Island
- Town of Summerville

This coordinated effort will include a regional decision-making process that is consistent among all Carolina Clear-lead efforts with representatives from each MS4 participating in a prioritization strategy for effective outreach and involvement programming. This pollutant of concern analysis and prioritization process will include the following considerations, pulled together through a planning and reporting framework provided by Carolina Clear:

- An assessment of the region's TMDLs and 303(d) impaired waterbodies list.
- Public Works Departments, stormwater staff, and educational partners will evaluate common concerns and phone calls of stormwater-related issues across the region.
- Feedback from community and educational partners will also include a review of common problems potentially affecting local water resources and the audiences that may be responsible for addressing these problems.
- Telephone survey data collected in the fall of 2013 will be available in the fall/winter of 2014 to guide outreach prioritization, educational messaging and willingness to be involved. The results of this effort will be used as public input to the development of the SWMP as well as a baseline for broad program evaluation.

This process will result in a five-year outreach and involvement strategy that prioritizes resources and potential for sustainable impact across at least three pollutants of concern, behaviors to address, target audiences, motivating messages, vehicles for information delivery and short-term and long-term measures of success. This outreach plan will be a guiding document for this consortium's efforts, recognizing that new information, media opportunities, partnerships and new water quality data may affect both the strategy and means to measure program success.

Contractual Agreement
between
CLEMSON UNIVERSITY
and
BERKELEY COUNTY

PUBLIC awareness and education about natural resources is crucial to the process of protecting and restoring water quality. Clemson University (Clemson) and BERKELEY COUNTY will partner to deliver public education and outreach and public involvement/participation programming to general and targeted audiences towards achieving compliance with the public education and outreach and public involvement/participation requirements of the NPDES Phase II Stormwater Program.

NOW, the parties agree as follows:

1. Clemson will deliver public education and outreach and public involvement/participation with a goal to influence a more aware and involved public in regards to stormwater management decisions. The educational programs will include components designed for various residential and commercial audiences and others targeted for their impact to stormwater and nonpoint source pollution. This effort will be delivered through various means, as detailed below in items 4 and 5. Events will be held at Clemson and/or other available facilities in such a way to reach diverse and regionally distributed audiences. Such instruction may include the finishing of informational handouts, instructional manuals, promotional materials, webpages and similar such materials, as deemed appropriate by Clemson and the participating entity.
2. BERKELEY COUNTY will participate in a regional decision-making process to define regional priorities in regards to behaviors, pollutants, and audiences to be targeted for outreach. BERKELEY COUNTY shall provide input as available on audience demographics, behaviors based on staff observations, residential and commercial impacts related to stormwater management that may lead to compliance and enforcement actions, and other ~~input~~ based on stormwater operations.
3. BERKELEY COUNTY shall provide information regarding readily available delivery nodes for education and involvement programming (e.g., newsletters, community calendars, government access channels, community meetings, Council meetings, tax or water bills, etc.).
4. Clemson will raise public awareness using a mass media approach. Billboard and television public service announcements, radio broadcasts and interviews, newspaper articles, stories and advertisements, and publications are among the outlets considered for use in this effort.
5. Each of the public-related activities described below will be part of the core program on an annual basis and will target a specific audience, all subject to modification with the

approval of BERKELEY COUNTY and Clemson, as well as acknowledging regulatory direction and interpretation by South Carolina DHEC.

Clemson University will:

LEAD

- 5.1. Work with one regional association of stormwater managers and local decision-makers to update, plan and determine regional public education and outreach and public involvement/participation priorities from year-to-year (in this case, the ASHLEY COOPER STORMWATER EDUCATION CONSORTIUM).
- 5.2. Explore, pilot (as needed) and initiate strategic approaches to educating target audiences towards the goal of adopting improved behaviors and practices towards better stormwater management.

COMMUNICATE

- 5.3. Maintain webpage(s) with content specific to the regional outreach programs. Utilize tools to monitor website visits and other related statistics.
- 5.4. Maintain communication among regional partners through meetings, newsletters/e-news, one-on-one meetings or other means established as best practice for the partnership.

IMPLEMENT

- 5.5. Plan, develop, present and be a participant in at least three (3) community and public programs per year with emphasis on stormwater education. Provide resources to encourage continued learning and practice adoption.
- 5.6. Create at least three (3) news articles per year for the general public.
- 5.7. Plan and present homeowner and yard owner program(s) for individuals and families. Distribute or provide materials for distribution as part of workshops and/or provide resources to encourage continued learning and practice adoption.
- 5.8. Provide at least one (1) youth program per year within the region such as
 - i. Adopt-A-Watershed which uses a local watershed,
 - ii. Storm Drain Marking,
 - iii. 4-H Wetlands Project explores estuaries, marshes, and swamps,
 - iv. 4HcO Pontoon Classroom,
 - v. Engaging teachers in new watershed and stormwater curriculum meeting SC Standards, and
 - vi. EnviroScape* (tabletop landscape model used to teach audiences about watersheds and demonstrate and involve audience in nonpoint source pollution and best management practices).
- 5.9. Present at least one (1) program per year that addresses pollution prevention and alternatives for a target audience, as per the region's priorities.

- 5.10. Develop and provide for the general public, within means, items such as banners and promotional giveaways to serve as a way to attract audiences and increase regional consortium visibility.
- 5.11. Utilize mass media outlets to provide statewide education at an increased cost-effectiveness; as needed, locally utilize mass media such as newspaper's, radio, interviews and advertisements to address specific needs.

INVOLVE

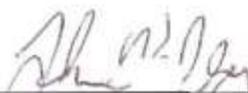
- 5.12. Provide at least one (1) opportunity for general public and at least one (1) opportunity for commercial audiences to be involved in improved watershed management and stormwater awareness.
- 5.13. Promote and expand web-based tools to encourage learning about and adoption of low impact development techniques (SC LID Atlas, <http://www.clemson.edu/public/carolinaclear/lidmap/>) and furthering involvement from citizens in watershed-focused volunteer opportunities (Watershed Stewardship Map, http://www.clemson.edu/restoration/focus_areas/restoration_ecology/projects/watershed_center/stewardship/index.html) and through the use of demonstration sites as warranted appropriate.

REPORT

- 5.14. Provide and manage a user-friendly database to track each year's activities.
 - 5.15. Annually, produce a document summarizing the year's efforts, successes, decision-making processes, partnerships and regional priorities.
 - 5.16. On request and based on current regulatory guidance, provide data for public education and outreach and public involvement/participation measures of the Annual Report Checklist required by DHEC of all Municipal Separate Storm Sewer Systems (MS4s).
6. Clemson will provide accountability statistics for each of the activities as best can be estimated. The statistics will include the following accomplishment indicators:
 - 6.1. Number of educational programs and activities conducted.
 - 6.2. Number of people reached through educational programs or involved by outreach programs according to method, audience or targeted behavior.
 - 6.3. Number of people receiving information through "non-program" contacts such as telephone, office, visits, website contacts, visual and print media.
 - 6.4. Evaluation of activities and the pollutant or behavior targeted.
 - 6.5. As available, feedback on programs and anecdotal evidence of successful program implementation.
 7. At a minimum of *once per cycle* (anticipated as no less than 3 years and no more than 5 years), and on the Carolina Clear statewide schedule so as to gain regional comparison information, implement statistically relevant survey instruments to gain insight on the awareness, knowledge and behaviors of the general public related to stormwater and watershed management, as well as regional effort awareness.

8. The County shall provide payment in the amount of \$25,000 annually for the core program. Fees for additional services will be negotiated based on cost. These costs are based on the urbanized area population of each MS4, county and/or defined area(s).
9. A mutually agreeable estimated delivery schedule shall provide activities distributed through each year in an Annual Activity Plan (as default) or on an otherwise agreed upon multi-year activity plan, which will be noted as a regional decision documented in writing for the regional entity.
10. Clemson is insured by the State Insurance Reserve Fund pursuant to the State Tort Claims Act. BERKELEY COUNTY is also insured by the State Insurance Reserve Fund. The parties agree that each shall be responsible for the negligent acts or omissions of its own officers, employees, and agents and that neither is responsible for the negligent acts or omissions of the other's officers, employees, and agents in the performance of the requirements of this agreement.

This contract is subject to the terms and conditions of the Memorandum of Understanding between Clemson and BERKELEY COUNTY, dated 3/5/13, which are fully incorporated herein by reference.



 John Kelly, Vice President

Clemson University

3/5/13

 Date



 Daniel W. Davis, County Supervisor

Berkeley County

3/5/13

 Date

Memorandum of Understanding

between

CLEMSON UNIVERSITY

and

BERKELEY COUNTY

WHEREAS, Clemson University (hereinafter, CLEMSON) holds in its Extension faculty and staff various levels of expertise concerning stormwater compliance requirements as promulgated by SC DHEC and USEPA, and

WHEREAS, BERKELEY COUNTY (hereinafter BERKELEY COUNTY) is seeking a partnership to implement stormwater public education and outreach and public involvement/participation programming; and

WHEREAS, Clemson University has developed an environmental outreach program (Carolina Clear), portions of which apply to the impact of stormwater on natural resources;

THEREFORE, be it resolved that since Carolina Clear seeks to educate citizens about the impacts of stormwater and means to improve stormwater management and since this program provides outreach opportunities to address a broad range of water quality issues including the impact of stormwater on natural resources, Clemson and BERKELEY COUNTY will collaborate to address stormwater public education and outreach and public involvement/participation. Carolina Clear is a comprehensive approach developed by Clemson University Cooperative Extension Service (CUCES) to inform and educate communities about, among other issues, 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 these resources play in enhancing the state's economy, environmental health, and overall quality of life.

In order to assist BERKELEY COUNTY in satisfying the Public Education and Outreach Minimum Control Measure, as required by the NPDES Phase II Stormwater Program, CUCES proposes to utilize selected components of the Carolina Clear program in order

- Coordinate and lead a regional body of partners including community representatives joined together by a shared interest in watershed restoration, protection, and improved stormwater management.

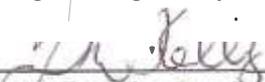
- Determine the appropriate public awareness campaign with BERKELEY COUNTY and the community's guidance on target behaviors, audiences, pollutants and established venues and modes for outreach. Some program implementation approaches, BMPs (*i.e.*, the program actions/activities), and measurable goals are contained in the individual agreement and seek to
 - o Form partnerships,
 - o Use and develop education materials and strategies, and
 - o Reach diverse audiences.
- Implement a strategic public education program with BERKELEY COUNTY, or conduct equivalent outreach activities addressing the awareness of stormwater pollution and its effects on natural resources and the specific activities and safe alternatives to improve stormwater management.

In order to satisfy the Public Involvement/Participation Minimum Control Measure, as required by the NPDES Phase II Stormwater Program, CUCES proposes to

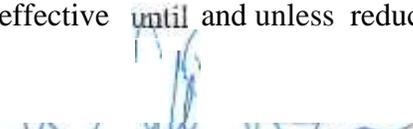
- Provide opportunities for citizens and various audiences to become active in stormwater management.
- Provide program accountability measures including estimated number of people contacted, publications produced and distributed, and measures of outreach impacts and possible behavior change, and other specifics as appropriate considering SCDHEC and USEPA guidance.
- Other programs and measures as specified in the Contractual Agreement.

Because each agreement is unique to the requirements of the circumstances, Clemson and BERKELEY COUNTY agree that the specific metrics of each contract shall be individually negotiated and delineated in the Contractual Agreement. Neither party has any responsibility for any performance obligations except as indicated in a subsequently negotiated Contractual Agreement.

This Memorandum of Understanding will commence upon the date of the signature of the last party to this contract and will run thereafter for a period of five (5) years. The parties may agree in writing to extend this agreement for an additional 5-year period, provided such agreement is executed no later than 30 days prior to the expiration of this contract. No amendments, changes or modifications will be effective until and unless reduced to writing and signed by the parties.



 John Kelly, Vice President



 Daniel W. Davis, County Supervisor

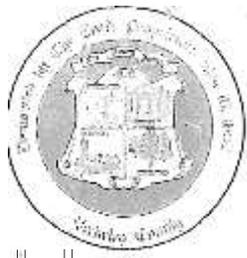
Clemson University

 Date

Berkeley County

 Date

Appendix H
Berkeley County
Intergovernmental Agreements with the City of Hanahan and the City of Goose Creek



BERKELEY COUNTY
SUPERVISOR'S OFFICE

William W. Peagler, III
SUPERVISOR

RECEIVED
NOV 16 2015
Thomas 1:30pm
BY: SHONDA BAGGETT

October 20, 2015

Dennis Hatton, City Administration
City of Goose Creek
PO Drawer 1768
Goose Creek, South Carolina 29445-1768

Dear Dennis,

Enclosed please find the Intergovernmental Agreement regarding the NPDES stormwater discharge and other stormwater related services.

We look forward to partnering with the City of Goose Creek in this program.

Sincerely,

A handwritten signature in cursive script that reads "Bill".

William W. Peagler, III
County Supervisor

WWP, III/bwm
Encl: as stated
cc: John O Williams
Ton Lewis
Clint Busby

STATE OF SOUTH CAROLINA) INTERGOVERNMENTAL
) AGREEMENT – NPDES STORMWATER
) DISCHARGE PERMIT COMPLIANCE
) AND OTHER STORMWATER RELATED
 COUNTY OF BERKELEY) SERVICES

THIS AGREEMENT (Agreement) is made and entered into as of this 15th _____ day of October, 2015, by and between the County of Berkeley, S.C. (the County) and the City of Goose Creek, S.C. (the City)

WHEREAS, the County and the City are required by law to establish a stormwater management program pursuant to a National Pollutant Discharge Elimination System (NPDES) Permit (SCR030000) (the Permit) issued by the South Carolina Department of Health and Environmental Control (DHEC), the purpose of which is to protect, maintain and enhance the environment of the County and City and the short-term and long-term public health, safety and general welfare of the citizens of the County and City by addressing discharges of pollutants to the stormwater drainage system; and

WHEREAS, the County has developed a Stormwater Management Program (the SWMP) for the unincorporated areas of the County; and

WHEREAS, the County has developed a Stormwater Management Utility for the purpose of implementing the Berkeley County SWMP and satisfying the regulatory requirements of the Permit; planning, designing, constructing, funding, and maintaining stormwater management, sediment control, and flood control programs, projects and facilities; and reviewing and approving stormwater management and sediment control plan for land disturbing activities; and providing for the administration and enforcement thereof; and

WHEREAS, the County and City believe it is in the best interest of their citizens to avoid duplication of services with respect to stormwater management by entering into an agreement for the County to administer and enforce a SWMP for the City in order to provide for the effective and efficient handling of stormwater in the City and within as much of the County as possible;

NOW THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, the County and the City hereby agree as follows:

A. Mutual Protections for the City and County

The City and County hereby mutually covenant and agree to take, use, provide and make, all proper necessary and sufficient precautions, safeguards and *protections* against the occurrence of any accidents, injuries, or damages to any person or property in performing or failing to perform any actions under this Agreement, and to be responsible for and save harmless the other party) from the payment of all sums of money by reason of all or any accidents, injuries, or damages that may occur in the progress of any work (or arising out of the alleged failure to perform work) performed under this Agreement and arising out of or in connection with intentional, willful, wanton, reckless, or negligent conduct of the responsible party. This payment obligation shall include, but not be limited to, losses

incurred under this Agreement for or by reason of the violation of any ordinance or regulation, or the laws of the State of South Carolina or of the United States. The City and County agree that the responsible party shall have the authority to control any litigation that arises from the responsible party's related activities under this section, provided that the parties are not adverse in such litigation.

B. Obligations of the City

1. The City authorizes the County to administer the SWMP within the municipal limits of the City. This agreement and the SWMP shall authorize enforcement by City and County representatives. The City agrees that Berkeley County shall utilize the Berkeley County Stormwater Design Standards Manual in the administration of the SWMP. All costs of defending the ordinances adopted by the City shall be borne by the City.
2. The City agrees to cooperate with the County to enable the County to implement the SWMP, the Manual, Permit, and stormwater utility fees within the City. The City agrees to educate its staff regarding the provisions of each, and will implement the operational measures necessary for compliance for City property and operations.
3. The City hereby delegates to the County the duties of development, implementation and enforcement of the SWMP, and the efforts of monitoring, recordkeeping and reporting which may be imposed by the Permit, subject to Section 4.4 thereof (as may be amended from time to time). The City shall make available to the County necessary documentation related to annual reporting associated with the Permit.
4. The City shall provide the County with documentation of easements and rights-of-way as needed to operate and maintain the drainage system. In those cases where easements or rights-of-way have not been obtained, but are needed, the City agrees to assist the County in obtaining an appropriate easement or right-of-way.

C. Obligations of the County

1. The County agrees to fulfill the responsibilities granted it by the City pursuant to this Agreement.
2. The County shall be responsible for the day to day operation and maintenance activities as well as the long-term management of the City's storm drainage system.
3. The methodology for determining fees or charges for this program shall be determined by the County. The County shall bill and collect stormwater management utility user fees from property owners, tenants, and other appropriate parties within the City using the same methods contained in the County's Stormwater Management Utility Ordinance.
4. The County shall implement and operate all six (6) of the minimum control measures as identified in the Permit, to include the Program Description of Elements, Measures and Services attached to this Agreement as Exhibit A and made part hereof by reference, within the City. While the County will be responsible for conducting and ensuring

compliance with the Permit, this does not exclude the City from assisting in these activities when deemed necessary or appropriate by the City and County.

5. The County hereby assumes the duties of development, implementation and enforcement of the SWMP, and the efforts of monitoring, recordkeeping and reporting which may be imposed by the Permit, subject to Section 4.4 thereof (as may be amended from time to time).
6. The City agrees to assist with information and non-legal advice regarding defense of any challenges to the County's Ordinances and program compliance.

D. Miscellaneous

1. This Agreement will become effective upon execution by authorized representatives of both parties.
2. This Agreement may not be revised or modified except by written mutual agreement of the City and the County.
3. The City and County reserve the right to challenge any of the terms, conditions, or provisions of the Permit, its enabling laws, rules and regulations and /or interpretations thereof by authorities asserting jurisdiction.
4. If any section, subsection, sentence, clause, phrase, or portion of this Agreement is for any reason held invalid or unconstitutional by any court or competent jurisdiction, such provision and such holding shall not affect the validity of the remaining portion of this Agreement.
5. Those rights and obligations under this Contract, which, by their nature should survive, shall remain in effect after termination, suspension or expiration hereof.
6. The failure of either Party to enforce at any time any of the provisions of this Contract shall in no way be construed as a waiver of such provision nor in any way affect the right of either Party thereafter to enforce each and every provision of this Contract. There can be no assignment by either party of any rights or responsibilities hereunder without the consent of the other party.
7. All parties acknowledge that nothing under this agreement creates a right of action for any person or entity, and that this contract does not create or otherwise permit third party beneficiary rights or related causes of action. It is further acknowledged that the *parties* hereto are governmental entities providing these services in a governmental capacity. Accordingly, it is agreed that the parties are sovereigns that are, to the extent permitted by the South Carolina Tort Claims Act, and other applicable law, protected by sovereign immunity with respect to all acts and omissions related hereto.
8. The City and County agree to enact, follow and enforce such ordinances, rules, policies, and regulations as may be necessary to carry out the terms of this Agreement.

9. Any notices which may be permitted or required hereunder shall be in writing and shall be deemed to have been duly given as of the date and time the same are personally delivered or are deposited with the United States Postal Service, postage prepaid, and addressed as follows:

If to the County:
Attn: Stormwater Management Program, Berkeley County Engineering, PO Box 6122
Moncks Corner, SC 29461

If to the City:
Attn: Director of Public Works, City of Goose Creek, P.O. Drawer 1768, Choose Creek,
SC 29445

10. This agreement shall be effective as of the date listed above, and shall continue from year to year unless terminated. Either party may terminate this agreement by delivering 12 months' advance written notice of termination to the other Party's address listed above.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals, by and through the undersigned agents, this 15th day of October, 2015.

SIGNED, SEALED & DELIVERED
IN THE PRESENCE OF:

Mary K. Dix

BERKELEY COUNTY

By:

[Signature]

Its:

[Signature]
County Supervisor

[Signature]

THE CITY OF GOOSE CREEK

By:

[Signature]

Its:

[Signature]

Exhibit A

Program Description of Elements, Measures and Services Berkeley County will provide to the City in association with the Intergovernmental Agreement (IGA) for NPDES Stormwater Discharge Permit Compliance and Other Stormwater Related Services.

Notice of Intent (NOI):

- The County will review and update the City's NOI for consistency with the County's NOI and update the NOI as necessary for compliance with SCDHEC NPDES MS4 Permit NOI submittal requirements.

Stormwater Management Program (SWMP):

- The County will review, update and manage the City's SWMP and all associated documents for consistency with the County's SWMP and for compliance with the NPDES MS4 Permit requirements.
- The County will provide necessary updates to the SWMP and all associated documents as required by the NPDES M34 Permit requirements.
- The County will implement the City's SWMP.
- » The County will review and update the City's Stormwater Management Ordinance for consistency with the County Stormwater Management Ordinance.

Enforcement Response Plan (ERP):

- The County will review and update the City's ERP for consistency with the County's ERP.
- The County will implement the ERP within the City.
- The County will perform all necessary stormwater inspections, generate inspection reports and initiate enforcement actions for all stormwater violations within the City.
- The County will notify and coordinate any and all enforcement actions taken within the City with appropriate City personnel.
- The County will maintain records of all inspections and enforcement actions performed within the City.

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- The County will program and implement Best Management Practices (BMPs] as necessary to address TMDLs and discharges to impaired waters as required by the NPDES MS4 Permit.

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- The County will maintain the partnership with the Ashley Cooper Stormwater Education Consortium.
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- The County will initiate enforcement actions as necessary to eliminate illicit discharges in accordance with the ERP for all illicit discharges found during outfall dry weather screening.
- The County will inventory and update the City's stormwater system and establish a GIS map of the City's stormwater system.

- The County will perform periodic inspections of the City's stormwater system for illicit discharges and initiate enforcement actions for any illicit discharges found.
- The County will develop and perform illicit discharge training at all appropriate municipal staff as required by the NPDES MS4 Permit.
- The County will establish a hotline for citizens of the City to report illicit discharges.

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- The County will review stormwater, erosion & sediment control, pollution prevention, site prep and grading plans for all residential, commercial, and industrial development and other construction projects within the City for compliance with County and state requirements as required by the NPDES MS4 Permit.
- The County will track all active construction projects within the City and maintain a database of all active construction projects.
- The County will perform stormwater and erosion and sediment control inspections of all residential, commercial and industrial construction projects within the City as required by the NPDES MS4 Permit.
- The County will track all active construction projects and maintain a database of all inspection reports from start of construction through construction completion and site stabilization.
- The County will initiate and manage enforcement actions for all non-compliant and deficient stormwater construction in accordance with the ERP.
- The County will provide staff training as required by the NPDES MS4 Permit.

Post-Construction Stormwater Management for New Development and Redevelopment:

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- The County will review stormwater plans for site performance post-construction stormwater control measures as required by the NPDES MS4 Permit.
- The County will review for and ensure long-term maintenance of post-construction stormwater control measures installed to meet site performance standards.
- The County will establish and maintain an inventory of all installed post-construction stormwater control measures.
- The County will inspect all post-construction stormwater control measures installed during construction, upon completion of construction and after construction as required by the NPDES MS4 Permit.
- The County will maintain a database of all post-construction inspection reports and enforcement actions in accordance with the NPDES Permit and ERP.

Pollution Prevention/Good Housekeeping for Municipal Operations:

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- The County will establish and maintain an inventory of all municipally owned stormwater controls within the City.
- The County will develop and perform Pollution Prevention/Good Housekeeping training of all appropriate municipal staff as required by the NPDES MS4 Permit.
- The County will perform a comprehensive assessment of all municipally owned facilities and maintain a database of assessment results.
- The County will identify all municipal High-Priority facilities within the City and perform facility specific inspections of all High Priority facilities as required by the NPDES MS4 Permit.
- The County will inventory and prioritize the municipally owned or operated stormwater system structures and catch basins within the City and implement a maintenance plan and schedule for the stormwater system structures and catch basins.
- The County will implement pollution prevention measures for all operation and maintenance activities performed within the City.
- The County will inspect and maintain all municipally owned or operated stormwater controls as required by the NPDES MS4 Permit.

Reviewing and Updating the SWMP:

- The County will perform an annual review of the City's SWMP.
- The County will update the City's SWMP as necessary to add or modify selected BMPs and comply with the NPDES MS4 Permit.

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- The County will maintain records of all illicit discharge inspection reports and enforcement actions within the City.
- The County will maintain records and track all active stormwater construction projects within the City.
- The County will maintain records of all stormwater construction inspections, post-construction inspections and enforcement actions associated with construction activity within the City.
- The County will maintain records of all post-construction BMPs and BMP inspections with the City.

- The County will maintain records of illicit discharge and good housekeeping training of municipal staff.
- The County will maintain records of all municipal facility assessments and high priority inspections within the City.
- « The County will maintain records of all stormwater system maintenance, catch basin maintenance, stormwater control maintenance and street sweeping within the City.
- The County will prepare all annual reports to be submitted to SCDHEC in accordance with the NPDES MS4 Permit.

Stormwater Management Utility:

- The County will implement the Stormwater Management Utility Ordinance within the City.
- The County will manage the Stormwater Management Utility within the City.
- The County will bill and collect Stormwater Management Utility fees on parcels and users within the City.
- The County will perform, update and maintain impervious surface area calculation data within the City in association with the Stormwater Management Utility Rate Study.
- The County will incorporate parcels and users within the City in the Stormwater Management Utility Rate Study.
- The County will maintain records of all stormwater utility fees collected and stormwater utility revenues spent within the City.

Stormwater Capital Improvements:

- The County and the City will establish a Stormwater Advisory Board consisting of representatives of the both the County and City.
- The Stormwater Advisory Board will program, schedule and fund stormwater capital improvement projects and stormwater BMPs utilizing Stormwater Utility fees collected from parcels and users within the County and City.
- The County will implement, manage and construct stormwater capital improvement projects and stormwater BMPs under the oversight of the Stormwater Advisory Board and in accordance with the Stormwater Management Utility Ordinance.

BERKELEY COUNTY
SUPERVISOR'S OFFICE

William W. Peagler, III
SUPERVISOR

November 3, 2015

Johnny Cribb, City Administrator
City of Hanahan
1255 Yeamans Hall Road
Hanahan, South Carolina 29410

For your
files

Dear Johnny,

Enclosed please find the Intergovernmental Agreement regarding the NPDES stormwater discharge and other stormwater related services.

We look forward to partnering with the City of Hanahan in this program.

Sincerely,

William W. Peagler, III
County Supervisor

WWP, I /bwm
Encl: as stated
cc: John O Williams
Tom Lewis

LEGAL
SEP
BERKELEY COUNTY

) AGREEMENT - NPDES STORMWATER
) DISCHARGE PERMIT COMPLIANCE
) CB OTWER STO ACER L TEB

THIS AGREEMENT (Agreement) is made and entered into as of this 9th day of October, 2015, by and between the County of Berkeley, S.C. (the County) and the City of Hanahan (the City).

WHEREAS, the County and the City are required by law to establish a stormwater management program pursuant to a National Pollutant Discharge Elimination System (NPDES) Permit (SCR030000) (the Permit) issued by the South Carolina Department of Health and Environmental Control (DHEC), the purpose of which is to protect, maintain and enhance the environment of the County and City and the short-term and long-term public health, safety and general welfare of the citizens of the County and City by addressing discharges of pollutants to the stormwater drainage system; and

WHEREAS, the County has developed a Stormwater Management Program (the SWMP) for the unincorporated areas of the County; and

WHEREAS, the County has developed a Stormwater Management Utility for the purpose of implementing the Berkeley County SWMP and satisfying the regulatory requirements of the Permit; planning, designing, constructing, funding, and maintaining stormwater management, sediment control, and flood control programs, projects and facilities; and reviewing and approving stormwater management and sediment control plan for land disturbing activities; and providing for the administration and enforcement thereof; and

WHEREAS, the County and City believe it is in the best interest of their citizens to avoid duplication of services with respect to stormwater management by entering into an agreement for the County to administer and enforce a SWMP for the City in order to provide for the effective and efficient handling of stormwater in the City and within as much of the County as possible;

NOW THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, the County and the City hereby agree as follows:

A. Mutual Protections for the City and County

The City and County hereby mutually covenant and agree to take, use, provide and make, all proper necessary and sufficient precautions, safeguards and protections against the occurrence of any accidents, injuries, or damages to any person or property in performing or failing to perform any actions under this Agreement, and to be responsible for and save harmless the other party from the payment of all sums of money by reason of all or any accidents, injuries, or damages that may occur in the progress of any work (or arising out of the alleged failure to perform work) performed under this Agreement and arising out of or in connection with intentional, willful, wanton, reckless, or negligent conduct of the responsible party. This payment obligation shall include, but not be limited to, losses

incurred under this Agreement for or by reason of the violation of any ordinance or regulation, or the laws of the State of South Carolina or of the United States. The City and County agree that the responsible path shall have the authority to control any litigation that arises from the responsible path's related activities under this section, provided that the parties are not adverse in such litigation.

B. Obligations of the City

1. The City authorizes the County to administer the SWMP within the municipal limits of the City. This agreement and the SWMP shall authorize enforcement by City and County representatives. The City agrees that Berkeley County shall utilize the Berkeley County Stormwater Design Standards Manual in the administration of the SWMP. All costs of defending the ordinances adopted by the City shall be borne by the City.
2. The City agrees to cooperate with the County to enable the County to implement the SWMP, the Manual, Permit, and stormwater utility fees within the City. The City agrees to educate its staff regarding the provisions of each, and will implement the operational measures necessary for compliance for City property and operations.
3. The City hereby delegates to the County the duties of development, implementation and enforcement of the SWMP, and the efforts of monitoring, recordkeeping and reporting which may be imposed by the Permit, subject to Section 4.4 thereof (as may be amended from time to time). The City shall make available to the County necessary documentation related to annual reporting associated with the Permit.
4. The City shall provide the County with documentation of easements and rights-of-way as needed to operate and maintain the drainage system. In those cases where easements or rights-of-way have not been obtained, but are needed, the City agrees to assist the County in obtaining an appropriate easement or right-of-way.

C. Obligations of the County

1. The County agrees to fulfill the responsibilities granted it by the City pursuant to this Agreement.
2. The County shall be responsible for the day to day operation and maintenance activities as well as the long-term management of the City's storm drainage system.
3. The methodology for determining fees or charges for this program shall be determined by the County. The County shall bill and collect stormwater management utility user fees from property owners, tenants, and other appropriate parties within the City using the same methods contained in the County's Stormwater Management Utility Ordinance.
4. The County shall implement and operate all six (6) of the minimum control measures as identified in the Permit, to include the Program Description of Elements, Measures and Services attached to this Agreement as Exhibit A and made part hereof by reference, within the City. While the County will be responsible for conducting and ensuring compliance with the Permit, this does not exclude the City from assisting in these

activities when deemed necessary or appropriate by the City and County.

5. The County hereby assumes the duties of development, implementation and enforcement of the SWMP, and the efforts of monitoring, recordkeeping and reporting which may be imposed by the Permit, subject to Section 4.4 thereof (as may be amended from time to time).
6. The City agrees to assist with information and non-legal advice regarding defense of any challenges to the County's Ordinances and program compliance.

D. Miscellaneous

1. This Agreement will become effective upon execution by authorized representatives of both parties.
2. This Agreement may not be revised or modified except by written mutual agreement of the City and the County.
3. The City and County reserve the right to challenge any of the terms, conditions, or provisions of the Permit, its enabling laws, rules and regulations and/or interpretations thereof by authorities asserting jurisdiction.
4. If any section, subsection, sentence, clause, phrase, or portion of this Agreement is for any reason held invalid or unconstitutional by any court or competent jurisdiction, such provision and such holding shall not affect the validity of the remaining position of this Agreement.

Those rights and obligations under this Contract, which, by their nature should survive, shall remain in effect after termination, suspension or expiration hereof.

6. The failure of either Party to enforce at any time any of the provisions of this Contract shall in no way be construed as a waiver of such provision nor in any way affect the right of either Party thereafter to enforce each and every provision of this Contract. There can be no assignment by either party of any rights or responsibilities hereunder without the consent of the other party.
7. All parties acknowledge that nothing under this agreement creates a right of action for any person or entity, and that this contract does not create or otherwise permit third party beneficiary rights or related causes of action. It is further acknowledged that the parties hereto are governmental entities providing these services in a governmental capacity. Accordingly, it is agreed that the parties are sovereigns that are, to the extent permitted by the South Carolina Tort Claims Act, and other applicable law, protected by sovereign immunity with respect to all acts and omissions related hereto.

The City and County agree to enact, follow and enforce such ordinances, rules, policies, and regulations as may be necessary to carry out the terms of this Agreement.

9. Any notices which may be permitted or required hereunder shall be in writing and shall be deemed to have been duly given as of the date and time the same are

personally delivered or are deposited with the United States Postal Service, postage prepaid, and addressed as follows:

If to the County:

Attn: Stormwater Management Program, Berkeley County Engineering, PO Box 6122
Moncks Corner, SC 29461

If to the City:

Attn: City Administrator, City of Hanahan, 1255 Yeamans Hall Road, Hanahan, SC
29410

10. This agreement shall be effective as of the date listed above, and shall continue from year to year unless terminated. Either party may terminate this agreement by delivering 12 months' advance written notice of termination to the other Party's address listed above.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals, by and through the undersigned agents, this _____ day of October, 2015.

SIGNED, SEALED & DELIVERED
IN THE PRESENCE OF:

Nyark K. Dip
[Signature]

BERIKLEY COUNTY

By: [Signature]

Its: COUNTY SUPERVISOR

Kimberly C. Peters

THE CITY OF HANAHAN

By: [Signature]

Its: City Administrator

Clark of Council

Program Description of Elements, Measures and Services Berkeley County will provide to the City in association with the Intergovernmental Agreement (IGA) for NPDES Stormwater Discharge Permit Compliance and Other Stormwater Related Services.

Notice of Intent (NOI):

- The County will review and update the City's NOI for consistency with the County's NOI and update the NOI as necessary for compliance with SCDHEC NPDES MS4 Permit NOI submittal requirements.

Stormwater Management Program (SWMP):

- The County will review, update and manage the City's SWMP and all associated documents for consistency with the County's SWMP and for compliance with the NPDES MS4 Permit requirements.
- The County will provide necessary updates to the SWMP and all associated documents as required by the NPDES MS4 Permit requirements.
- The County will implement the City's SWMP.
- The County will review and update the City's Stormwater Management Ordinance for consistency with the County Stormwater Management Ordinance.

Enforcement Response Plan(ERP):

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- The County will implement the ERP within the City.
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- The County will notify and coordinate any and all enforcement actions taken within the City with appropriate City personnel.
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- The County will assess the City's receiving water conditions and impacts.

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-
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- The Stormwater Advisory Board will program, schedule and fund stormwater capital improvement projects and stormwater BMPs utilizing Stormwater Utility fees collected from parcels and users within the County and City.
- The County will implement, manage and construct stormwater capital improvement projects and stormwater BMPs under the oversight of the Stormwater Advisory Board and in accordance with the Stormwater Management Utility Ordinance.

Appendix I
Berkeley County
Pollution Prevention/Good Housekeeping Manual



BERKELEY COUNTY STORMWATER MANAGEMENT PROGRAM

POLLUTION PREVENTION/GOOD HOUSEKEEPING MANUAL

Adopted February 23, 2011

**1003 Highway 52
Post Office Box 6122
Moncks Corner, SC 29461-6120
Telephone: 843.719.4127**

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1.0 INTRODUCTION

Berkeley County must develop a program for pollution prevention/good housekeeping as a condition of their National Pollutant Discharge Elimination System (NPDES) Phase II Small Municipal Separate Storm Sewer Systems (MS4) permit. Minimum Control Measure number six (6) of the County's MS4 permit states that Berkeley County must develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from County operations as an integral part of their Stormwater Management Program (SWMP). The Program is to include employee training to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet, and building maintenance, new construction and land disturbances, and stormwater system maintenance.

According to the NPDES Phase II regulations, the operator of a regulated MS4 community must develop a pollution prevention/good housekeeping program to:

- Prevent or reduce the amount of stormwater pollution generated by county/municipal operations and conveyed into receiving waters,
- Train employees on how to incorporate pollution prevention/good housekeeping techniques into county/municipal operations, and
- Identify appropriate best management practices and measurable goals for preventing or reducing the amount of stormwater pollution generated by county/municipal operations.

This good housekeeping/pollution control manual is designed to assist Berkeley County staff in addressing potential stormwater runoff issues from County owned and/or operated facilities. This manual is based on the Urban Subwatershed Restoration Manual No. 9: Municipal Pollution Prevention/ Good Housekeeping Practices Version 1.0 produced by the Center for Watershed Protection.

2.0 BASICS OF COUNTY/MUNICIPAL POLLUTION PREVENTION/GOOD HOUSEKEEPING PROGRAMS

Everyday, Berkeley County employees engage in a variety of activities that influence water quality. Some activities, such as County facility management, construction project management, and street repair and maintenance can negatively impact water quality, while others, such as storm drain maintenance and employee training, can help improve it. Whether a pollution prevention/good housekeeping program is designed to reduce the influence of activities that negatively impact water quality (Figure 2-1), or increase the influence of activities that help improve it (Figure 2-2), it should be carefully designed to address local water quality issues.



Figure 2-1: County/Municipal Activities Negatively Impacting Water Quality



Figure 2-2: County/Municipal Activities Improving Water Quality

3.1 COUNTY/MUNICIPAL OPERATIONS AND ACTIVITIES AFFECTING WATER QUALITY

Pollution prevention/good housekeeping involves identifying county/municipal operations and/or activities that may affect stormwater runoff in a community and improving them to better support water quality goals. County/municipal operations and/or activities should be systematically evaluated to determine where improvements can be made in the following areas, at a minimum:

- Hotspot facility management
- Construction project management
- Post-construction stormwater management
- Street repair and maintenance
- Storm drain maintenance
- Park and landscape maintenance
- Employee training

These county/municipal operations/activities can generate or reduce a variety of stormwater pollutants, including sediment, nutrients, metals, hydrocarbons, pesticides, chlorides, bacteria and trash. Typical pollutants expected to be affected by these operations and/or activities are included in Table 3-1.

Table 3-1: Stormwater Pollutants Associated with County/Municipal Operations and Activities

County/Municipal Operations	Sediment	Nutrients	Metals	Hydro-carbons	Toxins	Others
Hotspot Facility Management	●	●	●	●	●	Trash, Organic Matter, Pesticides, Chlorine
Construction Project Management	●	■	○	■	■	Trash
Street Repair and Maintenance	●	■	■	●	■	Trash
Storm Drain Maintenance	■	○	○	○	○	Trash, Organic Matter
Park and Landscape Maintenance	■	●	○	○	■	Pesticides
Post-construction Stormwater Management	■	■	■	○	○	Bacteria
Employee Training	●	●	●	●	●	Chloride, Trash
Key ● = frequently associated with operation ■ = infrequently associated with operation ○ = rarely associated with operation						

Developing an effective pollution prevention/good housekeeping program involves determining which of these operations and/or activities are conducted in Berkeley County and designing a program that will increase or reduce their influence, depending on whether they have a positive or negative impact on water quality.

3.2 HOTSPOT FACILITY MANAGEMENT

County/municipal hotspot facilities are publicly owned and/or operated facilities that produce higher levels of stormwater pollutants and/or present a higher potential risk for spills, leaks or illicit discharges. Common county/municipal hotspot facilities include facilities that handle solid waste, wastewater, road and vehicle maintenance, and yard waste, such as:

- Equipment Storage and Maintenance Yards
- Hazardous Waste Disposal Facilities
- Hazardous Waste Handling and Transfer Facilities
- Landfills
- Materials Storage Yards
- Public Buildings (e.g. Libraries, Police and Fire Departments)
- Public Works Yards
- Solid Waste Handling and Transfer Facilities
- Vehicle Storage and Maintenance Yards
- Water and Wastewater Treatment Facilities
- Facilities such as morgue, mosquito abatement facility, fueling area, etc.
- Boat Landings
- Convenience Sites

If not carefully managed, the activities conducted at county/municipal hotspot facilities can generate a wide variety of stormwater pollutants, including nutrients, hydrocarbons, metals, chlorides, pesticides, bacteria and trash. A summary of the pollution-generating activities typically conducted at county/municipal hotspot facilities and the pollutants associated with those activities are presented in Tables 3-2 and Table 3-3 below.

Table 3-2: Pollution Generating Activities Associated with County/Municipal Hotspot Facilities

County/Municipal Hotspot Facility	Pollution Generating Activities
Public Works Yards	Vehicle Maintenance and Repair, Vehicle Fueling, Vehicle Washing, Vehicle Storage, Outdoor Loading and Unloading, Outdoor Storage, Dumpster/Waste Management, Building Repair, Building Maintenance, Parking Lot Maintenance, Turf Management, Landscaping
Vehicle Storage and Maintenance Yards	Vehicle Maintenance and Repair, Vehicle Fueling, Vehicle Washing, Vehicle Storage, Outdoor Loading and Unloading, Outdoor Storage, Dumpster/Waste Management, Building Repair, Building Maintenance, Parking Lot Maintenance
Equipment Storage and Maintenance Yards	
Materials Storage Yards	Outdoor Loading and Unloading, Outdoor Storage, Dumpster/Waste Management, Parking Lot Maintenance
Water and Wastewater Treatment Facilities	Vehicle Storage, Outdoor Loading and Unloading, Outdoor Storage, Dumpster/Waste Management, Building Repair, Building Maintenance, Parking Lot Maintenance, Turf Management, Landscaping
Landfills	Vehicle Fueling, Vehicle Storage, Outdoor Loading and Unloading, Outdoor Storage, Dumpster/Waste Management
Solid Waste Handling and Transfer Facilities	
Hazardous Waste Disposal Facilities	
Hazardous Waste Handling and Transfer Facilities	
Composting Facilities	

County/Municipal Hotspot Facility	Pollution Generating Activities
Public Buildings	Outdoor Loading and Unloading, Outdoor Storage, Dumpster/Waste Management, Building Repair, Building Maintenance, Parking Lot Maintenance, Turf Management, Landscaping
Public Golf Course	Vehicle Maintenance and Repair, Vehicle Fueling, Vehicle Washing, Vehicle Storage, Outdoor Loading and Unloading, Outdoor Storage, Dumpster/Waste Management, Building Repair, Building Maintenance, Parking Lot Maintenance, Turf Management, Landscaping
Public Swimming Pool	Building Repair, Building Maintenance, Parking Lot Maintenance, Swimming Pool Discharges

Table 3-3: Stormwater Pollutants Associated with Activities Conducted at Hotspot Facilities

Hotspot Operation or Activity	Sediment	Nutrients	Metals	Hydro-carbons	Toxins	Others
Vehicle Repair	○	○	●	●	●	
Vehicle Fueling	X	○	●	●	●	
Vehicle Washing	●	●	■	■	●	
Vehicle Storage	○	X	■	●	○	Trash
Outdoor Loading	●	■	■	○	○	Organic Matter
Outdoor Storage	●	■	■	■	■	
Waste Management	○	■	■	■	●	Trash
Building Repair	●	○	■	■	■	
Building Maintenance	●	X	●	○	■	
Parking Lot Maintenance	●	○	■	●	■	
Turf Management	■	●	X	X	●	Pesticides
Landscaping	○	●	X	X	●	Pesticides
Swimming Pool Discharges	X	X	X	X	X	Chlorine
Key X = not a pollutant source ○ = minor pollutant contribution ■ = moderate pollutant contribution ● = major pollutant contribution						

Of the hotspot facilities listed above, public works yards are often one of the most severe potential pollutant contributors (Figure 3-1). A number of stormwater pollutants are often stored or handled at these facilities and they should be one of the first hotspot facilities to be investigated during the development of a pollution prevention/good housekeeping program.



Figure 3-1: Public Works Yards - Typical Severe Hotspot Facilities in a Community

Inspecting Berkeley County owned and/or operated facilities is necessary to identify potential causes of stormwater pollution. These investigations can be used to systematically evaluate the typical major categories of pollution-generating activities illustrated in Figure 3-2 that commonly contribute to stormwater quality problems at county/municipal facilities:



Figure 3-2: Typical Categories of Pollution-Generating Activities to Assess at Hotspot Facilities

Ideally, the individuals who manage or oversee each of the facilities will be present during a site inspection. They should be able to answer questions about the activities that are conducted at their facility and explain any pollution prevention/good housekeeping practices that may already be in place. Participation during site inspections is also an opportunity for facility managers/operators to learn more about the county/municipality's pollution prevention/good housekeeping efforts and how the activities conducted at their facility can influence stormwater quality.

During a county/municipal facility site inspection it is helpful to have an aerial photograph or site plan on which the locations of proposed pollution prevention/good housekeeping practices or stormwater retrofits can be marked. Digital photos should be taken during any facility inspection to document areas that need improvement and in the identification of stormwater management and pollution prevention/good housekeeping practices. The pictures can also be used to educate the facility manager and other county/municipal staff during employee training sessions.

In May of 2010, an initial Facility Audit was performed on a limited number of Berkeley County facilities. This audit was intended to give the County an overall idea of the condition of the facilities. In addition, the report identifies some pollution prevention/good housekeeping practices that can be used to address the pollution generating activities associated with each hotspot facility. In many cases, pollution prevention/good housekeeping practices can be prescribed using the information that was gathered during initial field investigations. In other cases, however, additional site visits may be required.

A wide range of pollution prevention/good housekeeping practices can be used to address the pollution-generating activities conducted at county/municipal hotspot facilities. Some of the most commonly used practices are listed in Table 3-4.

Table 3-4: Pollution Prevention/Good Housekeeping Practices Commonly Used to Control Stormwater Pollution at County/Municipal Hotspot Facilities

Hotspot Operation or Activity	Pollution Prevention/Good Housekeeping Practices
Vehicle Maintenance and Repair	Drip pans, traps, covered outdoor storage areas, secondary containment, discharge of washwater to sanitary sewer system, proper disposal of used fluids, disconnected storm drains, automatic shutoff nozzles, signs, spill response plans, spill clean up materials, dry clean up methods, employee training, stormwater retrofits
Vehicle Fueling	
Vehicle Washing	
Vehicle Storage	
Outdoor Loading and Unloading	Covered loading and unloading areas, secondary containment, storm drain disconnection or treatment, inventory control, spill response plans, spill clean up materials, dry clean up methods, employee training, stormwater retrofits
Outdoor Storage	
Dumpster/Waste Management	Dumpster/Waste Management, secondary containment, storm drain disconnection or treatment, liquid separation/containment, employee training
Building Repair	Temporary covers/traps, employee training, contractor training, proper cleanup and disposal procedures, disconnected storm drains, dry cleaning methods, stormwater retrofits
Building Maintenance	
Parking Lot Maintenance	
Turf Management	Integrated pest management, reduced non-target irrigation, careful applications, proper disposal and landscaping water, avoid blowing and hosing to storm drain, employee training, stormwater retrofits
Landscaping	

In many cases, the pollution prevention/good housekeeping practices that can be used to address the pollution-generating activities associated with a county/municipal hotspot facility save time and money, reduce liability and do not greatly interfere with normal operations. For example, the pollution prevention/good housekeeping practices applied at a vehicle storage and maintenance yard might include the use of drip pans under vehicles, tarps for covering disabled vehicles, dry clean-up methods for spills, proper disposal of used fluids and covering and providing secondary containment for any outdoor storage area (Figure 3-3). In some cases, however, more costly on-site stormwater retrofit practices may be needed to control and treat stormwater runoff, especially when the facility is rated as a severe hotspot.



Figure 3-3: Pollution Prevention/Good Housekeeping Practices Commonly Used at County/Municipal Hotspot Facilities

Once the inspection is done a brief implementation plan should be developed. The plan should summarize the results of the assessment of the current County pollution prevention/good housekeeping practices and the practices that will be used to reduce the stormwater pollution generated by hotspot facilities. The plan should also include a schedule that describes when the prescribed pollution prevention/good housekeeping practices will be implemented. The contents of the implementation plan should be reviewed with the individual who manages the hotspot facility.

3.3 CONSTRUCTION PROJECT MANAGEMENT

Berkeley County performs a number of capital improvement, development and redevelopment construction projects, which can generate a wide range of stormwater pollutants, including sediment, nutrients, hydrocarbons, pesticides, trash and construction debris.

Common county/municipal construction projects include:

- Public buildings (e.g. libraries, police and fire departments).
- Public works facilities.
- Road construction and widening.
- Utility construction and repair.
- Water and wastewater treatment facilities.

These County funded construction projects can have a number of negative impacts on water quality both during and after construction. From a water quality standpoint, the construction phase is often considered the most damaging phase of the land development cycle particularly in regards to sediment impacts.

County construction project erosion/sediment control plans and procedures should include the following practices, at a minimum:

1. Minimize Clearing;
2. Protect Waterways;
3. Phase Construction;
4. Implement Rapid Soil Stabilization;
5. Protect Steep Slopes;
6. Install Perimeter Controls;
7. Adjust Erosion and Sediment Control Plan for Site Conditions; and
8. Assess Erosion and Sediment Control Plan After Storm Events.

All of these practices should be part of any County construction project and local stormwater management ordinances should ensure that necessary sediment/erosion control practices adequately apply to County projects. Some of the practices most commonly used to improve the way that county/municipal construction projects are managed are listed in Table 3-5.

Table 3-5: Pollution Prevention/Good Housekeeping Practices Commonly Used to Improve County/Municipal Construction Project Management

Existing Conditions	Recommended Improvements
<ul style="list-style-type: none"> No local erosion and sediment control and/or stormwater ordinance in place 	<ul style="list-style-type: none"> Develop a local erosion and sediment control and/or stormwater management ordinance Ensure that county/municipal construction sites are required to meet the provisions of each ordinance
<ul style="list-style-type: none"> County/municipal construction projects are not subject to the requirements of the local erosion and sediment control and/or stormwater management ordinance 	<ul style="list-style-type: none"> Revise the local erosion and sediment control and/or stormwater management ordinance to ensure that county/municipal construction sites are required to meet the provisions of each ordinance
<ul style="list-style-type: none"> County/municipal construction projects are not subject to local plan review and site inspection procedures 	<ul style="list-style-type: none"> Revise the local development review process to ensure that county/municipal construction sites are subject to local plan review and site inspection procedures
<ul style="list-style-type: none"> Existing contractor selection and procurement procedures do not consider erosion and sediment control and/or stormwater management 	<ul style="list-style-type: none"> Revise the selection and procurement procedures to ensure that erosion and sediment control and stormwater management are considered during the selection process
<ul style="list-style-type: none"> Innovative sediment/erosion control practices are not used on county/municipal construction projects 	<ul style="list-style-type: none"> Revise the local sediment/erosion control ordinance to ensure these practices are allowed Promote the use of innovative sediment/erosion control practices on all county/municipal construction projects Provide training to design engineers and contractors on the design and installation of innovative sediment/erosion control practices

3.4 POST-CONSTRUCTION STORMWATER MANAGEMENT

Stormwater Best Management Practices (BMPs) are engineered facilities designed to treat or otherwise manage post-construction stormwater runoff and mitigate the negative impacts of land development. These practices, which include dry detention ponds, wet detention ponds, stormwater wetlands, bioretention areas, swales, filtration practices and infiltration practices (Figure 3-4), provide a number of water quality and water quantity benefits and, if carefully designed, can provide a number of other benefits to the community (e.g. aesthetics, wildlife habitat, etc.).



Figure 3-4: Stormwater Best Management Practices (BMPs): (Clockwise from Top Left) Dry Detention Ponds, Wet Detention Ponds, Bioretention Area and Swales

Under the NPDES Phase II regulations, Berkeley County must ensure adequate long-term operation and maintenance of post-construction stormwater BMPs. Within many communities, the county/municipality as well as homeowners associations and private landowners are responsible for the maintenance and upkeep of stormwater BMPs. Regulated communities can help to ensure that privately owned and - operated facilities are maintained by including enforceable provisions within the local stormwater management ordinance that require regular maintenance of these facilities.

Although not necessary, it is often helpful to create a map showing the location of each publicly owned and/or operated stormwater BMPs. It is important to conduct a site assessment of all county/municipal owned and/or operated stormwater BMPs to determine how well each practice is being maintained. An inspection checklist should be used to compile information during the assessment.

After county/municipal owned/operated post-development stormwater BMPs are assessed, a comparison of the inspection results to determine which stormwater treatment practices are in the worst condition should be formulated. At the completion of each inspection, the local stormwater manager should make a note of any maintenance tasks that need to be performed and how urgent those tasks appear to be. If there are any urgent maintenance needs, the local stormwater manager should immediately notify the individual responsible for the upkeep and maintenance of the stormwater BMPs. These improvements, especially those that are needed to alleviate a safety hazard, should be made as soon as possible. This process should also help to identify any common problems with maintenance, which can result in recommended changes to the county/municipality's inspection and maintenance procedures. Some of the most commonly used practices to improve post-construction stormwater BMPs are listed in Table 3-6.

Table 3-6: Pollution Prevention/Good Housekeeping Practices Commonly Used to Improve Post-Construction Stormwater BMPs

Post-Construction Stormwater BMPs	Recommended Practices
Dry Detention Ponds	<ul style="list-style-type: none"> • Mow side slopes monthly. • Repair undercut or eroded areas as necessary. • Pesticide/ nutrient management. • Remove litter/ debris as necessary. • Inspect for erosion of pond banks or bottom semi-annually. • Seed or sod to restore dead or damaged ground annually (as needed). • Inspect for damage to the embankment annually. • Monitor for sediment accumulation in the facility and forebay annually. • Inspect monthly to ensure that inlet and outlet devices are free of debris and operational. • Removal of sediment from the forebay every 5 to 7 years • Monitor sediment accumulations, and remove sediment when the pond volume has been reduced by 25%.
Wet Detention Ponds	<ul style="list-style-type: none"> • Mow side slopes of the pond monthly. • Since decomposing vegetation captured in the wet pond can release pollutants, especially nutrients, it may be necessary to harvest dead vegetation annually. Otherwise the decaying vegetation can export pollutants out of the pond and also can cause nuisance conditions to occur. • Clear debris from all inlet and outlet structures monthly. • Repair all eroded or undercut areas as needed. • Place a sediment marker in the forebay to determine when sediment removal is required. • Monitor sediment accumulations in the main pond area and remove sediment when the permanent pool volume has been significantly filled and/or the pond becomes eutrophic.
Bioretention Area	<ul style="list-style-type: none"> • Pruning and weeding as needed • Remove trash and debris as needed • Inspect inflow points for clogging semi-annually (every 6-months). • Remove any sediment semi-annually (every 6-months). • Repair eroded areas. Re-seed or sod as necessary semi-annually (every 6-months). • Mulch void areas semi-annually (every 6-months). • Inspect trees and shrubs to evaluate their health semi-annually (every 6-months). • Remove and replace dead or severely diseased vegetation semi-annually (every 6-months). • Remove evasive vegetation semi-annually (every 6-months). • Nutrient and pesticide management. Annual, or as needed. • Water vegetation, shrubs and trees semi-annually (every 6-months). • Remove mulch, reapply new layer annually • Test planting mix for pH annually. • Apply lime if pH < 5.2. as needed. • Add iron sulfate + sulfur if pH > 8.0 as needed. • Place fresh mulch over entire area as needed. • Replace pea gravel diaphragm every 2 to 3 years if needed.
Swales	<ul style="list-style-type: none"> • Mow grass to maintain design height and remove clippings as needed (frequent/seasonally). • Nutrient and pesticide management annually, or as needed • Inspect side slopes for erosion and repair annually, or as needed • Inspect channel bottom for erosion and repair annually, or as needed • Remove trash and debris accumulated in forebay annually. • Annual (semi-annually first year) inspection of vegetation. Plant an alternative grass

	<p>species if original cover is not established.</p> <ul style="list-style-type: none"> • Annual inspection for clogging and correct the problem. • Roto-till or cultivate the surface of the bed if swale does not draw down in 48 hours as needed. • Remove sediment build-up within the bottom of the swale as needed, after 25% of the original design volume has filled.
Stormwater Wetlands	<ul style="list-style-type: none"> • Monitor wetlands after all storm events greater than 2-inches of rainfall during the first year to assess erosion, flow channelization and sediment accumulation. Inspection should be made at least once every six months during the first three years of establishment. • Place a sediment cleanout stake in the forebay area to determine when sediment removal is required. • Debris should be removed from the inlet and outlet structures monthly. • Monitor wetland vegetation and replaced as necessary once every 6-months during the first three years of establishment. • Annually inspect and maintain the depth of the zones within the wetland. • Annually remove invasive vegetation. • Repair all eroded or undercut areas as needed.
Vegetated Filter Strip	<ul style="list-style-type: none"> • Inspect vegetation for rills and gullies annually and correct. Seed or sod bare areas. • Inspect grass after installation to ensure it has established. If not replace with an alternative species. • Inspect to ensure that grass has established annually. If not, replace with an alternative species. • Mow grass to maintain a height of 3- to 4-inches. • Remove sediment build-up from the bottom when it has accumulated to 25% of the original capacity.

3.5 STREET REPAIR AND MAINTENANCE

Public streets and roadways in Berkeley County make up a significant percentage of the urban infrastructure and require regular maintenance to keep them in good condition. Regular County street repair and maintenance activities, such as pavement marking, repair, patching, resurfacing, sealing and right-of-way maintenance, can generate a range of stormwater pollutants, including metals, chlorides, hydrocarbons, nutrients, sediment and trash. If not properly managed, these activities can negatively impact water quality (Figure 3-5).



Figure 3-5: Roadway Repairs and Maintenance Generating Significant Amounts of Sediment

There are three primary county/municipal street repair and maintenance activities that can influence stormwater quality:

- Routine road and bridge maintenance: Re-chipping, grinding, pothole repair, pavement striping, asphalt re-paving, saw cutting.
 - Potential pollutants: Sediment, chloride, cyanide, and phosphorus.
- Winter operations: Sanding, application of deicing compounds.
 - Potential pollutants: Fine particles, creosote and PAH.

- Right-of-way maintenance: Herbicide and pesticide application, vegetation selection.
 - Potential pollutants: Nutrients, herbicides, pesticides.

All streets and roadways have routine maintenance needs such as mowing and sweeping, with other maintenance needs dictated by age, traffic volume or climatic conditions. Recommended pollution prevention/good housekeeping techniques for roadways are applied through county/municipal employee, utility employee and contractor training, as well as county contracting specifications.

Improving the way that county/municipal street repair and maintenance activities are conducted within the community can reduce the amount of stormwater pollution that is conveyed into receiving waters. Some of the practices most commonly used to improve the way that county/municipal street repair and maintenance activities are conducted are listed in Table 3-7.

Table 3-7: Pollution Prevention/Good Housekeeping Practices Commonly Used to Improve County/Municipal Street Repair and Maintenance Activities

Street Repair or Maintenance Activity	Recommended Improvements
Routine Roads and Bridges Maintenance	<ul style="list-style-type: none"> • Prevent paving materials and wastes from entering the storm drain system • Minimize the area of soils left exposed or graded • Collect any loose sand, gravel, asphalt, or other material as soon as possible after construction activities • When placing chip seals, limit spreading aggregate to the sealed surface and sweep up excess aggregate once cured and each day thereafter until aggregate loss is insignificant • Mix road stabilization materials during periods of calm, dry weather, and seal as soon as possible after dressing • Fill and compact soil, gravel, and asphalt in layers • Reuse road spoil in repairs if possible and sweep up and dispose of properly • Eliminate 'edge break' by fully sealing road shoulders • When striping, use water-based paints or thermoplastics rather than solvent based ones • Avoid striping operations while the pavement is wet, during humid conditions, or if rain is likely • Avoid applying thermoplastics at low temperatures, i.e. below 54°F • When possible, use portable drip trays under equipment to catch spills • Use a skirt around the blaster to minimize the spraying of material away from the work site • Coordinate street-sweeping with line removal, so that waste material is picked up before it can be transported by rain, wind, and traffic • Use dry cutting techniques when saw cutting and sweep or vacuum up residue • Construct runoff barriers to protect storm drains from wet saw-cut runoff • Place drip pans or absorbent materials under saw-cut equipment when not in use • Use as little cooling water as possible and switch the water off when the saw is not in use
Vegetative Maintenance	<ul style="list-style-type: none"> • Use mechanical methods of vegetation removal rather than herbicides • Dispose of lawn clippings at a landfill; clippings should not be disposed of in streams or storm drains • Avoid applying herbicides and pesticides if rain is expected • Calibrate equipment to avoid over application

A field investigation should be done to assess current County pollution prevention/good housekeeping practices for street repair and maintenance activities. Once the investigation is done a brief implementation plan should be created. The plan should summarize the results of the assessment of the current County pollution prevention/good housekeeping practices and the practices that will be used to reduce the stormwater pollution generated by County street repair and maintenance activities. The plan should also include a schedule that describes when the prescribed pollution prevention/good housekeeping practices will be implemented. The contents of the implementation plan should be reviewed with the individual who manages the street repair and maintenance activities.

3.6 STORM DRAIN MAINTENANCE

Storm drain maintenance is often the last opportunity to remove pollutants before they enter the storm drain system. The effectiveness of this pollution prevention/good housekeeping practice depends on the basic design of the stormwater conveyance in a subwatershed. Most systems have a catch basin (Figure 3-6) or sump pit located in the storm drain inlet to trap sediment and organic matter and prevent clogging. In some areas, however, conveyance systems were designed to be self-cleansing and thus have no storage. Each catch basin or sump pit tends to be unique in how quickly it fills up, and whether the trapped material is liquid, solid or organic. To this extent, each reflects the conditions and behaviors that occur within the few hundred feet of street it serves.

Storm drain maintenance can be an effective strategy in urban subwatersheds that have few other feasible options to remove pollutants. For many communities, storm drain maintenance is reactive and conducted in response to complaints from residents. Water quality is not a commonly cited reason for a storm drain cleanout program. When performed properly, regular maintenance can improve water quality and prevent clogging and flooding.

Storm drain cleanout effectiveness is impacted by both the frequency and method of cleanout. Table 3-8 provides estimated pollutant removal rates for catch basin cleanouts.

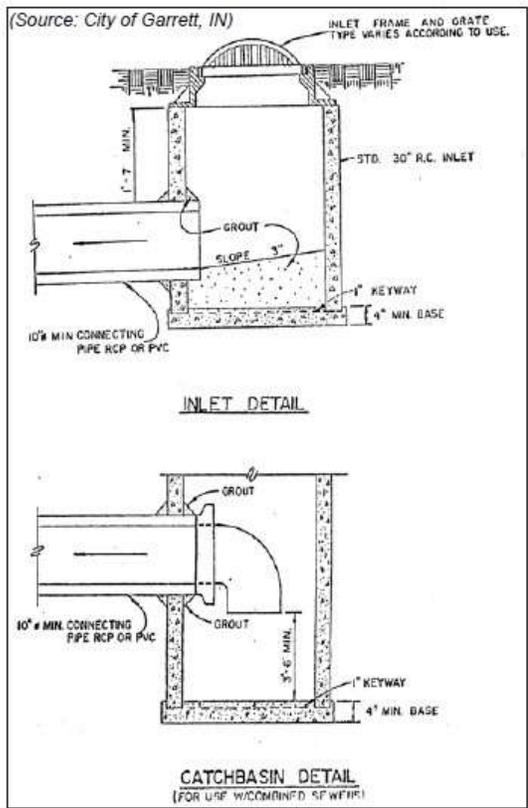


Figure 3-6: Catch Basin Detail

Table 3-8: Expected Pollutant Removal Rates for Catch Basin Cleanouts (Law et al., 2008)

Frequency	Total Suspended Solids	Total Phosphorus	Total Nitrogen
Annual	18%	<1%	3%
Semi-Annual	35%	2%	6%

A storm drain maintenance program should address the following:

- *Tracking* – the location and maintenance of storm drains should be tracked using a database and spatial referencing system (e.g., Global Positioning System, Geographic Information System).

Additionally, knowing the type and era of the storm drain system may be of use since some inlets/catch basins are designed to be self-cleaning while others have some trapping capacity.

- *Frequency* – Catch basins should be inspected and cleaned out according to their priority:
 - Priority A – Catch basins to be cleaned annually.
 - Priority B – Catch basins to be cleaned at least once every two years.
 - Priority C – Catch basins to be cleaned less frequently than A & B.
- *Technology* – the four common methods of cleaning catch basins are described in Table 3-9.
- *Staff Training* - operators need to be properly trained in catch basin maintenance including waste collection and disposal methods. Staff should also be trained to report water quality problems and illicit discharges.
- *Material Disposal* - since catch basin waste may contain hazardous material, it should be tested and disposed of accordingly. Maintenance personnel should keep a log of the amount of sediment collected and the removal date at the catch basin.

Table 3-9: Equipment Used for Catch Basin and Inlet Cleaning (from Lager et al. 1979)

Equipment	Description
Manual cleaning	Bail out sediment-laden water and shovel into street then truck. Or crew enters catch basin and fill buckets with sediment that are then carried to a dump truck. Clean water is used to refill the catch basin.
Eductor cleaning	Eductor truck evacuates the catchment of the sediment-laden water into a settling tank.
Vacuum cleaning	Air blower of the vacuum truck is used to create a vacuum and the air-solid-liquid material is separated in the vacuum truck unit by gravity separation and baffles.
Vacuum combination jet cleaning (e.g. Vacuum)	A vacuum assisted truck that uses a combination of air, water and hydraulic suction. Suction is used to extract material from storm inlets. Water is used to clear material from storm drain pipes that is not removed by the vacuum. The material is stored in the truck holding tank and transported for disposal.

3.7 PARK AND LANDSCAPE MAINTENANCE

A community may own or control as much as 10% of all the land within a subwatershed, when all the parks, schools, golf courses, rights-of-way, easements, open space and county/municipal buildings are combined. It is not uncommon for these areas to be managed as vast expanses of turf. The maintenance of these areas frequently includes mowing, fertilization, pesticide application, and supplemental irrigation. Poor turf management and landscaping practices have the potential to create stormwater pollution, particularly in urban areas where soils are compacted and infiltration is minimized. Potential pollutants generated by landscape and park maintenance include nutrients, herbicides, organic debris, and sediment. Because of their large size and ownership, county/municipal lands are good candidates for pollution prevention/good housekeeping techniques such as riparian reforestation and integrated pest management.

A wide range of pollution prevention/good housekeeping practices can be used to improve the way that park and landscape maintenance activities are conducted within a community. Some of the most commonly used practices are listed in Table 3-10.

Table 3-10: Pollution Prevention/Good Housekeeping Practices Commonly Used to Improve County/Municipal Park and Landscape Maintenance Activities

Activity	Pollution Prevention/Good Housekeeping Practices
Turf Reduction	<ul style="list-style-type: none"> • Plant trees and/or other native vegetation in suitable areas • Consider turf alternatives, such as native or low-water, cool-season turf grass • Allow natural regeneration in suitable areas
Turf Management	<ul style="list-style-type: none"> • Sweep any grass clippings away from paved surfaces after mowing • Use mulching type mowers or dispose of at local composting facility • Use erosion control measures when soils are exposed • Place stockpiled materials away from storm drains
Native Plantings	<ul style="list-style-type: none"> • Provide native and naturalized landscaping guidance and plant lists • Require use of appropriate native and naturalized landscaping on municipally-owned properties
Landscape Management	<ul style="list-style-type: none"> • Collect landscape waste (including grass clippings) and dispose of at a local yard waste recycling/composting facility • Do not use leaf blowers to blow waste into streets, storm drains or ditches
Pesticide/Herbicide Application	<ul style="list-style-type: none"> • Develop an integrated pest management plan that uses pesticides only as a last resort • Apply only when rain is not expected • Do not prepare herbicides or pesticides for application near storm drains • Use manual and/or mechanical methods to remove weeds rather than herbicides • Consider a low or no pesticide approach to maintaining landscaped areas
Fertilizer Application	<ul style="list-style-type: none"> • Never apply fertilizers or pesticides within five feet of pavement, 25 feet of a storm drain inlet, or 50 feet of a stream or water body • Consider a low or no fertilizer approach to maintain turf • Apply only when rain is not expected • Perform a soil test to determine actual fertilization needs and application rate • Calibrate fertilizer spreaders to avoid excessive application • Employ shutoff devices to prevent irrigation after precipitation
Irrigation	<ul style="list-style-type: none"> • Employ shutoff devices to prevent irrigation after precipitation or if a pressure drop occurs due to broken sprinkler heads or lines • Design irrigation systems specific to each landscaped area's water requirements • Select native plant species whenever possible and group together plants with similar water requirements in order to reduce excess irrigation • Use soaker hoses not sprinklers and irrigate in the morning or evening to conserve water
Employee Training	<ul style="list-style-type: none"> • Train employees on the use and appropriate application of pesticides, herbicides and fertilizers • Ensure that designated no mow areas are well advertised • Educate staff on the benefits of trees and native and naturalized species

A field investigation should be done to assess current County pollution prevention/good housekeeping practices for park and landscape maintenance activities. Once the investigation is done a brief implementation plan should be created. The plan should summarize the results of the assessment of the current County pollution prevention/good housekeeping practices and the practices that will be used to reduce any stormwater pollution generated by the County park and landscape maintenance activities. The plan should also include a schedule that describes when the prescribed pollution prevention/good housekeeping practices will be implemented. The contents of the implementation plan should be reviewed with the individual who manages the park and landscape maintenance activities.

3.8 EMPLOYEE TRAINING

County/municipal employees that are educated about the link between their work and stormwater quality can assist in reducing the amount of stormwater pollution that is conveyed into receiving waters. In order for county/municipal pollution prevention/good housekeeping programs to achieve success, employees must be trained on how to incorporate pollution prevention/good housekeeping practices into their everyday activities.

County/municipal employees must be provided with specific information about the actions they can take to prevent or reduce stormwater pollution. Table 3-11 presents the range of training topics that can be provided for each county/municipal operation. If they are not already familiar with the requirements of the NPDES Phase II permit, a general training session is a good opportunity to educate employees about them.

The most effective pollution prevention/good housekeeping training programs are the ones that provide the right information to the right employees. For example, employees engaged in landscape and park maintenance should be trained in landscaping techniques that use less fertilizer and pesticides, while employees responsible for maintaining fleet vehicles should be trained in the proper disposal of waste automotive fluids and how to correctly deal with leaky or disabled vehicles.

There are a variety of methods that can be used to educate county/municipal employees on stormwater pollution prevention/good housekeeping practices, including:

- Annual Performance Reviews
- Brochures
- Conferences
- Meetings
- Training Sessions
- Videos
- Walkthroughs
- Workplace Posters
- Workshops

Employee turnover is an important consideration when developing an employee training and education program. The key to an effective program is to ensure that institutional knowledge about pollution prevention/good housekeeping practices is maintained over time. A tracking system, such as a sign in sheet that identifies the county/municipal staff members that have received training is critical to ensure the effectiveness of a pollution prevention/good housekeeping employee training program.

Table 3-11: Employee Training Programs – Presenting the Right Information to the Right Audience

County/Municipal Operation	Training Targets	Training Topics
Hotspot Facility Management	<ul style="list-style-type: none"> • Facility managers • Building maintenance staff • Fleet maintenance staff 	<ul style="list-style-type: none"> • Vehicle maintenance and repair procedures • Vehicle washing procedures • Materials loading and unloading procedures • Materials storage procedures (outdoor storage) • Spill prevention and response • Dumpster management • Building repair and maintenance procedures
Construction Project Management	<ul style="list-style-type: none"> • Contract administration staff • Building services staff • Plan review staff • Site inspection staff 	<ul style="list-style-type: none"> • Considering erosion and sediment control and stormwater management during contractor selection • Plan review techniques • Erosion and sediment control practices • Ordinance enforcement procedures
Post-Construction Stormwater Management	<ul style="list-style-type: none"> • Storm drain staff • Site inspection staff • Maintenance staff 	<ul style="list-style-type: none"> • Post-Construction stormwater BMP inspection procedures • Post-Construction stormwater BMP maintenance procedures
Street Repair and Maintenance	<ul style="list-style-type: none"> • Street maintenance staff • Vehicle operators 	<ul style="list-style-type: none"> • Road maintenance procedures • Winter road maintenance procedures • Handling and application of pesticides and other chemicals
Storm Drain Maintenance	<ul style="list-style-type: none"> • Storm drain staff • Street maintenance staff • Vehicle operators 	<ul style="list-style-type: none"> • Storm drain maintenance procedures • Materials disposal • Vacuum truck maintenance
Park and Landscape Maintenance	<ul style="list-style-type: none"> • Parks and recreation staff • Community forestry staff • Landscaping staff • Mowing staff 	<ul style="list-style-type: none"> • Use and appropriate application of pesticides, herbicides and fertilizers • No mow areas • Benefits of trees, native and naturalized species

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Appendix B
Berkeley County
Water Quality Monitoring Data

N/A-Berkeley County is not conducting water quality monitoring.

Appendix C

Berkeley County

Revised/Updated Monitoring and Assessment Plan

N/A-No updates were made to the County's Monitoring and Assessment Plan, because Berkeley County does not have one.

Appendix D
Berkeley County
Implementation Schedule for Following Years

SWMP Requirements					
Measure	Section	Brief Description	Start Date	Deadline	Frequency
SWMP	4.1	Update SWMP to include City of Hanahan and City of Goose Creek	January 1, 2016	December 31, 2016	Once During Permit Term
2 nd Report	5.3	Complete and Submit 2nd Report (covering years 3 and 4)	n/a	July 4, 2018	Once During Permit Term
NOI	2.5	Deadline to submit a re-application	n/a	July 4, 2018	Once During Permit Term
Minimum Control Measure Requirements					
Year 3 - 2016					
Measure	Section	Brief Description	Start Date	Deadline	Frequency
PEO	4.2.1.1.3	Continue Contractual Agreement with ACSEC	January 1, 2016	December 31, 2016	Annually
PEO	4.2.1.1.3	Support ACSEC	January 1, 2016	December 31, 2016	Annually
PIP	4.2.2.1.1	Sponsor/Support Citizen Participation Events	January 1, 2016	December 31, 2016	Annually
PIP	4.2.2.1.2	Provide Access to Information for the SWMP	January 1, 2016	July 1, 2016	Once During Permit Term
PIP	4.2.2.1.3	Incorporate Written Procedures for Implementing MCM#2	January 1, 2016	December 31, 2016	Annually
IDDE	4.2.3.2.1	Update Storm Sewer Map	January 1, 2016	December 31, 2016	Annually
IDDE	4.2.3.2.2	Update Priority Areas	January 1, 2016	December 31, 2016	Annually
IDDE	4.2.3.2.3.a	Conduct Field Screening of Year 3 Screening Points	January 1, 2016	December 31, 2016	Annually
IDDE	4.2.3.2.4/5	Conduct Illicit Tracking of Year 3 Potential Illicit Discharges	January 1, 2016	December 31, 2016	As Needed
IDDE	4.2.3.2.5/6	Document Illicit Discharges	January 1, 2016	December 31, 2016	As Needed
IDDE	4.2.3.2.2	Identify Year 4 Priority Areas	January 1, 2016	December 31, 2016	Annually
IDDE	4.2.3.2.2.a.i	Identify Year 4 Screening Points	January 1, 2016	December 31, 2016	Annually
IDDE	4.2.3.2.3b	Conduct Field Screening Assessment	January 1, 2016	December 31, 2016	Once During Permit Term
IDDE	4.2.3.2.8.a	Develop a Written Spill/Dumping Response Procedure	January 1, 2016	December 31, 2016	Once During Permit Term
IDDE	4.2.3.2.9	Provide Employee Training	January 1, 2016	December 31, 2016	Annually
CSR	4.2.4.6.a	Maintain Site Inspection Inventory	January 1, 2016	December 31, 2016	Annually
CSR	4.2.4.8	Train MS4 Staff	January 1, 2016	December 31, 2016	Annually

CSR	4.2.4.9	Continue Construction Operator Education and Public Involvement	January 1, 2016	December 31, 2016	Annually
Measure	Section	Brief Description	Start Date	Deadline	Frequency
PCR	4.2.5.2	Develop Site Performance Standards	January 1, 2016	December 31, 2016	Once During Permit Term
PCR	4.2.5.3	Revise Plan Review Checklist for Post Construction SWP3 Submittal Requirements	January 1, 2016	December 31, 2016	Once During Permit Term
PCR	4.2.5.5	Update Post Construction BMP Inventory	January 1, 2016	December 31, 2016	Annually
PCR	4.2.5.6.2	Conduct Post Construction BMP Installation Inspections	January 1, 2016	December 31, 2016	Annually
PCR	4.2.5.6.1	Conduct Post Construction BMP Maintenance Inspections	January 1, 2016	December 31, 2016	Annually
PP&GH	4.2.6.2	Conduct Inspections at All Municipal Facilities	January 1, 2016	December 31, 2016	Once During Permit Term
PP&GH	4.2.6.3	Conduct High Priority Facility Inspections.	January 1, 2016	December 31, 2016	Annually
PP&GH	4.2.6.4.2	Review and Implement Pollution Prevention Measures for O&M Activities	January 1, 2016	December 31, 2016	Annually
PP&GH	4.2.6.4.3	Inspect City-Owned Structural Controls	January 1, 2016	December 31, 2016	As Needed
PP&GH	4.2.6.4.3	Maintain City-Owned Structural Controls	January 1, 2016	December 31, 2016	As Needed
PP&GH	4.2.6.5	Conduct PP&GH Training	January 1, 2016	December 31, 2016	Annually
Year 4 - 2017					
Measure	Section	Brief Description	Start Date	Deadline	Frequency
PEO	4.2.1.1.3	Continue Contractual Agreement with ACSEC	January 1, 2017	December 31, 2017	Annually
PEO	4.2.1.1.3	Support ACSEC	January 1, 2017	December 31, 2017	Annually
PEO	4.2.1.1.7	Distribute Campaign Materials	January 1, 2017	December 31, 2017	Annually
PEO	4.2.1.1.8	Assess the PEO Plan	January 1, 2017	June 30, 2017	Annually
PEO	4.2.1.1.8	Develop Annual Adjustments for the PEO Plan	July 1, 2017	December 31, 2017	Annually
PIP	4.2.2.1.1	Sponsor/Support Citizen Participation Events	January 1, 2017	December 31, 2017	Annually
PIP	4.2.2.1.3	Incorporate Written Procedures for Implementing MCM#2	January 1, 2017	December 31, 2017	Annually
IDDE	4.2.3.2.1	Update Storm Sewer Map	January 1, 2017	December 31, 2017	Annually
IDDE	4.2.3.2.2	Update Priority Areas	January 1, 2017	December 31, 2017	Annually

IDDE	4.2.3.2.3.a	Conduct Field Screening of Year 4 Screening Points	January 1, 2017	December 31, 2017	Annually
IDDE	4.2.3.2.4/5	Conduct Illicit Tracking of Year 4 Potential Illicit Discharges	January 1, 2017	December 31, 2017	As Needed
Measure	Section	Brief Description	Start Date	Deadline	Frequency
IDDE	4.2.3.2.5/6	Document Illicit Discharges	January 1, 2017	December 31, 2017	As Needed
IDDE	4.2.3.2.2	Identify Year 5 Priority Areas	January 1, 2017	December 31, 2017	Annually
IDDE	4.2.3.2.2.a.i	Identify Year 5 Screening Points	January 1, 2017	December 31, 2017	Annually
IDDE	4.2.3.2.9	Provide Employee Training	January 1, 2017	December 31, 2017	Annually
CSR	4.2.4.6.a	Maintain Site Inspection Inventory	January 1, 2017	December 31, 2017	Annually
CSR	4.2.4.8	Train MS4 Staff	January 1, 2017	December 31, 2017	Annually
CSR	4.2.4.9	Continue Construction Operator Education and Public Involvement	January 1, 2017	December 31, 2017	Annually
PCR	4.2.5.5	Update Post Construction BMP Inventory	January 1, 2017	December 31, 2017	Annually
PCR	4.2.5.6.2	Conduct Post Construction BMP Installation Inspections	January 1, 2017	December 31, 2017	Annually
PCR	4.2.5.6.1	Conduct Post Construction BMP Maintenance Inspections	January 1, 2017	December 31, 2017	Annually
PP&GH	4.2.6.3	Conduct and Document High Priority Facility Inspections.	January 1, 2017	December 31, 2017	Annually
PP&GH	4.2.6.4.2	Continue to Implement Pollution Prevention Measures for O&M Activities	January 1, 2017	December 31, 2017	Annually
PP&GH	4.2.6.4.3	Inspect City-Owned Structural Controls	January 1, 2017	December 31, 2017	As Needed
PP&GH	4.2.6.4.3	Maintain City-Owned Structural Controls	January 1, 2017	December 31, 2017	As Needed
PP&GH	4.2.6.5	Conduct PP&GH Training	January 1, 2017	December 31, 2017	Annually
Year 5 - 2018					
Measure	Section	Brief Description	Start Date	Deadline	Frequency
PEO	4.2.1.1.3	Continue Contractual Agreement with ACSEC	January 1, 2018	December 31, 2018	Annually
PEO	4.2.1.1.3	Support ACSEC	January 1, 2018	December 31, 2018	Annually
PIP	4.2.2.1.1	Sponsor/Support Citizen Participation Events	January 1, 2018	December 31, 2018	Annually

PIP	4.2.2.1.3	Incorporate Written Procedures for Implementing MCM#2	January 1, 2018	December 31, 2018	Annually
IDDE	4.2.3.2.1	Update Storm Sewer Map	January 1, 2018	December 31, 2018	Annually
Measure	Section	Brief Description	Start Date	Deadline	Frequency
IDDE	4.2.3.2.2	Update Priority Areas	January 1, 2018	December 31, 2018	Annually
IDDE	4.2.3.2.3.a	Conduct Field Screening of Year 5 Screening Points	January 1, 2018	June 30, 2018	Annually
IDDE	4.2.3.2.4/5	Conduct Illicit Tracking of Year 5 Potential Illicit Discharges	January 1, 2018	December 31, 2018	As Needed
IDDE	4.2.3.2.5/6	Document Illicit Discharges	January 1, 2018	December 31, 2018	As Needed
IDDE	4.2.3.2.9	Provide Employee Training	January 1, 2018	December 31, 2018	Annually
CSR	4.2.4.6.a	Maintain Site Inspection Inventory	January 1, 2018	December 31, 2018	Annually
CSR	4.2.4.8	Train MS4 Staff	January 1, 2018	December 31, 2018	Annually
CSR	4.2.4.9	Continue Construction Operator Education and Public Involvement	January 1, 2018	December 31, 2018	Annually
PCR	4.2.5.5	Update Post Construction BMP Inventory	January 1, 2018	December 31, 2018	Annually
PCR	4.2.5.6.2	Conduct Post Construction BMP Installation Inspections	January 1, 2018	December 31, 2018	Annually
PCR	4.2.5.6.1	Conduct Post Construction BMP Maintenance Inspections	January 1, 2018	December 31, 2018	Annually
PP&GH	4.2.6.3	Conduct and Document High Priority Facility Inspections.	January 1, 2018	December 31, 2018	Annually
PP&GH	4.2.6.4.2	Continue to Implement Pollution Prevention Measures for O&M Activities	January 1, 2018	December 31, 2018	Annually
PP&GH	4.2.6.4.3	Inspect City-Owned Structural Controls	January 1, 2018	December 31, 2018	As Needed
PP&GH	4.2.6.4.3	Maintain City-Owned Structural Controls	January 1, 2018	December 31, 2018	As Needed
PP&GH	4.2.6.5	Conduct PP&GH Training	January 1, 2018	December 31, 2016	Annually

Appendix E
Berkeley County
Consortium Annual Report



Annual Report of Activities

YEAR 6 / JULY 2013 - JUNE 2014

SEPTEMBER 2014



The Ashley Cooper Stormwater Education Consortium (ACSEC) had another banner year of providing diverse stormwater education and involvement opportunities in the Charleston Tri-County area. During Year Six, July 1, 2013 to June 30, 2014, nearly 2.4 million educational impacts were recorded, including 2,245,119 through indirect outreach methods and 120,701 through direct outreach methods.

On May 5th, 2014, the second ACSEC joint resolution signing event took place; thirteen county councilmen, mayors and community representatives reaffirmed their community commitment to the ACSEC's resolution to protect water quality through stormwater education. This event occurs once every five years, with the first occurring in July 2008.

The role of mass media in ACSEC outreach continued to evolve in area impacts, including highlights in commercial, billboard, direct mailing and more. Internet-based outreach nearly doubled in reporting Year Six as new and existing resources continued to develop. The Clemson Extension Carolina Yards program launched a mass media campaign to better address behaviors and pollutants in residential landscaping practices. The ACSEC electronic newsletter, *Ripple Effect*, rose to over 1500 subscribers and is archived on multiple websites.

ACSEC public education opportunities addressed a variety of topics and audiences. Throughout the year, multiple workshops were hosted to address pond problem solving, low impact development, construction and commercial practices, rain garden design and more. In May 2014, 147 attendees participated in the second biannual Charleston Area Stormwater Pond Management Conference.

Permanent exhibits across the Tri-County area provided an important opportunity to learn about and view stormwater best management practices in action. Additional permanent exhibits were developed and collectively, nearly 68,000 individuals visited the 22 permanent exhibits in the ACSEC region.

Public involvement opportunities grew and diversified in Year Six and will continue to evolve into Year Seven. There were 848 storm drains marked by 420 volunteers. In June 2014, the ACSEC teamed up with Rainwater Solutions, and sold over 250 rain barrels through its annual sale. Opportunities for participation in restoration projects expanded to include salt marsh, oyster and dune restorations, all providing hands-on opportunities for learning and coastal stewardship. The ACSEC's community and education partners look forward to Year Seven as they work together to serve the Lowcountry community and protect its unique water resources.



Kim Counts & Guinn Garrett
ACSEC Co-Coordinator
Kim and Guinn are Water Resources Agents for the Clemson Carolina Clear program, and work to co-coordinate the Ashley Cooper Stormwater Education Consortium. Kim's professional interests include landscaping best management practices, rainwater harvesting, rain gardens and community involvement projects. Guinn's professional interests include water quality monitoring, stormwater pond management and commercial and construction best management practices. In their spare time, Kim and Guinn can both be found outside enjoying SC's water resources.

2013-2014 Highlights

- In Year Six, the ACSEC Joint Resolution Signing Event provided the opportunity for thirteen communities to reaffirm their commitment to the ACSEC's regional education strategy to address stormwater impacts.
- The 2013 Carolina Clear telephone survey was instrumented across each consortium area. Phone calls began in the fall 2013 to collect information on environmental attitudes, awareness and behaviors. In the Charleston Tri-County area, 400 individuals participated in the survey.
- During the 2013-2014 reporting year, the Carolina Yards Program was revitalized to better address behaviors and pollutants in residential landscaping practices. A large-scale mass media campaign raised awareness of new program resources.
- In the spring of 2014, the biannual Charleston Area Stormwater Pond Management Conference was held with 147 participants in attendance. The effort sought to provide water quality research and recommended pond management strategies to pond owners and managers via a series of plenary, breakout and field sessions.
- The College of Charleston Masters of Environmental Studies Program partners with the ACSEC to offer graduate student internships with emphasis on stormwater management. In Year Six, Ms. Leslie Wooten conducted a program evaluation of ACSEC rainwater harvesting outreach efforts and developed a rainwater harvesting system study examining the use of first flush diverters for water quality.

TOTAL OUTREACH ACTIVITIES AND TOTAL NUMBER REACHED (*estimated*)

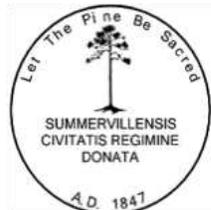
1. ACSEC internet resources including ACSEC E-newsletter, Facebook page, new factsheet series and updated website. **NUMBER REACHED: 143,810**
2. Mass media campaign including "What is a Watershed?" street interviews, radio, community segments and Carolina Yards billboards and commercials. **NUMBER REACHED: 1,538,736**
3. Permanent demonstration sites across the Ashley Cooper region demonstrate diverse best management practices for protecting water quality. **NUMBER REACHED: 67,540**
4. ACSEC representation at fairs and festivals, providing information on ACSEC and ways to protect water quality. **NUMBER REACHED: 11,889**
5. Diverse array of public workshops, trainings, presentations and conferences pertaining to stormwater. **NUMBER REACHED: 55,689**
6. ACSEC public involvement opportunities including rain garden installations, storm drain marking, litter sweeps, oyster reef construction, water quality monitoring and rain barrel sales. **NUMBER REACHED: 11,704**

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The majority of designated Small Municipal Separate Storm Sewer Systems (SMS4) communities in the Charleston Urbanized Area, representing approximately 90% of the population, have committed to the ACSEC regional collaboration. These communities are represented by a dedicated group of public servants who have been engaged for many years in building the partnership.

Local SMS4 Consortium Representatives

Berkeley County	Clint Busby, Sonia Shahnaj
Charleston County	John Carullo, Frank Pandullo, Neil Desai, Stuart Ruelle, Kevin Limehouse
Dorchester County	Kelly Billbrough
City of Charleston	Laura Cabiness, Kinsey Holton
City of Folly Beach	Represented by Charleston County via Inter-Governmental Agreement (IGA)
City of Goose Creek	Steve Price, Chick Foster
City of Isle of Palms	Represented by Charleston County via IGA
Town of James Island	Represented by Charleston County via IGA
Town of Lincolville	Represented by Charleston County via IGA
Town of Mount Pleasant	Hillary Repik, Brett Champion
City of North Charleston	Mike Dalrymple, John Peckham, Merry Barton
Town of Sullivan's Island	Represented by Charleston County via IGA
Town of Summerville	Ross Cornette



Collaboration is integral in developing and delivering a successful watershed-scale outreach program that reaches diverse audiences. The ACSEC is fortunate to have a variety of organizations in the Charleston Tri-County region that have joined the effort. Education partners include universities, state and local government agencies, utilities and non-profits. Each brings unique expertise, resources, ideas and programs to the ACSEC. The ACSEC fosters communication among organizations and through this cooperative effort programs are being created or enhanced.



ACSEC Education Partners



MISSION STATEMENT

Improve water quality within the Ashley and Cooper River basins by providing educational opportunities on stormwater impacts and on our community roles in supporting healthy, fishable, and swimmable waterways.

PROGRAM GOALS

- Develop and implement an education plan that defines a cohesive education strategy which outlines target audiences and associated target pollutants relevant to the region using a prioritized approach.
- Facilitate compliance with existing and future educational regulatory requirements by capitalizing on local resources and service providers.
- Foster citizen involvement in stormwater management through ACSEC education and participation programs.
- Encourage behavioral change towards environmental quality improvement through stormwater education.
- Utilize mainstream and developing technologies and tools to maximize citizen exposure to ACSEC stormwater goals and objectives.
- Create an interactive reporting process to facilitate information exchange and dissemination among member entities.

“It struck me that I know where every drop of rain that falls in the city of Goose Creek, I know where it is. It’s right outside that window there (points to Cooper River). But interestingly, I think there’s a little bit of North Charleston mixed in. And Berkeley County. And everyone else has a little bit of that water out there, too. So the idea of consortium is a perfect idea.”

-Mayor Michael J Heitzler, City of Goose Creek

ACSEC Joint Resolution Signing Event



“I got a great deal of useful information, plus the course inspired me to make some changes. The inspiration was needed to do the up front work that will result in a more sustainable and easier to maintain yard in the long run.”

*-ACSEC program participant,
Carolina Yards Online Class*

“The presentations were all really good and on point. As a Site Manager, my awareness of what is needed and why was raised to the next level and I am now able to provide my clients with much more value.”

*-ACSEC program participant,
Sediment Basin Workshop*

ACSEC Joint Resolution Signing Event

On May 5th, 2014 the Ashley Cooper Stormwater Education Consortium (ACSEC) hosted the second Joint Resolution Signing Event to celebrate a continued partnership effort towards protecting the Lowcountry's water resources through stormwater education. Representatives from Berkeley, Charleston and Dorchester county governments, along with ten municipal representatives from Charleston, Folly Beach, Goose Creek, Isle of Palms, James Island, Lincolville, Mount Pleasant, North Charleston, Sullivan's Island and Summerville, were all present to demonstrate support for the ACSEC. Approximately 75 community partners, education partners and guests were in attendance.

The Joint Resolution Signing occurs once every five years; the original Resolution Signing Event took place in July 2008. The signing of the document highlights the regional collaboration of the ACSEC, with unique partnerships between the small municipal separate storm sewer system (MS4) community partners and education partners including universities, local and state agencies and non-profit organizations. A list of the ACSEC education partners can be found on p.2 of this report.

As community partner representatives signed the Joint Resolution document, they each spoke to the audience about the value of water resources and the significance of the Consortium effort within their respective community. The ACSEC education partners were recognized for their demonstrated dedication to education and natural resource protection. The event also included presentations from Ms. Katie Giacalone, Director of the Center of Watershed Excellence, Dr. Cal Sawyer of Clemson University's School of Agricultural, Forest and Environmental Science and Ms. Guinn Garrett and Ms. Kimberly Counts, ACSEC Co-ordinators.



Annual Report of Activities Format

The annual report utilizes the same general format as the previous five ACSEC reports and the other regional stormwater consortiums in South Carolina. This annual report is intended to give the reader a comprehensive look at the ACSEC from July 1, 2013 to June 30, 2014, delineating activities into public education and public involvement categories. For each activity, a brief description is provided as well as information on lead provider, supporting partners, date, number of impacts and target audiences. Public education activities are identified as either direct or indirect outreach strategies.

Clemson University Carolina Clear developed an online database in the first ACSEC reporting cycle to record detailed information on activities conducted by consortium partners. The data collected in the online database includes information on target audiences, pollutants, activity type, lead service providers, supporting partners, number of impacts, location and other details. This annual report provides a condensed version of the information collected in the online database as well as additional, supplementary information sourced from ACSEC partners.

The activities in the report are listed in table format. Due to space limitations, target audiences are abbreviated as follows:

Target Audience Abbreviations

GP	General Public
R	Residential Homeowners and Renters
YT	K-12 Youth and Teachers
HE	Higher Education
T	Technical Engineers, Contractors, Developers and Staff
EA	Elected and Appointed Officials and High Level Staff
C	Commercial
SP	Stormwater Pond Managers
B	Boat Owners, Operators and Marinas
P	Pet Owners

Public education activities are classified into two broad categories, **direct** and **indirect** outreach methods, to express mechanisms by which information has been communicated to the public. Direct methods include activities that are implemented via direct personal contact. Examples of direct methods include workshops, presentations, trainings and public involvement activities. In contrast, indirect outreach methods refer to contacts through traditional media channels including television, radio, print and billboards. Indirect methods generally reach a much greater portion of the population due to the nature of their mediums; however, it is often more difficult to gauge specific impacts. Whereas when dealing with direct methods, smaller numbers of people are reached yet the ones that are reached generally provide a forum for direct evaluation and feedback. Each method is important in the overall education campaign, and are both part of the five year educational strategy for the ACSEC. Throughout the document, the words “direct” or “indirect” are provided at the top of each reporting table to indicate which category an effort belongs.

Data provided are as accurate as possible and are reviewed by multiple individuals involved in the reporting process. However, due to the nature of indirect outreach initiatives, indirect impact numbers are typically estimates.

Internet (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	Clemson University	Website, Clemson Extension (stormwater related only), Carolina Yards, Carolina Clear, and ACSEC: Impacts are based on Google Analytics unique page views.	Continuous	53,457	GP, R, P, SP, T, B, C, YT



WEBSITE: The ACSEC website is part of the Carolina Clear website, which continues to add new features for the public, including links to free resources like the SCWaterWays factsheet series, an ACSEC Facebook feed and archived editions of the ACSEC’s e-newsletter, the “Ripple Effect”. The ACSEC website also includes archived information including annual report and meetings, as well as the ACSEC Strategic Education Plan. Clemson Extension maintains a Stormwater Pond Management website and the Carolina Yard website. The Stormwater Pond Management website provides targeted information on pond inspection and maintenance to ensure stormwater pond function and water quality protection; the Carolina Yard website serves as a gateway to information on best management practices for an environmentally friendly lawn and garden (see highlight, p. 12-13).

Internet (Indirect) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	ACSEC Education and Community Partners	ACSEC Electronic Newsletter, <i>Ripple Effect</i> : Bi-monthly Consortium e-newsletter.	Bi-monthly (6 editions total)	1,535	GP, R, HE, EA, P, T, B, C, YT, SP



ELECTRONIC NEWSLETTER: The ACSEC e-newsletter “Ripple Effect” was designed to provide awareness of ACSEC-related activities, including past, ongoing and future events. The “Ripple Effect” also includes links to pertinent electronic resources providing information on good stewardship practices. The “Ripple Effect” is issued on a bi-monthly basis. ACSEC community and education partners are encouraged to submit information for inclusion in the “Ripple Effect” and also to distribute the e-newsletter to others. The “Ripple Effect” is archived on multiple partner websites; therefore, the number of impacts is likely underestimated. Archived editions can be viewed at www.ashleycooper.org.

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	ACSEC Education and Community Partners	ACSEC Facebook Page: Provides daily/weekly information regarding ACSEC activities, news and events.	Continuous	14,798	GP, R, HE, EA, P, T, B, C, SP, YT



ACSEC FACEBOOK PAGE: The ACSEC Facebook page is visually driven, utilizing photographs to provide awareness of Consortium-related activities and information. The page also provides time sensitive information including camp and workshop registration deadlines, volunteer opportunities, watershed stewardship reminders and other pertinent news items. Facebook allows for an additional avenue for communication as followers may post to the page or message the administrators (ACSEC co-coordinators). A live news feed of the ACSEC Facebook page is provided on www.ashleycooper.org.

During Year Six, 277 people followed the ACSEC Facebook page, 121 posts were made totaling 14,798 “views.” Average Facebook views were 122 per post.

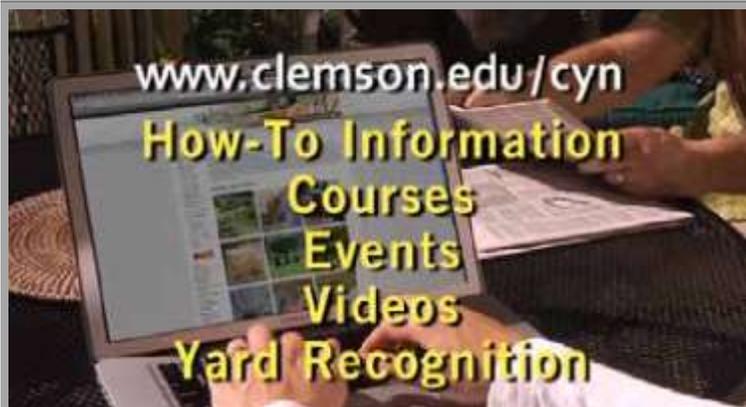
Television (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	SC Education Television (ETV), Clemson Carolina Clear	Television, <i>Making It Grow</i> : Award-winning weekly one-hour TV program on ETV. Live call-in show airs Tuesday evenings from 7-8PM and answers home gardening and landscape questions from around South Carolina. A member of the Clemson Carolina Clear team was a host on the show to highlight water-related stewardship practices and address questions concerning best management practices for protecting water quality.	Continuous	600,000	GP, R
Clemson Carolina Clear	Fox 24/MyTV	Television, Street Interviews: Street interviews and filming were conducted in Summerville, North Charleston, downtown Charleston, and Folly Beach to ask passersby, "Do you know where your stormwater goes?" Answers were compiled into a one minute segment with an educational message that storm drains lead to waterways. Aired on Fox News, MyTV and YouTube.	July 7-21, 2013.	245,000	GP



Television (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service, Clemson Carolina Clear		Television, Carolina Yards Commercial: Commercial rotation on Comcast stations that featured best management practices for a sustainable landscape, and highlighted the recently revamped Carolina Yard website. See highlight, p. 12-13 for more information on the Carolina Yards program.	September 20 to November 3, 2013	115,588	GP
WCSC/Live 5 News	Clemson Carolina Clear	Television, Community Piece: Live 5 News interviewed ACSEC co-coordinator Kim Counts and highlighted the June 2014 ACSEC rain barrel sale. The benefits of rainwater harvesting, uses in the home landscape and resources for more information were included.	May 24, 2014	12,000	GP



Radio (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Public Service	SC ETV	Radio, "Your Day": One-hour weekly radio program on local public radio.	Continuous; M-Th Noon-1PM	30,000 state-wide each week	GP

RADIO: "Your Day" is a radio program produced as a public service of Clemson University Radio Productions, featuring a wide range of topics of interest to South Carolina residents and visitors alike. Each Monday through Thursday at noon, "Your Day" provides programming in the public radio tradition, but with a South Carolina flavor. Recurring programs highlight best management practices in horticulture, entomology, pesticides and water resources.

Online Banner (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	News Station	Online Banner: Carolina Yards Online Banner displayed on www.comcast.net website. Promoted sustainable lawn practices and directed viewers to the Carolina Yard website.	September 20 to November 3, 2013	74,020	GP



ONLINE BANNER: The online banner was a new mode of outreach for the ACSEC and Carolina Clear. Hosted through a partnership with Comcast, a Carolina Yards online banner was displayed on the station website and directed viewers to the Carolina Yards website to find how-to information for sustainable yard care. The Carolina Yards program (see highlight, p. 12-13) encourages stormwater best management practices through an environmentally-friendly garden and lawn recognition program.



Billboards (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		Billboard, <i>Buffer Zones</i> : part of the Carolina Yards billboard series. Two locations: Interstate 26 at Montague Avenue; Highway 17 South, approximately 15 miles south of downtown Charleston.	May 12, 2014 to present	205,540; 12,000	GP
Clemson Carolina Clear		Billboard, <i>Healthy Soils</i> : part of the Carolina Yards billboard series. Billboard located on Interstate 26, three miles west of Heriot Street.	May 12, 2014 to present	250,672	GP
Clemson Carolina Clear		Billboard, <i>Give it a Rest</i> : part of the Carolina Yards billboard series. Billboard located on Interstate 26, four miles east of State Route 453.	May 12, 2014 to present	67,936	GP



BILLBOARD: The statewide “Carolina Yards: Do you have one?” billboard series promoted shoreline buffers, proper grass and lawn maintenance and healthy soil management. Outreach messages were selected to address nutrient reduction in stormwater and pond management. Billboards were located in select Tri-County locations and number of impacts represent daily estimated counts.



The Carolina Yards Program

Clemson Extension and Carolina Clear's Carolina Yards program began in 2000 to provide information on watershed friendly landscape practices in a simple and do-it-yourself manner for all yard-owning and managing audiences. Paired with a statewide increase in program interest and demands, Carolina Clear partnering communities sought to address behaviors and pollutants related to residential landscaping practices and solutions for better yard practices. As a result, several Carolina Yards program development steps were taken during 2013-2014 so that Carolina Yards may better meet these needs:

- The program got an overall facelift with a new logo and title. The website was overhauled to include videos, tutorials, updated tips, events calendar, Facebook feed and more.
- A five-week online course introduced improved Carolina Yards principles and action items to participants. Nearly 100 individuals have been trained on these principles via the online course.
- Social science concepts of developing social norms and neighbor-to-neighbor education were put to work with recognition items made available for those who have certified their yard and received a Clemson certificate.
- A Carolina Yards Plant Database (www.clemson.edu/cy/plants) was developed, identifying plants of SC that fit the program's goals of minimizing pesticides, fertilizers and water use, while creating low-maintenance, wildlife-friendly yards.
- Carolina Yards events and installation of demonstration yards were outreach initiatives of every consortium, offering educational opportunities.



The Carolina Yards Program

With these new and updated resources, this Carolina Clear media campaign took a new perspective - marketing these resources under the program brand with a goal to increase program awareness, resource use and participation at educational events. This model was truly successful for the program, and Clemson Extension and Carolina Clear will continue to monitor its long-term impact on yard and resource management.

The mass media campaign in the Berkeley, Charleston and Dorchester communities included the following:

- Fall commercial rotation purchases,
- Online banners on news station websites, directing users to the program for how-to information, and
- Versatility of billboard messages based on program focus areas with options of rainwater harvesting, minimizing turf and mowing best practices, composting and building healthy soil and vegetated buffer zones.

At the time of this report, it is estimated that this mass-media campaign achieved greater than 5.2 million statewide impacts, with 725,756 estimated impacts in the Tri-County.

Across 24 counties, there are now more than 100 yards certified under the program brand, just in time for the 100-year anniversary of the Smith-Lever Act, which formalized the Cooperative Extension Service. Acknowledging the value of public commitment to resource protection and stewardship, each newly Certified Carolina Yard is publicly recognized on Facebook.

Carolina Clear and its community partners look forward to the next steps for the Carolina Yards program, including the release of the revised instructional workbook. Also, the launch of a Carolina Schoolyards program will expand learning to outdoor classrooms through demonstration and water protection curriculum and associated activities. To find out more information on the Carolina Yards program, visit: www.clemson.edu/cy.



Publications (Indirect)

ARTICLES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Lakeside Magazine	Carolina Carolina Clear	ARTICLE, Magazine: "Love, Don't Litter, Where You Live"	August/September 2013	6,000	GP, R
Lakeside Magazine	Clemson Carolina Clear	ARTICLE, Magazine: "Invigorating Your Garden"	October/November 2013	6,000	GP, R
Lakeside Magazine	Clemson Carolina Clear	ARTICLE, Magazine: "Rain Gardens"	December 2013/January 2014	6,000	GP, R

THE POST AND COURIER Read by more than 96,000 residents, "The Post and Courier" is one of Charleston's oldest and widely distributed newspapers. "The Post and Courier" regularly features Clemson Extension agent work and recommendations in a Home and Garden section column, providing an avenue for promoting best management practices for stormwater protection in the landscape. "The Post and Courier" also has a record of providing coverage for multiple ACSEC community and education partner activities, including this year's Native Plant Society Dune Restoration project.

Lakeside Magazine	Clemson Carolina Clear	ARTICLE, Magazine: "Soil Fertility"	February/March 2014	6,000	GP, R
The Post and Courier	SC Native Plant Society, Lowcountry	ARTICLE, Newspaper: "Planting Project"	February 23, 2014	96,005	GP, R
The Catalyst	Clemson Carolina Clear	ARTICLE, Newspaper: "MUSC Grounds Department to Install Markers"	February 28, 2014	4,500	GP, R, C
The Post and Courier	Clemson Extension	ARTICLE, Newspaper: "Minding Your N, P and Ks - How To Interpret Clemson Extension Soil Test Results for a Bountiful Vegetable Garden"	March, 15, 2014	96,005	GP, R
Lakeside Magazine	Clemson Carolina Clear	ARTICLE, Magazine: "Recycle Yard and Kitchen Waste by Composting"	April/May 2014	6,000	GP, R

Publications (Indirect)

ARTICLES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
The Post and Courier	Carolina Carolina Clear	ARTICLE, Newspaper: "Tips for a green(er) house"	April 20, 2014	96,005	GP, R
Lakeside Magazine	Clemson Carolina Clear	ARTICLE, Magazine: "Know Your Beneficial Insects"	May/June 2014	6,000	GP, R

PRINT ADVERTISING

The Moultrie News	Town of Mount Pleasant	PRINT ADVERTISING: "It Drains Here" promotional piece	June 4, 2014	70,607	GP, R
The Moultrie News	Town of Mount Pleasant	PRINT ADVERTISING: "Illicit Discharge" promotional piece	June 18, 2014	70,607	GP, R

THE MOULTRIE NEWS

The Moultrie News, started in 1969, is available both in print and online, with print editions published weekly. Readership is "East of the Cooper" and growing; the paper delivers to 28,243 homes in the greater Mount Pleasant, Daniel Island, Isle of Palms, Sullivan's Island and Wando River communities. The Moultrie News also has a growing web presence that sees more than 101,000 page views per month. In June 2014, two quarter-page stormwater education print ads were sponsored by the Town of Mount Pleasant.

WHAT GOES IN HERE... COMES OUT HERE.

Stormwater is generated during rainfall events when you fall onto the surfaces of your neighborhoods, businesses, and rooftops. Stormwater has the ability to capture a variety of urban pollutants such as animal feces, tires, and trash that infiltrate water bodies. Stormwater runoff is NOT treated at the local wastewater treatment facility.

So when polluted stormwater carries both organic and inorganic pollutants from leaking vehicles or improper disposal practices, avoid using oil on the ground, avoid herbicides and pest chemicals, and be sure that it is not responsible to show **ONLY RAIN** down the drain to protect our waterways.

Town of Mount Pleasant **ASHLEY COOPER**
STORMWATER EDUCATION CONSORTIUM

For more information, visit us online at www.mountpleasant.com/publicworks

HELP REPORT AND ELIMINATE ILLEGAL DISCHARGES IN OUR WATERWAYS.

When it rains, it pours! And, with this rainy season all of the pollutants left out on the landscape of our neighborhoods, businesses, and rooftops - trash, cigarette butts, paint, chemical spills, pet waste, oils, grease, and more!

IF YOU SEE THE FOLLOWING IN A RIVER OR LOCAL BODY OF WATER:

- Septic or sewer overflow
- Oil, soap or motor oil

OR, IF YOU SEE THE FOLLOWING DUMPED OR FLOWING INTO STORM DRAINS OR DITCHES:

- Construction / paint waste
- Household cleaning chemicals
- Auto tires or car fluids
- Auto chemical or oil spill
- Hot water/steam or acids
- Green slippings or leaves
- Cooking grease

THIS IS AN ILLEGAL DISCHARGE!

Please notify the Town of Mount Pleasant Stormwater Division (360-884-6511) or Public Department.

For more information please visit us online at www.mountpleasant.com/publicworks

Town of Mount Pleasant **ASHLEY COOPER**
STORMWATER EDUCATION CONSORTIUM

Mailers (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		POSTCARD: Stormwater pond management postcard delivered to stormwater pond owners in the Tri-County.	April 1, 2014	9,495	GP, R, SP



(front of postcard)



(back of postcard)

STORMWATER POND POSTCARD A 2012-2013 Carolina Clear/College of Charleston Master of Environmental Studies (MES) internship mapped almost 6,000 stormwater ponds in the Tri-County, with 9,495 pond owners identified for these pond systems. In Spring 2014, an educational postcard was developed and sent to pond owners; the postcard highlighted the function of these ponds for both water quantity, quality and the community, encouraged pond management and directed owners seeking more information to free or low-cost available resources, including the 2014 Charleston Area Stormwater Pond Management Conference (see highlight, p. 27).



Map of almost 6,000 stormwater ponds identified in the Berkeley, Charleston and Dorchester counties. Map produced by Sarah Rollins, College of Charleston MES program.

Carolina Clear Telephone Survey

Every 5 years, Carolina Clear implements a telephone survey across consortium areas to assess resident knowledge, attitudes, behaviors and awareness of stormwater and related programmatic efforts. The survey is developed with feedback from consortium community and education partners and results provide guidance in developing strategies for education and outreach statewide and on the local consortium level.

The Carolina Clear survey, which was first administered in 2009, was replicated again in 2013. Phone calls began in the fall of 2013 to collect information on the environmental attitudes, awareness and behaviors of adults living within each consortium outreach area. Repeated questions, such as the selection of the best definition for watershed, were used to measure the impact from the region's collective pollution prevention and awareness programs. New questions, such as on storm drain marker awareness and what icon or wording can be recalled on a storm drain marker, provide measures of impact and potential new outreach methods. ACSEC region specific questions were posed to assess how residents interact with their waterways, resident awareness regarding the relationship between polluted stormwater and shellfish, most common news sources and awareness of the work of the Ashley Cooper Stormwater Education Consortium.

In the Berkeley, Charleston, and Dorchester counties, 400 responses were collected from randomly selected residents. Selected questions will be reviewed for statistical significance and data summaries will be available by the winter of 2014-2015. More information on the survey, questions asked and regular updates are available at <http://www.clemson.edu/public/carolinaclear/surveys2013.html>.

The Carolina Clear 2013 telephone survey will result in new and updated programs, outreach materials and measures of impact for Carolina Clear and the Ashley Cooper Stormwater Education Consortium.

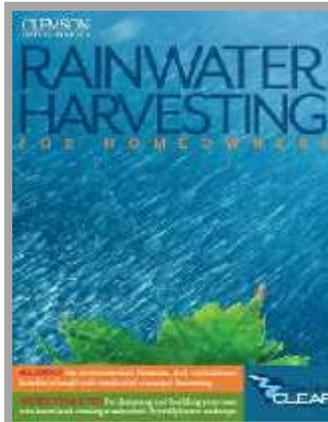


Outreach Materials (Indirect)

BROCHURES, BOOKLETS, MANUALS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension	SCDHEC	Booklet, <i>Carolina Yardstick Workbook</i> : Highlights Carolina Yards principles for sustainable landscapes.	Continuous	170	GP, R, P
Clemson Carolina Clear		Brochure, <i>Leaf it on the Lawn</i> : Discusses tips for proper disposal of lawn debris; flyer in Spanish and English.	Continuous	100	C, R, GP
Charleston Waterkeeper	Clemson Carolina Clear	Brochure, <i>Project IMPACT's Recreational Boater Education Booklet</i> : Tips for boater operation and maintenance to protect water quality.	Continuous	100	B
Clemson Carolina Clear		Manual, <i>Rain Gardens - A Rain Garden Manual for South Carolina</i> : Created to assist SC homeowners in designing and installing rain barrel systems.	Continuous	250	GP, R
Clemson Carolina Clear		Manual, <i>Rainwater Harvesting for Home Owners</i> : Provides SC residents with step-by-step information on planning and constructing a rain garden.	Continuous	250	GP, R

The “Leaf it on the Lawn” flyer was designed with homeowners and landscapers in mind. Flyer provides tips on how to properly dispose of lawn debris and is available in Spanish and English.



The rainwater harvesting manual is written to assist SC homeowners with designing and installing rain barrel systems. The rain gardening manual provides information on constructing a rain garden and emphasizes the step-by-step planning process. Both manuals are distributed within the Ashley Cooper region during public events, workshops and presentations. The publications are also made available, as a free download, on the Carolina Clear website.

Outreach Materials (Indirect)

POSTCARDS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear	Multiple	POSTCARD, <i>What is a Rain Garden?</i> : Provides brief description and purpose of a rain garden and links interested individuals to online resources and additional information.	Continuous	200	GP, R, YT
Clemson Carolina Clear	Multiple	POSTCARD, <i>Trashing Our Environment</i> : Provides information on what can be done to prevent litter in SC.	Continuous	200	GP, R, YT
Clemson Carolina Clear	Multiple	POSTCARD, <i>What To Do About Pet Waste</i> : Provides information to pet owners on the hazards of pet waste in runoff and how to properly dispose of waste.	Continuous	200	GP, R, YT, P
Clemson Carolina Clear	Multiple	POSTCARD, <i>We All Live Downstream</i> : Highlights that stormwater is not treated; includes tips to preventing stormwater pollution.	Continuous	350	GP, R, YT
Clemson Carolina Clear	Multiple	POSTCARD, <i>Septic Systems Care and Maintenance</i> : Tips for maintaining septic systems to reduce negative impacts on water quality.	Continuous	100	GP, R
Clemson Carolina Clear	Multiple	POSTCARD, <i>Better Manage Fats, Oil and Grease (FOGs)</i> : Provides information on the hazards of FOGs in our sewer system; includes information on proper FOG disposal.	Continuous	200	GP, R, C
Clemson Carolina Clear	Multiple	POSTCARD, <i>A More Green Way to Clean</i> : Tips on proper pressure washing to protect water quality.	Continuous	100	GP, R, C
Clemson Carolina Clear	Multiple	POSTCARD, <i>What is a Rain Barrel?</i> : Describes rainwater harvesting; promotes the use of rain barrels for smarter lawn care as well as for water quality.	Continuous	200	GP, R, YT
Clemson Carolina Clear	Multiple	POSTCARD, <i>Freshwater Shorescapes</i> : Describes the benefits of shorescaping and tips and resources for pond owners.	Continuous	100	GP, R, SP

Educational postcards provide a take-home outreach material for distribution to residents and visitors at tabling events, workshops and presentations, office displays and more. All postcards provide links to free resources for more information. Postcard impacts are in thanks to distribution by the ACSEC's education and community partners.



Outreach Materials (Indirect)

PROMOTIONAL ITEMS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear		PROMOTIONAL ITEMS, Stormwater Pond Management Sticker: Promotes the Clemson Stormwater Pond Management website.	Continuous	180	P, T, C, R GP, SP
Clemson Carolina Clear		PPROMOTIONAL ITEM, www.ashleycooper.org Sticker: ACSEC logo and website utilized to promote website visitation and Consortium awareness.	Continuous	500	GP, R, YT
Clemson Carolina Clear		PROMOTIONAL ITEM, Pocket Ashtray: Encouraged responsible disposal of cigarette butts.	Continuous	50	GP, R
Clemson Carolina Clear		PROMOTIONAL ITEM, Clean Water Hero Bracelets: Promoted water stewardship, distributed to youth during programs.	Continuous	230	GP, YT
Clemson Carolina Clear		PROMOTIONAL ITEM, Thank You! Reusable Bags: Promoted the ACSEC and protection of local waterways.	Continuous	100	GP, R
Clemson Carolina Clear		PROMOTIONAL ITEM, ACSEC Koozies: Promoted the ACSEC and includes a "Ask About Watersheds message." Distributed at events and programs.	Continuous	100	GP, R
Clemson Carolina Clear		PROMOTIONAL ITEM, Fish Sponges: Includes a "Only Rain Down the Storm Drain!" message. Distributed to youth at tabling events and presentations.	Continuous	120	GP, YT
Clemson Carolina Clear		PROMOTIONAL ITEM, Dog Bag Dispenser: Distributed to dog owners at tabling events to remind owners to pick up pet waste.	Continuous	120	GP, R, P



Permanent Exhibits (Indirect)

SITE DEVELOPMENT

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension	Carolina Clear, Tri-County Master Gardeners	PERMANENT EXHIBIT DEVELOPMENT: Clemson University Research and Education Center's "Ed Shed."	Continuous	500	GP, R, YT, HE, T, EA, P, C

The "Ed Shed" located at Clemson University's Coastal Research and Education Center (CREC), provides a demonstration and training area with several examples of stormwater best management practices (BMPs) to include pervious pavers, pervious concrete, both above-ground and below-ground rainwater harvesting systems, rain gardens, landscaping utilizing native plants and no-till gardening techniques. Interpretive signage provides information on rain gardens and native plant identification. During reporting Year Six, the "Ed Shed" was utilized for rain garden workshops, a bog garden workshop, farm tours, litter sweep gatherings, Consortium meetings and one national-scale conference space. During Year Six, the "Ed Shed" was also a host site for graduate-level rainwater harvesting research (see highlight, p. 52).



Clemson Extension, Tri-County Master Gardeners	Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: Urban Research and Demonstration Area Rain Garden	Continuous	1,000	GP, R, YT, HE, T, EA, P, C
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In the fall of 2013, Clemson Cooperative Extension, the Tri-County Master Gardeners and Lowcountry Master Naturalists enhanced and enlarged the rain garden at the Urban Research and Demonstration Area. This rain garden demonstration site provides an opportunity to view a larger-scale rain garden. The rain garden is in a highly visible location along Savannah Highway and includes interpretive signage.



Permanent Exhibits (Indirect)

SITE DEVELOPMENT

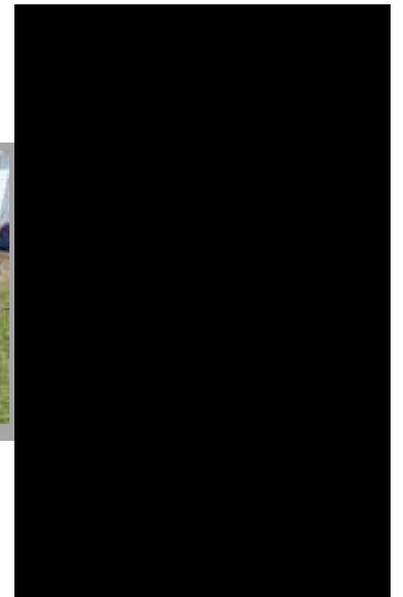
LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston County Park and Recreation Commission	Clemson Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: Caw Caw Interpretive Center	Continuous	2,000	GP, R, YT, HE, T, EA, P, C

A new demonstration site was established at the picnic shelter located at the Caw Caw Interpretive Center. The site includes a 50-gallon rain barrel which overflows into a full shade rain garden. Visitors to the site can better understand how to connect the overflow of a rain barrel into a residential scale rain garden as well as appropriate plants for full shade rain gardens. This location is visited by school groups, birding groups and various other types of visitors to Caw Caw.



Charleston County Park and Recreation Commission	Clemson Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: Wannamaker County Park	May 3 to June 30, 2014	500	GP, YT
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A new demonstration site was established at Wannamaker County Park's Whirlin' Waters site. A residential scale, full sun rain garden was installed utilizing the help of area youth; the rain garden captures stormwater from surrounding impervious areas, including sidewalks and patios, and will be outfitted with educational signage. This demonstration site has much potential in the years to come as Whirlin' Waters experiences high visitation numbers (over 63,000 during May and June 2014) and the rain garden is located in a high visibility space within the park. As this exhibit was established towards the end of the Year Six reporting year, increased impact numbers will be reflected in Year Seven.



Permanent Exhibits (Indirect)

SITE DEVELOPMENT-SCHOOL INITIATIVES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Green Hearts Project, Keep America Beautiful, Keep Charleston Beautiful	Clemson Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Mitchell Elementary School- As part of the Green Hearts Project, a 1550-gallon cistern was installed to supply water to surrounding raised beds using drip irrigation. The cistern is located adjacent to the school's outdoor classroom and captures runoff from the structure's roof.	Continuous	350	YT
Clemson Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Ashley River Creative Arts School- Bicycle pump installed on existing 300-gallon cistern. Students peddle the stationary bicycle as part of the bicycle pump system that moves water from the cistern to garden areas.	Continuous	500	YT
Clemson Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Goodwin Elementary School- Two 50-gallon rain barrels were installed adjacent to the school's small greenhouse and butterfly garden area.	Continuous	100	YT
Clemson Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: James Island Charter High School- Four 50-gallon rain barrels were installed at a school garden used by biology students, science club and camp youth.	Continuous	390	YT



Permanent Exhibits (Indirect)

EXISTING SITES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Native Plants Society	Charles Towne Landing State Historic Site, Clemson Carolina Clear	PERMANENT EXHIBIT EXISTING: Rain garden demonstration site at the Legare-Waring House at Charles Towne Landing State Historic Site. This site includes interpretive signage and is frequented by public walking the grounds of Charles Towne Landing, as well as those visiting for other public and private events.	Continuous	1,000	GP, R
SC Aquarium	Clemson Carolina Clear	PERMANENT EXHIBIT EXISTING: Rain barrel display at the SC Aquarium; site located at Aquarium entrance.	Continuous	1,000	GP, R, YT, HE, T, EA, P, C
Clemson Carolina Clear	Clemson Extension Master Gardeners	PERMANENT EXHIBIT EXISTING: Bowens Island rain garden is a 900-square foot large-scale rain garden managing nearly 2000-square feet of roof area runoff. This popular dining destination provides rain garden exposure to the public.	Continuous	1,000	GP, R, C
St. Julian Divine Community Center	City of Charleston, Charleston Horticulture Society, Carolina Clear	PERMANENT EXHIBIT EXISTING: Two 55-gallon rain barrels are installed at the entry way to the St. Julian Divine Community Center. The rain barrels are connected to drip irrigation system utilized for adjacent landscaping.	Continuous	1,500	GP, YT, R
Sustainability Institute	Clemson Carolina Clear	PERMANENT EXHIBIT EXISTING: The Sustainability Institute's <i>Green Home Demonstration Site</i> features stormwater best management practices, including pervious concrete walkways and an extensive rainwater harvesting system. Tours are provided to visitors on a weekly basis.	Continuous	150	GP, R, YT, C



Permanent Exhibits (Indirect)

EXISTING SITES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Department of Natural Resources	Clemson Carolina Clear	PERMANENT EXHIBIT EXISTING: <i>Ft. Johnson Community Garden</i> is a demonstration garden adjacent to the SCDNR outdoor classroom at the Marine Resources Center on James Island. Stormwater best management practices present include two rain gardens, a 1500-gallon cistern, over 30 species of native plants and multiple waterwise irrigation practices.	Continuous	5,000	GP, R, HE, YT
Clemson Extension Service	Tri-County Master Gardeners, Clemson Carolina Clear, Exchange Club	PERMANENT EXHIBIT EXISTING: The Exchange Park in Ladson hosts the <i>Carolina Yard Living Classroom</i> . Stormwater best management practice features include pervious pavers, a rain barrel and a rain garden landscaped with native plants. All best management practices have associated interpretive signage for visitors. This demonstration site is popular at the Coastal Carolina Fair hosted at the Exchange Park each fall. During the Fair, Tri-County Master Gardeners staff the site to answer questions.	Continuous	50,000	GP, R, YT
Clemson Extension Service	Tri-County Master Gardeners, Carolina Clear	PERMANENT EXHIBIT EXISTING: Berkeley County's Extension Office located in Moncks Corner features a residential-scale rain garden, 50-gallon rain barrel and lateral sheet composting landscape bed. All features are located at the entry way to the office.	Continuous	150	GP, R, C



Permanent Exhibits (Indirect)

EXISTING SITES-SCHOOL INITIATIVES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: The <i>Green Teaching Garden</i> demonstrates stormwater best management practices at the Grice Marine Lab. Features include a rain garden, cistern, multiple rain barrels, composting station, native plants and raised beds. Tours are provided upon request.	Continuous	500	HE, GP, R, YT
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Rainwater harvesting cistern and pump located adjacent to the Political Science Building on College of Charleston's downtown campus.	Continuous	500	HE, GP, R, YT, C
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Early Childhood Development Center features rain barrels to raise awareness of water quality sustainability features.	Continuous	100	YT, HE, GP, R
Farms to Schools Initiative	Clemson Extension, Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Alston Middle School utilizes harvested rainwater and drip irrigation for raised beds.	Continuous	900	YT, GP
Charleston Children's Garden Project	Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: 300-gallon rainwater harvesting system installed at Stono Park Elementary School.	Continuous	400	YT, GP



2014 Charleston Area Stormwater Pond Conference

On May 22, 2014, ACSEC partners, the South Carolina Department of Natural Resources ACE Basin NERR Coastal Training Program, the South Carolina Sea Grant Consortium and Clemson's Carolina Clear program, partnered together to host the 2014 Charleston Area Stormwater Pond Management Conference at Trident Technical College's (TTC) campus. This Conference built upon the success of the inaugural 2012 Conference in an effort to provide stormwater pond management strategies and relevant water quality related research to pond owners and managers, including homeowner associations, property management companies, municipal and county employees and commercial pond management companies.

There were 147 pond owners, researchers, educators and pond management professionals in attendance at the conference. In addition to a series of plenary and breakout sessions on a variety of management topics, participants could take part in an afternoon optional field tour of TTC's large stormwater pond, led by experts from Clemson University Cooperative Extension Service and Woolpert consultants. The Conference was closed with a special delivery from Mr. David Wilson, SCDHEC's Chief of the Bureau of Water, on the evolving role of stormwater pond management in South Carolina.

Evaluations showed that the information and discussion were well-received and that a demonstrated demand exists for ongoing offerings of the Charleston Area Stormwater Pond Management Conference and other in-depth pond management programming. The Conference will continue to be offered biannually in the community; the ACSEC is already looking ahead to the next in 2016!



There were 147 attendees at the 2014 Charleston Area Stormwater Pond Conference, discussing best management strategies for stormwater ponds to protect function and downstream water quality.



Public Events (Indirect)

FAIRS AND FESTIVALS-FALL 2013

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Town of Folly Beach	Surfrider Foundation	EXHIBITS, <i>Folly Beach 40th Anniversary Celebration</i> : Surfrider tabled this event located on Center Street of Folly Beach. Tabling provided information to participants about the impacts of pet waste, litter and other forms of pollution.	September 21, 2013	250	GP, R, BO, YT
Charleston Green Fair	Multiple	EXHIBITS, <i>Charleston Green Fair</i> : This festival took place at the James Island County Park, providing an enjoyable venue for participants to learn more about environmental stewardship. ACSEC tabled the event to provide information on environmentally friendly gardening practices and other watershed stewardship topics.	September 22, 2013	3,100	GP, R, YT
Berkeley County Government	Clemson Carolina Clear	EXHIBITS, <i>Sanagree Community Day</i> : An enviroscape demonstration was utilized to provide awareness of nonpoint source pollution, with emphasis on pet waste and fertilizers.	October 12, 2013	960	R, YT



Public Events (Indirect)

FAIRS AND FESTIVALS-SPRING 2014

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Clemson Carolina Clear	EXHIBITS, <i>SC Horticulture Industry Tradeshow</i> : Provided information on the Carolina Yards Program updates to nursery and landscape professionals.	February 6-7, 2014	350	C
Charleston Soil and Water Conservation District	Multiple	EXHIBITS, <i>Southeastern Wildlife Exposition</i> : Provided informational handouts on water quality, soils and other conservation topics.	February 20-22, 2014	1,500	GP, R, EA, PO, YT, C
Charleston County Government	Clemson Carolina Clear	EXHIBITS, <i>The Black Expo 2014</i> : Informational handouts and giveaways accompanied stormwater education program discussion at this event held at the the North Charleston Colesium.	March 13-15, 2014	125	GP
Keep Dorchester County Beautiful	Clemson Carolina Clear	EXHIBITS, <i>Flowertown Festival</i> : Hosted in downtown Summerville, provides an opportunity to raise awareness of ACSEC efforts and distribute stormwater educational material.	April 6, 2014	500	GP, R, YT
Charleston County Soil and Water Conservation District	Multiple	EXHIBITS, <i>Hollywood Water Quality Earth Day</i> ; Enviroscene presentation and information on septic maintenance for water quality protection.	April 12, 2014	75	GP, YT
Medical University of South Carolina	Multiple	EXHIBITS, <i>MUSC Earth Day Festival</i> : Hosted on the MUSC campus; multiple ACSEC partners are present to provide information to MUSC staff, students, visitors and general public.	April 15, 2014	1,800	HE, GP, R, YT
Charleston County Government	Multiple	EXHIBITS, <i>Charleston County Earth Day Festival</i> : The festival is a hands-on, science based-experience with multiple ACSEC education partners providing information on watershed stewardship.	April 26, 2014	2,000	GP, R, YT
Keep Dorchester County Beautiful, Ashley Scenic River Advisory Committee	Charleston Soil & Water Conservation District, SC Sea Grant Consortium, Carolina Clear	EXHIBITS, <i>Oakbrook Ashley Riverfest</i> : Event held along the Ashley River at Jessen Boat Landing & Colonial Dorchester State Park. Participants meet representatives from various natural resource organizations. An enviroscene provided a platform to discuss watershed stewardship.	May 3, 2013	950	GP, R, YT, BO
Keep Charleston Beautiful	Multiple	EXHIBITS, <i>Green and Lean</i> : Annual 5K run to raise awareness of litter prevention efforts & KCB involvement opportunities.	May 31, 2014	279	GP

In-Person, Phone, Email (Direct Contacts)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Tri-County Master Gardeners Association		In-Person, Phone, Email: In the Tri-County, Clemson Extension Agents and Master Gardeners answered questions relating to a variety of home landscaping issues; topics including compost, mulch, fertilizers, native plants, irrigation, etc.	Continuous	49,000	GP, R, C
Clemson Extension	Clemson Carolina Clear	In-Person, Phone, Email: Clemson Extension Agents answered questions and provided services to a variety of Tri-County audiences regarding water resources and stormwater-related best management practices.	Continuous	225	P, R, C, YT, HE, T, GP, SP
Clemson Extension, Clemson's Agricultural Service Lab		Soil Samples: Clemson Extension, in cooperation with Clemson's Agricultural Service Lab, processed soil samples for Tri-County residents and commercial audiences.	Continuous	Berkeley: 569 Charleston: 2,511 Dorchester: 1,003 Total: 4,083	R, C, GP

The Charleston Tri-County area is home to 12 Clemson Extension Agents and nearly 450 active Master Gardeners. Throughout the year, Extension Agents and Master Gardeners in the Berkeley, Charleston and Dorchester County Extension offices respond to calls, walk-ins and emails from the public, as well as field questions during public events. Information is requested by individuals representing both the private and commercial sector, with diverse interests ranging from agriculture, forestry, home landscaping, horticulture and pond management. Extension offices also provide services in concert with the University, including processing soil samples, irrigation water analysis, plant and weed identification and identification of plant problems. These direct contacts with the public yield some of the most positive results in addressing specific concerns and problems, most of which relate to water quality at some level.



Presentations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SCDNR SCORE		PRESENTATION: "Oysters as living shorelines" on the water quality, shoreline stabilization and habitat effects of oyster reefs (4 separate presentations).	Continuous	131	R, HE
Clemson Extension, Carolina Clear		PRESENTATION: "Tools for Teachers, Stormwater Education Opportunities for Lowcountry K-12"; highlighted available resources, including the enviroscape.	August 7, 2013	10	YT
Clemson Extension, Carolina Clear		PRESENTATION: Two ACSEC-related presentations were delivered at the Water Education Summit in Chattanooga, TN highlighting Consortium efforts of "From Seeds to Shoreline, Engaging Youth in Wetland Restoration" and the business recognition program.	Sept 25, 2013	100	HE
Clemson Extension, Carolina Clear	Tri-County Master Gardeners	PRESENTATION: Water quality program for the Tri-County Master Gardeners in training, including irrigation water testing and local water sources.	October 3, 2013	31	R, HE
Clemson Carolina Clear, Surfrider Foundation	City of Folly Beach	PRESENTATION: Folly Beach Town Council regarding ACSEC efforts and partnership with Folly Beach and Surfrider; recieved approval to mark storm drains on Center Street with metal medallions.	October 8, 2013	15	EA
Clemson Extension, Carolina Clear	Tri-County Master Gardeners	PRESENTATION: Native plant program for the Tri-County Master Gardeners in training, with emphasis on water quality benefits and water-wise gardening.	October 17, 2013	31	R, HE
Clemson Extension, Carolina Clear	Isle of Palms Exchange Club	PRESENTATION: Program for Isle of Palms Exchange Club on stormwater, its impact on our waterways and best management practices for residential audiences.	October 24, 2013	100	R, C
Clemson Extension, Carolina Clear	Tri-County Master Gardeners	PRESENTATION: Native plant program at Magnolia Gardens, as part of continuing education for Tri-County Master Gardeners. Emphasis on downstream water quality benefits.	October 30, 2013	45	R, HE
Clemson Extension, Carolina Clear	SC Marine Educators Association	PRESENTATION: As part of the SC Marine Educators Association Annual Conference; information was provided on sustainable schoolyards with emphasis on stormwater best management practices.	November 2, 2013	20	YT, HE

Presentations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear		PRESENTATION: "Seeing is Believing" at the annual Extension Conference, highlighted successes and lessons learned of developing demonstration sites for stormwater BMPs.	December 11, 2013	25	HE
Clemson Extension, Carolina Clear	SC Sea Grant Consortium	PRESENTATION: Program for Tidal Creek Summit, presenting on the "From Seeds to Shoreline" program.	December 17, 2013	45	HE
Clemson Extension, Carolina Clear	Lakeside HOA	PRESENTATION: Program for Lakeside HOA regarding stormwater ponds and upland impacts.	January 15, 2014	15	R
Clemson Extension, Carolina Clear	Mount Pleasant Rotary Club	PRESENTATION: Program for Mount Pleasant Rotary Club on general stormwater and watershed stewardship, as well as involvement opportunities.	January 21, 2014	50	R, C
Clemson Extension, Carolina Clear	Wando Woods Community	PRESENTATION: Program for Wando Woods Neighborhood on general stormwater and watershed stewardship, as well as involvement opportunities.	January 27, 2014	50	R
Clemson Extension, Carolina Clear		PRESENTATION: Program for Charleston County Extension Advisory Committee regarding Consortium-related efforts in the Charleston Tri-County area.	February 5, 2014	25	GP
Clemson Extension, Carolina Clear	Tri-County Master Gardeners	PRESENTATION: "The Status of our Waterways" Lunch-and-Learn Workshop for Berkeley County Master Gardener's continuing education series.	February 19, 2014	30	R
Clemson Extension, Carolina Clear	Charleston County Park and Recreation Commission	PRESENTATION: As part of the CCPRC Stewardship Series, program on gardening with native plants for healthy watersheds.	February 20, 2014	20	GP, R
Clemson Extension, Carolina Clear	Bishop Gadson Community	PRESENTATION: Program on gardening with native plants to help protect water resources and the environment.	April 3, 2014	20	R
Clemson Extension, Carolina Clear	St. Johns Garden Club	PRESENTATION: Program on "Rainwater Harvesting 101" to cover rainwater harvesting basics.	April 9, 2014	25	R
Clemson, Carolina Clear	Clemson University, Multiple	PRESENTATION: ACSEC Resolution Signing event (see highlight, p.4).	May 5, 2014	75	EO

Presentations (Direct)

YOUTH PRESENTATIONS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SCDNR SCORE		YOUTH PRESENTATION: "Oysters as living shorelines"; water quality, shoreline stabilization and habitat benefits of oyster reefs.	Continuous	300	YT
College of Charleston, Grice Marine Program	Clemson Carolina Clear	YOUTH PRESENTATION: Career Day at CofC targeting rising high school seniors; included Enviroscope activity and tour of the Grice Green Teaching Garden.	July 20, 2013	42	YT, HE
Keep Charleston Beautiful	Palmetto Pride	YOUTH PRESENTATION: School-based litter prevention programs for grades K-8.	August 2013 to June 2014	3,664	YT
Ashley Hall School	Clemson Carolina Clear	YOUTH PRESENTATION: Enviroscope activity with Ashley Hall School 4th grade classes.	September 30, 2013	37	YT
Charleston County Soil and Water Conservation District		YOUTH PRESENTATION: Arbor Day/Earth Day programs where resource conservation was highlighted.	December 6, 2013	125	YT
Keep Dorchester County Beautiful		YOUTH PRESENTATION: Presentation at Ashley Ridge High School on composting and keeping area waterways clean.	January 29, 2014	40	YT
Green Hearts Project	Clemson Carolina Clear	YOUTH PRESENTATION: Enviroscope presentation for 5th grade students at Mitchell Elementary School.	February 17, 2014	48	YT
College of Charleston	Clemson Carolina Clear	YOUTH PRESENTATION: Enviroscope activity for 2nd-8th graders as part of CofC's education day.	February 27, 2014	1,200	YT, HE
College of Charleston	Clemson Carolina Clear	YOUTH PRESENTATION: Enviroscope activity with Homeschool Club.	March 13, 2014	30	YT
Berkeley County Government	Old Santee Canal Park, Multiple	YOUTH PRESENTATION: Enviroscope activity as part of the Berkeley County K-5 Naturescope "Kids Who Care" program.	April 9, 2014	2,000	YT
Fort Dorchester HS, Surfrider Foundation	Clemson Carolina Clear	YOUTH PRESENTATION: Enviroscope activity with Surfrider Foundation student group.	May 12, 2014	5	YT
Charleston County Soil and Water Conservation District		YOUTH PRESENTATION: Enviroscope presentations and water quality poster essay contest at Charleston County schools.	Multiple	45,400	YT

Workshops (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Clemson Carolina Clear	WORKSHOP, <i>Pond Problem Solving and Weed Identification Clinic</i> : One-day workshop on stormwater pond basics, inspection and maintenance, common problems and aquatic plant control.	October 11, 2013	33	GP, R, SP
Clemson Extension Service, Cypress Gardens	Clemson Carolina Clear	WORKSHOP, <i>The Garden Gathering</i> : Full day event featuring concurrent sessions on residential home landscaping topics. Program included a half-day workshop on water wise gardening. Participants learned about best management practices for protecting downstream water quality and had hands-on experience installing a rain barrel and constructing their own rain chain.	November 16, 2013	37	R
South Carolina Marine Association	SCDNR, SC Sea Grant Consortium, SCDHEC-OCRM, Clemson Carolina Clear	WORKSHOP, <i>Clean Marina Workshop</i> : The Clean Marina Program Workshop is an opportunity for marina owners to meet with members of the Clean Marina Committee; discussed best management practices for marina operation and site maintenance to protect water quality.	March 13, 2014	13	B



Workshops (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Tri-County Master Gardeners Association	Clemson Carolina Clear, Exchange Park	WORKSHOP, <i>Carolina Yard Gardening School</i> : Full-day event featuring keynote speakers, concurrent sessions, demonstrations, and a trade show. Water-related segments included a coastal stewardship for the home gardener program, with a focus on shorescaping.	March 22, 2014	105	R
SC Native Plants Society, Trident Technical College	Clemson Extension Service	WORKSHOP, <i>Bog Garden Workshop</i> : Participants had the opportunity to tour the “Ed Shed” and learn about efforts to reduce pollution in stormwater runoff. Each individual constructed their own bog garden planted with native bog plants.	April 12, 2014	20	R
Clemson Extension, ACE Basin NERR CTP	Carolina Clear, SCDNR	WORKSHOP, <i>Sediment Basin Workshop</i> : Emphasized design, inspection and maintenance techniques for sediment basins under the new requirements of the revised Construction General Permit.	June 5, 2014	68	T, C
SC Sea Grant Consortium	SCDNR, Carolina Clear	WORKSHOP, <i>From Seeds to Shoreline (S2S) Teacher Workshop</i> : A full day training held at the Fort Johnson Marine Center. Provided curriculum and step-by-step information for teachers on how to grow <i>Spartina alterniflora</i> with students. Workshop allowed for hands-on training opportunities including greenhouse construction and salt marsh exploration.	June 25, 2014	12	YT



Workshops (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
ACE Basin National Estuarine Research Reserve (NERR) Coastal Training Program	SCDNR, Center for Watershed Protection, SC Sea Grant Consortium	WORKSHOP, <i>Climate and Stormwater Roundtable Discussion</i> : Part of the ongoing work to develop a Low Impact Development Manual for coastal South Carolina. Workshop brought together diverse perspectives to discuss climate adaptation opportunities related to low impact development. Specialists presented on historical and projected climate patterns as well as the potential vulnerabilities.	September 20, 2013	25	EA, T, C
ACE Basin NERR Coastal Training Program	Army Corps of Engineers, Charleston County Park and Recreation Commission	WORKSHOP, <i>Coastal Wetland Identification</i> : Full-day training to increase coastal decision makers ability in identifying wetland boundaries. Provided an overview of the hydrologic, soil and vegetative indicators commonly found in Lowcountry wetlands. Workshop includes classroom lecture, discussion and field visits to different types of wetland.	November 6, 2013; April 17, 2014	78	EA, T, C
ACE Basin NERR Coastal Training Program	Center for Watershed Protection, SCDNR, SC Sea Grant Consortium	WORKSHOP, <i>A Collaborative Review of the Coastal Low Impact Development Manual</i> : This one-day workshop is designed to obtain intended user feedback on the current draft of the LID Manual, describe how the manual has been received by state regulatory agencies and share local examples of incentives for using LID practices. During this program, participants also learned about the site design guidelines and specifications for structural best management practices.	January 9, 2014	60	EA, T, C



Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson University		TRAININGS: Clemson's Department of Pesticide Regulation provides materials and testing for commercial, non-commercial and private applicator licenses. Number of impacts represents the number of Tri-County area certifications current through 2014.	Certification exams given quarterly	847	C, R, GP
Clemson University		TRAININGS: Clemson provides training and certification for the Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program to assist in pollution prevention control on construction projects.	July 12, 2013 to June, 2014	Cert: 108 Recert: 113	C, T

Land disturbing activities and sediment pollution have significant potential to adversely impact water quality. The Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program educates field personnel on the proper installation, maintenance and inspection of erosion prevention and sediment control measures. Clemson University initiated this program in 2004 and since has certified over 4,000 individuals. CEPSCI involves a series of one-day workshops to teach attendees the latest techniques for erosion prevention and sediment control.



SC DNR-SCORE Program		TRAININGS: SCORE program trained new volunteers to monitor water quality parameters in the Charleston Harbor and vicinity.	2013-2014	9	GP, YT
Surfrider Foundation	Clemson Carolina Clear	TRAININGS: Volunteers were trained on protocol for the Blue Water Task Force program; a volunteer water quality monitoring program of the Surfrider Foundation that was launched locally this year.	2013-2014	7	GP, YT

SC Department of Natural Resources' SC Oyster Restoration and Enhancement (SCORE) program annually trains volunteers to monitor water quality at designated sites around the Charleston Harbor vicinity. New to this year, Surfrider Foundation launched a local Blue Water Task Force initiative. Volunteers were trained on how to use an IDEXX quantitray to monitor enterococcus levels in the Folly River.



Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Tri-County Master Gardeners Association, Clemson Carolina Clear	TRAININGS, Master Gardener Training: Multi-day class spanning four months resulting in certified Master Gardeners.	Fall 2013	32	GP, R

As part of the Master Gardener (MG) coursework training, information and programs are incorporated on both structural and behavioral stormwater best management practices (BMPs). Once an individual has completed the course, their status remains active by performing internship and volunteer hours focused on community outreach. MGs are an enormous asset to the Charleston Tri-County area as each year this dedicated group of volunteers provide garden and landscape information to thousands of people from the public via phone, email, office visits, etc. (as reported in "Direct Contacts", p.30). The MGs provided support to the ACSEC during Year Six in a variety of ways including assistance with rain barrel sales, workshops and demonstration site projects. The MGs have the opportunity to learn more or refresh content pertaining to stormwater BMPs as part of the MG continuing education opportunities (as reported in "Presentations," p.31).



Charleston County Park and Recreation Commission	Clemson Extension Service, College of Charleston, SCDNR	TRAININGS: Master Naturalist Certification Programs in Fall 2013 and Spring 2014.	Fall 2013, Spring 2014	24	GP, R
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Charleston County Park and Recreation Commission is the lead provider for the Charleston Area Master Naturalist program. Master Naturalists receive training in a 13-week field study course led by a variety of experts. Participants learn about coastal ecology by visiting unique and diverse habitats. Water resource education is a fundamental component of the program, as participants learn about stormwater runoff and associated water quality issues. During Year Six, all Master Naturalists in training participated in an oyster reef restoration build and a rain garden installation project. Master Naturalists help disseminate information to the public, ideally becoming leaders in their community to support conservation and education of coastal resources.



Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service	Clemson Carolina Clear	ONLINE TRAINING: <i>Carolina Yards and Neighborhoods, Online Guide to Environmentally Friendly Gardening.</i>	May-June, 2014	38	GP, R
Clemson Extension Service		ONLINE TRAINING, Master Gardener Online Training: Spans four months of online programs resulting in certified Master Gardeners.	Fall 2013, Spring 2014	39	GP, R

The Carolina Yards and Neighborhoods Online Guide to Environmentally Friendly Gardening is a five-week course piloted in the Charleston Tri-County area during spring of 2013. Deemed as a success, the class was relaunched in Spring 2014 on a statewide level. Participants learn about the Carolina Yards principles through interactive presentations and discussion forums, complete tasks in their own home landscape and have the opportunity to certify their yard as a "Carolina Yard."

Conferences (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Carolina Clear, ACE Basin NERR Coastal Training Program, SC Sea Grant Consortium	Clemson Extension Service, SC DNR	CONFERENCE: 2014 <i>Charleston Area Stormwater Pond Management Conference</i> (see highlight, p. 27).	May 22, 2014	147	T, EA, HE, C
Clemson University Baruch Institute of Coastal Ecology and Forest Science.	Clemson Carolina Clear, College of Charleston, SC Sea Grant Consortium	CONFERENCE: American Ecological Engineering Society Annual Conference <i>Designing Resilience in a Changing World.</i> Included presentations, posters and exhibits, field trips and student design competition pertinent to ecological design. Field trips showcased area ecological engineering projects to include low impact development and restoration initiatives.	June 10-12, 2014	120	T, HE



Litter Sweeps (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Sea Grant Consortium	SC Department of Natural Resources	LITTER SWEEP, <i>Beach Sweep/River Sweep</i> : Annual land- and water-based cleanups events.	September 21, 2013	1,770	GP, R, C

During the 2013 Beach Sweep/River Sweep litter cleanup, 1,770 volunteers in Berkeley, Charleston, and Dorchester Counties collected 24,244 pounds of litter from nearly 111 miles of local beaches, waterways, marshes and surrounding uplands. Through the use of volunteers and funding provided by the private sector, the annual Beach Sweep/River Sweep litter cleanup contributes to the economic, environmental and societal wellbeing of the state. By participating in Beach Sweep/River Sweep, the public is more informed about natural resource issues, such as litter's detrimental effects on the landscape and wildlife, and people are empowered to take action and become environmental stewards. Coastal results of the 2013 event are available online at www.scseagrant.org/Content/?cid=49.



Photo: Susan Ferris Hill

Adopt-a-Highway, Community Pride Inc, Clemson Extension Service, Berkeley County Water and Sanitation Authority	SC Department of Transportation	LITTER SWEEP: Adopt-a-Highway conducts four sweeps seasonally each year. Volunteers adopt a two mile stretch of highway.	Quarterly	2,726	GP, R, C
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Initiated in South Carolina in 1988, the Adopt-A-Highway program utilizes the volunteer time of caring citizens to combat litter along SC highways. After cleanups, volunteers complete a report card which provides information on number of volunteers, bags of trash collected and hours worked. The program helps to remove thousands of pounds of debris from roadsides, preventing this litter from entering area waterways and improving South Carolina's scenic beauty. During the 2013-2014 reporting cycle, 2,726 volunteers adopted 560 miles of highway to remove 125,362 pounds of litter in the Tri-County.

2013-2014 ADOPT-A-HIGHWAY TOTALS FOR TRI-COUNTY

County	Total Pounds Collected	Total Miles Adopted	Total Groups Participating	Total Volunteers Participating
Berkeley	13,950	76	38	152
Charleston	58,417	364	182	2,109
Dorchester	52,995	120	50	465
Totals	125,362	560	270	2,726



Litter Sweeps (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
City of Charleston, Keep Charleston Beautiful (KCB)	Multiple	LITTER SWEEP: Community groups host two hour cleanups in marshes, parks and green spaces.	Continuous	927	GP, HE, R, C, YT
City of Charleston, KCB	College of Charleston	LITTER SWEEP, <i>Dash for Trash</i> : CofC students form teams to take part in a litter cleanup scavenger hunt where litter is worth points. This is a four hour cleanup in downtown Charleston.	October 26, 2014	215	HE
City of Charleston, KCB	CARTA	LITTER SWEEP, <i>Adopt-A-Stop</i> : Volunteers collect litter and service trash cans once a week at local CARTA bus stops.	Continuous	10	GP
City of Charleston, KCB	Palmetto Pride, Keep North Charleston Beautiful	LITTER SWEEP, <i>Clean Cities Sweep</i> : During the month of April local companies, schools, community groups and service organizations host cleanup and beautification projects.	April 1-30, 2014	1,821	GP, YT, C

Keep Charleston Beautiful (KCB) promotes the cleanliness and beautification of the City of Charleston through education, public awareness and community involvement. KCB strives to teach litter prevention and waste responsibility through education programs and public awareness campaigns, all of which are offered free of charge to the community. During the 2013-2014 reporting year, KCB organized 2,973 citizens whom volunteered 10,388 hours of community service and removed 2,091 bags (43,849 pounds) of trash.



Dorchester County Government, Keep Dorchester County Beautiful	Multiple	LITTER SWEEP: Community cleanups were hosted in partnership with Friends of the Edisto, Town of Ridgeville, Givhans Civic Group and other concerned citizen groups to remove litter along area waterways and roadways.	Continuous	245	GP, R, YT, C
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Keep Dorchester County Beautiful (KDCB) promotes public interest in the general improvement of the environment of Dorchester County and coordinates programs for litter control and recycling. During the 2013-2014 reporting year, KDCB organized 245 citizens whom volunteered 251 hours of community service and removed 9,780 pounds of trash.



Litter Sweeps (Direct)

Surfrider Foundation Charleston Chapter		LITTER SWEEP: Surfrider conducts marsh and beach cleanup efforts throughout the year.	Continuous	200	GP, R, YT, C
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The Charleston Chapter of The Surfrider Foundation is a volunteer organization that concentrates on reducing litter in area beaches and waterways and works to raise awareness of the importance of ocean stewardship. The Charleston Chapter of The Surfrider Foundation has roughly 300 members and offers educational programming and litter removal efforts throughout the year. A few of this year's highlights include the Run for the Coast beach sweep (September 2013), Morris Island Cleanup (October 2013), Barefoot Beach Rescue Project (June 2014) and weekly smaller-scale beach sweeps during the summer months. New efforts of the local Surfrider group in Year Six include the launch of the Blue Water Task Force initiative (see p. 29 & p. 36) and Ocean Friendly Gardens campaign (see p. 48).



Dune Restoration (Direct)

SC Native Plants Society	Charleston County Park and Recreation Commission, Surfrider Foundation, Master Naturalist Association	DUNE RESTORATION: The SC Native Plants Society organized a dune restoration event that transplanted dune vegetation from Sullivan's Island to Folly Beach.	February 22, 2014	100	GP, R, YT, C
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The SC Native Plants Society Lowcountry Chapter worked with area partners to organize a community coastal stewardship event transplanting native plants to stabilize dunes. The event was held on Sullivan's Island and Folly Beach County Park.

Storm Drain Marking (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	Castwood Townhouses	STORM DRAIN MARKING: 15 storm drains were marked along Castlewood Boulevard in downtown Charleston.	July 31, 2013	1	R
Clemson Extension, Carolina Clear	Coastal Master Naturalist Association	STORM DRAIN MARKING: 15 storm drains were marked in downtown Summerville.	September 12, 2013	3	R
Clemson Extension, Carolina Clear	Ashley River Creative Arts School	STORM DRAIN MARKING: 5 storm drains were marked on the Ashley River Creative Arts School campus.	October 10, 2013	12	YT, R
Clemson Extension, Carolina Clear	Westcott Plantation HOA	STORM DRAIN MARKING: 26 storm drains were marked in Westcott Plantation located in Summerville.	November 12, 2013	2	R
Clemson Extension, Carolina Clear	Surfrider Foundation	STORM DRAIN MARKING: 15 storm drains were marked on Center Street Folly Beach using the new metal markers.	November 13, 2013	13	R
Clemson Extension, Carolina Clear	C.E. Williams Middle School	STORM DRAIN MARKING: 100 storm drains were marked around downtown Charleston and C.E. Williams Middle School campus.	December 19, 2013	30	YT, R
Clemson Extension, Carolina Clear	Medical University of South Carolina	STORM DRAIN MARKING: 100 storm drains were marked in downtown Charleston around the MUSC campus.	February 20, 2014	6	C



New to Reporting Year Six, metal storm drain markers were made available for high visibility locations. The plastic markers were still used in residential settings. The messaging on both the plastic and metal markers is identical "Don't Pollute, Flows To Waterways."



Storm Drain Marking (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	City Marina	STORM DRAIN MARKING: 4 storm drains were marked at the Charleston Marina dock.	March 17, 2014	2	B
Clemson Extension, Carolina Clear	College of Charleston	STORM DRAIN MARKING: 40 storm drains were marked along Coming, Calhoun, Pitt, Bull, Glebe and St. Phillips Streets in downtown Charleston.	March 22, 2014	22	HE
Clemson Extension, Carolina Clear	Boy Scouts of America	STORM DRAIN MARKING: Boy Scout Troup 725 marked 20 storm drains in Summerville historic district including Main, Doty, Central, Cedar and 2nd streets.	March 26, 2014	13	YT
Clemson Extension, Carolina Clear	Ashley Hall School	STORM DRAIN MARKING: 144 storm drains were marked in downtown Charleston on streets adjacent to Ashley Hall campus.	April 1, 2014	43	YT
Clemson Extension, Carolina Clear	Green Hearts Project, Mitchell Elementary School	STORM DRAIN MARKING: 150 storm drains were marked in downtown Charleston on streets adjacent to Mitchell Elementary School.	April 2, 2014	48	YT
Town of Mount Pleasant	Boy Scouts of America	STORM DRAIN MARKING: Boy Scouts marked 200 storm drains at Charleston National in Mount Pleasant	April 16, 2014	19	YT
Clemson Extension, Carolina Clear	Charleston GOOD	STORM DRAIN MARKING: 8 storm drains were marked in downtown Charleston around Hampton Park.	April 21, 2014	2	R
Clemson Extension, Carolina Clear	Surfrider Foundation, Fort Dorchester School	STORM DRAIN MARKING: 6 storm drains were marked around Fort Dorchester School in North Charleston.	May 12, 2014	6	YT

During the 2013-2014 reporting year, 848 storm drains were marked utilizing the volunteered time of 420 individuals.



Rain Garden Installations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Charleston County Park and Recreation Commission		RAIN GARDEN INSTALLATION, Rain Garden Design and Construction Workshop: Master Naturalists in training constructed a rain garden at the Urban Research and Demonstration Area (URDA) as part of the Clemson Research and Education Center.	November 12, 2013	12	R
Clemson Extension, Carolina Clear		RAIN GARDEN INSTALLATION, Rain Garden Design and Construction Workshop: Master Gardeners in training completed construction on the rain garden at the URDA as part of the Clemson Research and Education Center.	November 21, 2013	12	R
Charleston County Park and Recreation Commission, Clemson Extension		RAIN GARDEN INSTALLATION, Rain Garden Design and Construction Workshop: Master Naturalist in training constructed a rain garden at Caw Caw Interpretive Center adjacent to the picnic shelter	April 8, 2014	12	R
Charleston County Park and Recreation Commission, Clemson Extension		RAIN GARDEN INSTALLATION, Rain Garden Design and Construction Workshop: Youth from Palmetto Summerville Behavioral Health constructed a rain garden at Whirlin' Waters located at Wannamaker County Park.	April 25, 2014	10	YT

During the 2013-2014 reporting year, four rain garden installation workshops were held involving 46 participants. All rain gardens were installed as part of a rain garden workshop which also included a formal presentation. Participants received a copy of the Carolina Clear "Rain Garden" Manual.



Oyster Reef Construction (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Department of Natural Resources SC Oyster Reef Enhancement Program (SCORE)	Multiple	OYSTER REEF CONSTRUCTION: SCORE facilitated 36 reef building events and 22 oyster bagging events.	Continuous	1,836	GP, R, YT, HE

SCDNR's South Carolina Oyster Restoration and Enhancement (SCORE) program coordinates community-based oyster reef restoration. During the 2013-2014 ACSEC reporting year, SCORE utilized 730 individuals volunteering 1,459 hours of time to construct 11,264 oyster bags for shoreline restoration efforts. An additional 1,106 people donated 2,616 hours of volunteer time to deploy 9,656 of these oyster bags for oyster reef construction in the Berkeley, Charleston and Dorchester County areas. The total combined number of volunteers and hours in the Tri-County area for bagging oyster shell and reef building events was 1,836 volunteers donating 4,075 hours. A component of the SCORE volunteer events includes presentation or discussion on the impacts of stormwater on the Lowcountry's oyster reefs.



Water Quality Monitoring (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Department of Natural Resources SC Oyster Reef Enhancement Program (SCORE)	Multiple	MONITORING: SCORE program utilized trained volunteers to gather water quality parameters at multiple sites. During this reporting year, 72 volunteers donated 106 hours to monitor water quality in the Tri-County area. Data can be found at score.dnr.sc.gov .	Weekly-Monthly	72	GP, R, HE
Surfrider Foundation	Charleston Chapter of Surfrider Foundation	MONITORING: New to Year Six, the Surfrider Foundation initiated a local <i>Blue Water Task Force</i> initiative. Volunteers collected enterococcus data on the Folly River. Data can be found at surfrider.org/blue-water-task-force .	Monthly	10	GP, B
Charleston Waterkeeper	College of Charleston	MONITORING: New to Year Six, water quality bacteria monitoring was conducted with volunteers in the Charleston Harbor vicinity. Data can be found at charlestonwaterkeeper.org	Weekly-Monthly	11	GP, B

Rain Barrel Sales (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Rainwater Solutions	Clemson Extension Service, Carolina Clear	RAIN BARREL SALE: As part of the <i>Carolina Yard Gardening School</i> , participants were able to purchase a rain barrel upon registration (5 barrels sold).	March 22, 2014	5	R
Rainwater Solutions	Exchange Park, Clemson Carolina Clear	RAIN BARREL SALE: ACSEC general public sale held at the Ladson Exchange Park (94 barrels sold).	June 6, 2014	94	GP, R
Rainwater Solutions	Clemson Carolina Clear, Charleston County Government	RAIN BARREL SALE: ACSEC general public sale held at the Charleston County Public Services Building (158 barrels sold).	June 7, 2014	158	GP, R

Rainwater harvesting provides a platform to increase awareness of impervious surfaces, volume of stormwater runoff and potential pollutants that may be picked up with runoff when water is unable to infiltrate. Furthermore, harvested rainwater can be utilized for a number of household needs, primarily irrigation, to help conserve water. In order to raise awareness about the practice, the ACSEC partnered with Rainwater Solutions to provide Ivy Rain Barrels at a discounted price to the general public and participants of some Consortium programming. Ivy is a 50-gallon rain barrel manufactured by Rainwater Solutions and is 100% USA made from 100% recycled plastic. Through this partnership, over 257 rain barrels were purchased in the Ashley Cooper region during spring/early summer 2014. Funds generated from the ACSEC rain barrel program are utilized to support community-based rainwater harvesting education projects and awareness.



Native Plant Sales (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Native Plants Society	CharlesTowne Landing State Park	Plant Sale: The SCNPS Native Plant Sale is open to the public and offers a wide variety of native plants for home landscaping, as well as educational opportunities about natives.	Sept 28, 2013; March 22, 2013	300	GP, R

The Lowcountry Chapter of the Native Plant Society hosts two native plant sales per year, one in the fall and one in the spring, held at Charles Towne Landing Historic Site. The plant sales are open to the public and entry is free. Use of native plants in landscaping is considered an important best management practice for protecting water quality as these plants typically require little to no fertilizer and less irrigation than non-native plant species. SCNPS volunteers are available to answer questions and provide guidance as to the significance of utilizing native plants in the home landscape.



Yard Certification Programs (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service, Carolina Clear		Yard Certification Program: <i>Carolina Yards</i> is a yard certification program offered by Clemson Extension Service and encourages environmentally friendly gardening practices. Of the 20 yards certified in the ACSEC region, 7 were certified in reporting Year Six. See p. 12-13 for additional details.	Continuous	20	R
Surfrider Foundation	Charleston Chapter of the Surfrider Foundation	Yard Certification Program: <i>Ocean Friendly Gardens</i> is a yard certification program offered by Surfrider Foundation that encourages water conservation, permeability and retention in the home landscape. The OFG effort is newly launched in ACSEC region.	Continuous	2	R



Boater Pumpout Program (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston Waterkeeper	SCDNR	BOAT PUMPOUT PROGRAM: Charleston Waterkeeper provides a sewage pumpout service to boat owners in the Charleston Harbor.	Continuous	39	B

In an effort to reduce the discharge of untreated sewage to our waterways, Charleston Waterkeeper, in partnership with SCDNR's Clean Vessel Act Program, offers a free sewage pumpout program to boat owners in the Charleston Harbor community. Since the program launch in Fall 2013, the Charleston Waterkeeper's "No. 2" pumpout boat has helped properly dispose of 10,053 gallons of sewage from boat sanitary waste tanks. Currently, the "No. 2" services 39 regular customers and continues to grow, helping to keep our waters waste free.



Youth Involvement Events (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SCDNR, Charleston Soil and Water Conservation District		YOUTH INVOLVEMENT: SC Envirothon is a week-long program at Sandhills Research Center in Columbia. Students study soils, water quality and other conservation topics. Students prepare for this competition year round.	May 2, 2014	120	YT



Youth Involvement Events (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service, Carolina Clear	SC Sea Grant Consortium, SCDNR, CCPRC	YOUTH INVOLVEMENT: 4-H2O “Exploring Lowcountry Waterways” Summer Camp for youth ages 10-13 and is a week long camp emphasizing watershed stewardship and water resource protection.	July 8-12, 2013; June 16-20, 2014	31	YT



The 4-H2O Exploration Program is a statewide effort implemented by Clemson University Cooperative Extension Service and provides hands-on, experiential learning opportunities with emphasis on water quality, conservation and watershed stewardship. In the ACSEC region, the 4-H2O program is entitled “Exploring Lowcountry Waterways” and is available to children living in Berkeley, Charleston, and Dorchester Counties. During the two week-long sessions, students have the opportunity to learn about and travel through local watersheds, from cypress swamps to barrier islands. Activities include macroinvertebrate sampling, water quality testing, seining, kayaking, fishing, birding and much more. In the ACSEC region, Consortium partners play a vital role in the camps’ success with partnerships including the SC Sea Grant Consortium, SC Department of Natural Resources, Charleston County Park and Recreation Commission and others.

Youth Involvement Events (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Sea Grant Consortium	SC DNR, Clemson Extension Service	YOUTH INVOLVEMENT: <i>From Seeds to Shoreline</i> initiative involves students in germination and planting of <i>Spartina alterniflora</i> to emphasize the significance of the salt marsh and actions for clean water.	Fall 2013 to Spring 2014	724	YT

From Seeds to Shoreline is the first of its kind, student driven wetland restoration project in South Carolina. The SC Sea Grant Consortium, SC Department of Natural Resources, and Clemson Extension Service partner to facilitate this school program aimed at engaging students in hands-on education that includes seed collection, germination, cultivation and planting of Spartina alterniflora, the dominant plant in a SC salt marsh. The program creates an opportunity to learn about the importance of salt marsh ecosystems and water quality while participating in a community service learning project with emphasis on environmental stewardship. Charleston Tri-County schools participating during the 2013-2014 school year included Ashley Hall, Mason Prep, Memminger Elementary, James Island Middle School, St. John's High, CREECs, Moultrie Middle School, The University of the Lowcountry, Sullivan's Island Elementary and Laing Middle. Collectively, the effort of these schools resulted in the transplanting of 3,656 seedlings to multiple local restoration sites.



College of Charleston Graduate Student Intern

Each year, Clemson's Carolina Clear partners with the College of Charleston Masters of Science in Environmental Studies Program (MES) to hire a graduate student intern. Over the years, such students have tackled diverse programmatic needs of the ACSEC, including development of resources to address stormwater pond issues and residential landscaping preferred practices. During the 2013-2014 reporting year, Ms. Leslie Wooten worked as a graduate student intern with Carolina Clear and the ACSEC. Unique to this year, Leslie's time was funded by the College of Charleston as part of the Peace Corps Masters International (PCMI) program, which provides students the opportunity to earn their masters while serving in the Peace Corps. Since August 2013, Leslie has worked with her internship advisors Kim Counts and Guinn Garrett to assist with Consortium efforts.

Through her work with Carolina Clear, Leslie has helped to develop and implement a variety of outreach and research programs targeting multiple best management practices and audiences. In the Fall of 2013, Leslie worked to construct an evaluation of rainwater harvesting outreach and education efforts. The evaluation was sent to 175 participants who had either attended a rain barrel sale or a lecture held by the Clemson Carolina Clear Program and ACSEC. Of the 74 individuals who responded, the support was evident for rainwater harvesting motivated by diverse factors and uses. Based on concerns associated with uses of harvested rainwater, Leslie has helped to coordinate a rainwater harvesting system study with Dr. Vijay Vulava and Dr. Tim Callahan that explores the effectiveness of first flush diverters for bacteria removal in collection systems. Two systems in the Charleston area are regularly evaluated for enterococcus bacteria pre- and post- first flush diversion. Monitoring of these systems is ongoing and will provide information for construction of future rainwater harvesting systems. As with all CofC MES student interns, Leslie will have the ability to apply her experiences and knowledge gained to her graduate work and future endeavors.



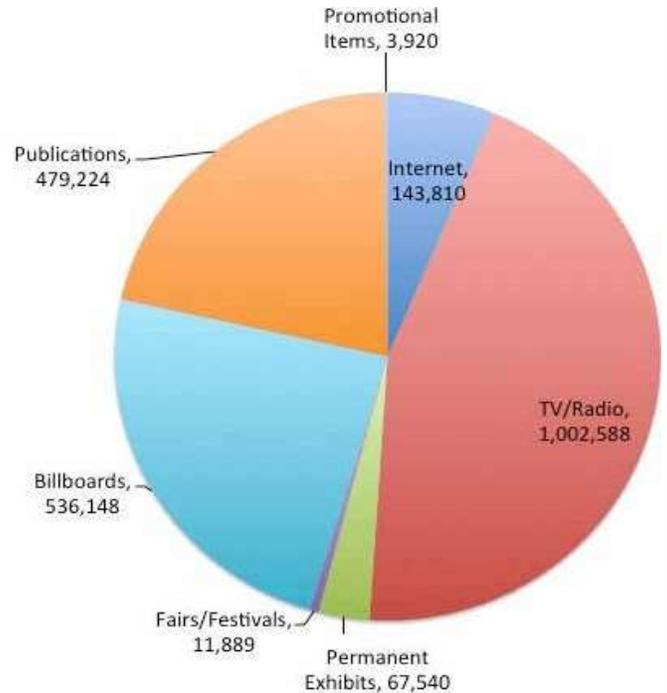
Outreach Summary

The ACSEC impacts from both direct and indirect outreach methods reached approximately 2,365,820 people in the Tri-County area from July 1, 2013 to June 30, 2014.

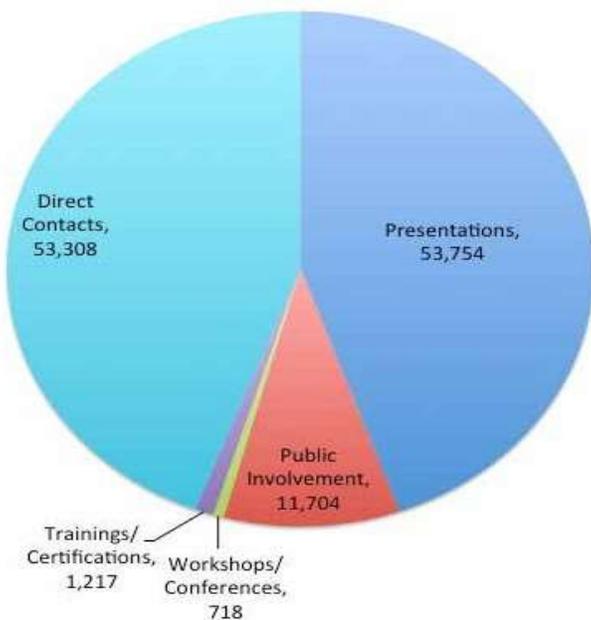
Indirect methods resulted in 2,245,119 impacts through mass media efforts; cumulative impacts from internet, billboard and permanent exhibit outreach was two times higher as compared to Year Five. This is due in part to the mass media promotion for the Carolina Yard program and growing demonstration site locations in the Tri-County.

Direct methods reached 120,701 individuals through direct contacts, presentations, trainings, workshops and public involvement opportunities. Public involvement grew by more than 1,500 impacts in the ACSEC, with new opportunities and programming provided by multiple community and education partners. The diversification of direct method impacts illustrates the ACSEC's growing offering of outreach to encourage stormwater education and involvement in our region.

INDIRECT METHODS SUMMARY, TOTAL IMPACTS 2,245,119



DIRECT METHODS SUMMARY, TOTAL IMPACTS 120,701



PUBLIC INVOLVEMENT SUMMARY, TOTAL IMPACTS 11,704



Articles

The *Lakeside Magazine* runs a bi-monthly column featuring Clemson Extension Water Resources Agent Jolie Brown. Jolie's articles discuss stewardship in the landscape, including the August/September 2013 article featured below on the impacts of litter on our community and waterways. The *Lakeside Magazine* is distributed to the lake counties of South Carolina, including Berkeley County.



Love, don't litter, where you live

by JOLIE ELIZABETH BROWN
jolie2@clemson.edu

There's a familiar phrase that goes something like, "Litter trades everywhere."

But litter not only bushes everywhere, it costs everyone, too. Keep America Beautiful is the nation's leading anti-litter organization. It first conducted a national survey on the costs and effects of litter in the U.S. in 1969. A 2009 survey is now being used to determine if litter has been reduced and if behaviors have changed.

That survey shows that litter costs the U.S. more than \$11.5 billion each year. Business pick up \$0.1 billion of that tab, while local and state governments, schools and other organizations take care of the rest.

Not only is there a cost for the cleanup, but litter has indirect costs associated to the crime. The majority of Realtors surveyed think that litter reduces property values by 9 percent. So, to put that in perspective, if you are selling your home for \$250,000 and it is located in a littered community, the Realtor thinks you would be lucky to get \$227,500. That's a lot of money directly linked to careless, thoughtless behavior on the part of your neighbors.

Litter is not only dangerous to your bottom line, it also affects the environment. Litter like water eventually ends up in our storm drains. Debris is moved by the rain so that storm drains, it is then carried by storm drains into local waterways. This contamination can have serious environmental consequences, including harmful effects on fish and marine animals who may be poisoned or become entangled in litter that pollutes their water. They search for food.

While children diseases from eating or being exposed to rotting substances. Litter in the waterways can also reduce oxygen, less than aquatic plants and animals. The reduction in oxygen can lead to fish kills.

The latest study also showed that our behavior is based on our environment. People are much more likely to litter if they are in an already littered area. I live on a well traveled road, and if I let one piece of litter stay on my lawn, by the end of the week, thousands have turned my beautiful lawn into their mailbox. However, if I pick up that first piece when I see it, it might be several weeks before a litterer strikes again.

After all that skum and gloom, I do have some good news. The 2009 survey showed that successful education, ongoing cleanup efforts and changes in packaging are having a positive influence. Visible litter on our roadways has decreased about 60 percent since 1969. Paper, metal, glass and beverage containers litter has decreased about 75 percent.

To get involved with a cleanup group, contact your local Clemson Extension office. For more information about water quality, visit www.clemson.edu/extension. For more information about littering, visit the Keep America Beautiful website at www.Keep.org.



1769 Quail Trail, \$219,000
Three-1/2 Bed in Lake Moore



1569 Quail Trail, \$275,000
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The Medical University of South Carolina's newspaper, *The Catalyst*, featured the partnership between Clemson Extension, the ACSEC and the MUSC Grounds Department to install metal storm drain markers on MUSC campus drains. As part of this partnership project, 100 storm drains were marked.



MUSC GROUNDS DEPARTMENT TO INSTALL MARKERS



MUSC's Kim Counts, from left, and Nate Dubosh join Clemson Extension's Angela Crouch as they install a metal storm drain marker at a location on Ehrhardt Street to promote stormwater education and raise awareness that storm drains do not lead to sewers and it is important not to pollute them. MUSC is the second location in the Tri-county to install these markers. MUSC Grounds Department will continue to install the markers until April.



photos provided

The complex block contains a newspaper clipping. At the top is the headline 'MUSC GROUNDS DEPARTMENT TO INSTALL MARKERS'. Below the headline is a photograph of three people: a woman in a light blue shirt (Kim Counts), a man in a dark uniform (Nate Dubosh), and another woman in a purple shirt (Angela Crouch) who is kneeling and using a tool to install a metal marker into a storm drain. To the right of the photo is a column of text providing context about the project. Below the text is a circular seal for the Ashley Cooper Stormwater Education Consortium. At the bottom right of the clipping, it says 'photos provided'.



The Post and Courier featured a “Tips for a green(er) house” article as part of their Earth Day (April 20, 2014) print edition. Featured in the story were recommendations from ACSEC co-coordinator’s Kim Coombs and Guinn Garrett on the benefits of several stormwater best management practices for homeowners, including: reducing impervious spaces in yards, incorporating native plants into the landscape, composting and more. The Post and Courier is viewed by more than 96,000 readers in the Lowcountry.



The Post and Courier regularly features ACSEC's education partner, Clemson Extension, in a column in its "Home and Garden" section. In March, Zack Snipes, Commercial Horticulture Extension Agent, provided an article on the benefits of soil testing for home gardeners. Soil testing for proper fertilizer application is an important educational message of the ACSEC to address excess nutrients in our community waterways.

Minding your N, P and K's: How to interpret soil test results



STOCK PHOTO

Do you know your garden soil's pH level?

Few years I tried convincing my grandfather, an avid vegetable gardener, to get his soil tested by the Clemson University Agricultural Service Laboratory. He finally agreed and submitted a sample (#6).

A few years later, I learned he was sending a sample yearly but not following the fertilizing recommendations returned by Clemson. Instead, he continued using the 10-10-10 he'd been using for years.

For many, like grandpa, interpreting the results of the laboratory analysis can be an impediment to making changes in their gardening practices. Vegetable



ZACK B. SNIPES
On Gardening

gardening requires good fertility management and following the recommendations can pay off in reduced costs and improved yields.

Here are common questions we at Clemson Extension receive about interpreting soil test results:

Q: I got my results back, what

are all those numbers under the "Recommendations"?

A: Those numbers are codes for a set of standard recommendations, and are explained by code under the "Comments" section.

Q: What is pH and what is the range of optimal pH levels? And what does "buffer pH" mean?

A: The pH scale measures the number of free hydrogen ions, an indicator of acidity. Nutrients are taken up by plants within a narrow pH range. For instance, a soil pH ranging from 5.8-6.5 is best for most vegetables. Some plants, such as blueberries, do better with acidic soils. Most soils in the

Lowcountry are acidic and will need modification to achieve an ideal pH (more below).

Buffer pH reveals how difficult it will be to change the pH of the soil. This number is needed to make specific recommendations for adjusting the soil pH. Buffer pH is not a number that should concern the home gardener.

Q: My soil test results do not recommend adding lime. Why not?

A: Lime raises the pH of soil to make it more basic. Most vegetables prefer a slightly acidic soil.

Please see SNIPES, Page D2

How to interpret soil test results

SNIPES from Page D1

pH. Adding lime when not needed might hurt plant development and be a waste of money for the gardener.

Q: What does CEC mean?

A: Cation Exchange Capacity (CEC) relates to the ability of soil to hold nutrients. Soils with a high CEC are more fertile than those with a low CEC. Increasing organic matter, such as adding compost to the soil, greatly boosts the CEC, thus improving fertility.

Q: Why don't the results measure nitrogen in my soil?

A: Nitrogen, critical for plant growth, is responsible for the green color in leaves, increased seed and fruit yield and rapid growth. Most garden soil does not have enough nitrogen available for high fertility plants like vegetables.

Nitrogen is difficult to measure in a soil test because it constantly switches from a mineral form to a gaseous form. Because of this, the recommendations for applying nitrogen fertilizers are made based on plant needs and measurable soil fertility indicators such as pH and cation exchange capacity (CEC).

Applying more nitrogen than recommended can result in excessive vegetative growth with less flowering or fruit. It also can lead to increased disease and insect

damage, add to environmental pollution, and waste the gardener's money.

Q: I noticed that the amount of phosphorus was reported as excessive. What does this mean and can I dilute it?

A: Lowcountry soils are naturally high in phosphorus, so it is not unusual to see this on a report. While gardeners cannot apply amendments or products to dilute excessive nutrients or minerals, the plants in your garden can utilize excess nutrients, lowering the amount in soil over time. In this case, the lab report will recommend you use a fertilizer that does not contain phosphorus such as 15-0-15.

Fertilizer bags are always prominently labeled with three numbers in the same order. This guaranteed analysis informs consumers that the percentage of the major minerals needed for plant growth, nitrogen (N), phosphorus (P) and potassium (K), have been verified by the Clemson Department of Plant Industry Fertilizer Inspection program.

Q: I have not taken a soil sample in for testing this year. Is it too late? Where can I take it? Can someone help me interpret the results?

A: It's not too late, although you may not have time to make significant pH adjustments for the

spring.

There are several drop-off sites in the tri-county area including these listed. Call ahead for office hours unless they are listed.

- Charleston County Office, 259 Meeting St., Charleston, 722-5940
- Berkeley County Office, 3014 Cypress Garden Road, Moncks Corner, 719-4140
- Dorchester County Office, 201 Johnston St., St. George, 832-0135
- Summerville Master Gardener Office, 1105 Yancey St., Summerville 285-2180 (9 a.m.-noon)

Master Gardener Farmers Markets soil sample collection sites:

- Saturdays: April-November, Marion Square Farmers Market, 9 a.m.-noon; Summerville Farmers Market, Main Street, 8 a.m.-1 p.m.
- Tuesdays: April-October, Mount Pleasant Farmers Market, Moultrie Middle School, 3:30-6 p.m.

Clemson Extension agents or Master Gardeners are available, at no charge, to assist in the interpretation of soil test results. Call one of the numbers listed.

More information about soil samples can be found at: www.clemson.edu/public/regulatory/ag_svc_lab/

Announcements

- The fourth annual Carolina Yard Gardening School is open for enrollment. Join Clemson Extension

and the Tri County Master Gardeners for this one-day gardening event that includes hands-on gardening workshops and lectures. Amanda McNulty, host of SCETV's gardening show "Making It Grow," will do a live show without the cameras. The school will be 8 a.m.-4:30 p.m. March 22 at the Charleston Exchange Park. Pre-registration is required and the cost is \$75. For details and to register, go to www.clemson.edu/extension/mg/counties/tri-county/ or email Amy Dabbs, Clemson Extension Horticulture Agent, at adabbs@clemson.edu.

● Clemson University will be offering Private Pesticide Applicator Training on April 8. Cost of registration is \$50 and is payable with cash or check. Please email Zack Snipes at zsnipes@clemson.edu or call 723-5940, ext. 123 to RSVP and for more information, including location and time.

● Clemson University will be hosting a "Nuisance Wildlife in Agricultural Crops" Workshop on April 10. This program is geared toward agricultural producers and will be held at Dorchester County Career and Technology Center. Registration is \$5. RSVP to Heather Weaver at 563-5773 or hweave2@clemson.edu by April 7.

Zack B. Snipes is a Clemson Extension Commercial Horticulture Agent in Charleston and Beaufort counties.

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PHOTOS PROVIDED BY:

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Representatives of the Ashley Cooper Stormwater Education Consortium take a tour of the Clemson University Drivetrain Testing Facility after the Fall 2013 ACSEC meeting.



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**Ashley Cooper Stormwater Education Consortium (ACSEC)
Table of Completed Activities, 2014-2015**

MCM 1, Public Education/Outreach

Date of Activity	Activity Description	Estimated Impact
1/9/14	WORKSHOP: SC DNR ACE BASIN NERR CTP and Sea Grant sponsored LID Stakeholder Meeting.	60
1/15/14	PRESENTATION: Presented "Protecting Water Quality Before the Pond" to Lakeside Homeowners Association.	10
1/21/14	PRESENTATION: Presented "Protecting Water Quality Before the Pond" to Mount Pleasant Rotary Club.	50
1/27/14	PRESENTATION: Presented "Protecting Water Quality Before the Pond" to Wando Woods Civic Group.	50
1/29/14	YOUTH PRESENTATION: Keep Dorchester Beautiful presented a composting and water resource-themed presentation to Ashley Ridge High School.	40
2/1/14	ARTICLE: "Soil Fertility" in Lakeside Magazine; included fertilizer management.	6,000
2/6/14-2/7/14	FAIRS/FESTIVALS: SC Horticulture Tradeshow; provided information on Carolina Yards program and stormwater best management practices (BMPs).	250
2/17/14	YOUTH PRESENTATION: Enviroscope used with youth at Mitchell Elementary as part of Green Hearts program.	48
2/19/14	WORKSHOP: Lunch and Learn Workshop for Berkeley County Master Gardeners; discussed impacts of stormwater on water quantity and quality and residential best management practices.	30
2/20/14	PRESENTATION: Presented "Celebrating South Carolina's Natural Heritage with Native Plants in the Home Landscape" as part of the Charleston County Parks and Recreation Commission Sustainability Series.	20
2/20/14-2/22/14	FAIRS/FESTIVALS: Charleston County Soil and Water Conservation District (CCSWD) hosted a booth at the Southeastern Wildlife Expo; included natural resource and stormwater outreach to visitors.	1,500
2/23/14	ARTICLE: "Planting Project" in The Post and Courier; Highlighted SC Native Plant Society dune restoration project on island communities.	96,005
2/27/14	YOUTH PRESENTATION: College of Charleston used the Enviroscope to discuss stormwater topics with youth (2nd-8th grade).	1,200
2/28/14	ARTICLE: "MUSC Grounds to Install Markers" in <i>The Catalyst</i> ; highlighted storm drain marking effort at MUSC.	4,500

Date of Activity	Activity Description	Estimated Impact
3/13/14	YOUTH PRESENTATION: College of Charleston used the Enviroscape model to discuss stormwater topics with local homeschool club.	30
3/13/14	WORKSHOP: ACSEC, SC DNR and the SC Marine Association hosted a "Clean Marina Workshop" for marina owners; focused on BMPs to protect water quality at marinas and boat landings.	13
3/15/14	FAIRS/FESTIVALS: Charleston County hosted stormwater management booth at the Charleston Black Expo 2014	125
3/15/14	ARTICLE: "Minding your N, P, and Ks - How to Interpret Clemson Extension Soil Test Results for a Bountiful Vegetable Garden" in <i>The Post and Courier</i> ; focused on soil health and fertilizer management.	96,005
3/22/14	WORKSHOP: "Carolina Yard Gardening School"; water-resource related topics included coastal stewardship and shorescaping.	105
4/1/14	POSTCARD: Stormwater pond postcard sent to 9495 pond owners in the Tri-County areas; postcard included information on the purpose of ponds, importance of proper maintenance, and resources available for pond owners.	9,495
4/1/14	ARTICLE: "Recycle Yard and Kitchen Waste by Composting" in <i>Lakeside Magazine</i> ; included proper debris disposal information for waterway health.	6,000
4/3/14	PRESENTATION: Gardening with native plants use presentation provided to Bishop Gasden local retirement community; focused on benefit to stormwater management.	20
4/6/14	FAIRS/FESTIVALS: ACSEC hosted booth at Flowertown Festival and included information on the efforts of the consortium and upcoming education and involvement opportunities.	500
4/9/14	FAIRS/FESTIVALS: Berkeley County Backyard Naturescope, Kids Who Care: Used Enviroscape model with K-5 public school students in Berkeley County to demonstrate connections to waterways and problem solving for water quality protection.	2,000
4/9/14	PRESENTATION: "Rainwater Harvesting 101" presented to St. Johns Garden Club.	
4/12/14	WORKSHOP: South Carolina Native Plant Society (SC NPS) "Bog Workshop"; included an emphasis on native plant use and best management practices for healthy waterways.	20
4/12/14	FAIRS/FESTIVALS: CCSWD hosted a booth at the Hollywood Water Quality Day.	75
4/15/14	FAIRS/FESTIVALS: ACSEC hosted booth at Medical University of South Carolina Earth Day festival; provided information on upcoming education and involvement opportunities.	1,800
4/17/14	WORKSHOP: SC DNR ACE BASIN NERR CTP's "Coastal Wetlands Identification" training.	36
4/20/14	ARTICLE: "Tips for a green(er) house" in <i>The Post and Courier</i> ; sustainable landscaping practices guidance provided by Clemson Extension (CUCES) agents.	96,005

Date of Activity	Activity Description	Estimated Impact
4/26/14	FAIRS/FESTIVALS: ACSEC hosted booth at Charleston County Earth Day Festival; included information on stormwater management and upcoming education and involvement opportunities.	2,000
5/1/14	ARTICLE: "Know Your Beneficial Insects" in <i>Lakeside Magazine</i> ; include integrated pest management (IPM).	6,000
5/3/14	FAIRS/FESTIVALS: Multiple partners host booths as part of the Oakbrook Ashley River Festival; included information on ways to protect waterway health through BMPs in the landscape.	950
5/5/14	ACSEC Resolution Signing Event. Representatives from three county governments and mayors from municipalities attended the event to sign the ACSEC joint resolution and demonstrate continued partnership and support of the regional watershed scale education approach. Included presentations on ACEC activities and regional partnership efforts.	75
5/22/14	CONFERENCE: "Charleston Area Stormwater Pond Management Conference" focused on maintenance techniques for healthy stormwater ponds and waterways.	150
5/24/14	TELEVISION: Television interview with CUCES agents on Live Five News promoted practice of rainwater harvesting.	
5/31/14	FAIRS/FESTIVALS: Keep Charleston Beautiful 5K race raised awareness of litter prevention efforts in the community.	279
6/4/14	PRINT ADVERTISEMENT: "It Drains Here" promotional piece placed in <i>Moultrie News</i> by the Town of Mount Pleasant.	70,607
6/5/14	WORKSHOP: "Sediment Basin Workshop" reviewed design, inspection and maintenance techniques for sediment basins.	68
6/10/14-6/12/14	CONFERENCE: "American Ecological Engineering Society Annual Conference" included low impact development and habitat restoration tours.	120
06/18/14	PRINT ADVERTISEMENT: "Illicit Discharge" promotional piece placed in <i>Moultrie News</i> by the Town of Mount Pleasant	70,607
6/25/14	WORKSHOP: SC Sea Grant, SCDNR and CUCES Carolina Clear's "From Seeds to Shoreline Teacher Workshops," provided full day training for teachers on watershed outreach, saltmarsh restoration, the school curriculum.	12
7/29/14	PRESENTATION; "Expanding Stormwater-Related Outreach from Clemson Extension" presented at the American Public Works Association, South Carolina Chapter Annual Conference.	50
8/1/14	FAIRS/FESTIVALS: CUCES Carolina Clear hosted table at SC Association of Counties tradeshow and tabling event; provided information on Carolina Clear program and consortium initiatives.	150

Date of Activity	Activity Description	Estimated Impact
08/18/14; 10/9/14	WORKSHOPS: Train-the-Trainer workshops focused on fats, oils, and grease management with managers and owners from two local restaurants.	16
8/25/14	ARTICLE: <i>The Post and Courier's</i> "The Pond Next Door" article included ACSEC guidance on appropriate pond best management practices.	96,005
8/31/14	ARTICLE: <i>The Post and Courier's</i> article "Rethinking the Lawn"; ACSEC guidance was provided on fertilizer management, buffer establishment, and sustainable landscaping practices.	96,005
9/01/14-11/15/14	PRESENTATION: "The Carolina Yard Lecture Series" was a six-part gardening series offered as part of the Charleston County Community Foundation. Series covered environmental horticulture and landscape-level BMPs.	20
9/1/14	YOUTH PRESENTATION: Enviroscope demonstration at Cario Middle School; provided forum to discuss waterway protection through stormwater BMPs with youth.	108
9/9/14	PRESENTATION: Presented on the Carolina Schoolyards initiative, as part of the Charleston County School District Sustainability Symposium. Focused on what actions can be adopted on school property to protect downstream water quality.	200
9/10/14	PRESENTATION: "Pond Problem Solving: Evolving Opportunities in Stormwater Pond Management Outreach in South Carolina;" as part of the 2014 Water Education Summit.	30
9/10/14	PRESENTATION: "Seeing is Believing, Creating Sustainable Demonstration Sites to Interpret Stormwater and Environmental Horticulture Best Practices", 2014 Water Education Summit.	15
9/21/14	FAIRS/FESTIVALS: ACSEC tabled a booth at the Charleston Green Fair; promoted upcoming opportunities for stormwater education and involvement were shared.	600
9/22/14	PRESENTATION: Workshop with Del Webb at Cane Bay included two presentations that focused on stormwater pond management and benefits of gardening with native plants.	30
10/1/14	PRESENTATION: "Healthy Habitats Equals Healthy Watersheds" program highlighted design concepts for creating landscapes, with emphasis on environmental stewardship, sustainability and wildlife habitat.	30
10/4/14	FAIRS/FESTIVALS: ACSEC hosted a booth and the Enviroscope at the 2014 Sangaree Community Day.	900
10/8/14	WORKSHOP: ACSEC hosted a Low Impact Development Tour as part of the Southeastern Stormwater Association's Annual Conference.	40
10/8/14	PRESENTATION: Presentation at Sustainability Institute's ReThink Series on the importance of picking up after pets for waterway health.	25
10/10/14	PRESENTATION: Presentation at South Carolina Association of Aquatic Plant Management Annual Conference on stormwater pond maintenance for function and downstream ecosystem protection.	50

Date of Activity	Activity Description	Estimated Impact
10/15/14	PRESENTATION: Presentation at 2014 South Carolina Water Resources Conference on stormwater pond outreach successes and lessons learned in ACSEC.	30
10/15/14	PRESENTATION: Presentation at the 2014 SC Water Resources Conference on the ACSEC's rainwater harvesting programmatic efforts.	25
10/15/14 - 10/16/14	CONFERENCE: Two-day 2014 South Carolina Water Resources Conference hosted by The Center for Watershed Excellence.	340
10/31/14	FAIRS/FESTIVALS: Carolina Yards and ACSEC information booth at the Mount Pleasant Home and Garden Show provided information on sustainable landscapes and stormwater BMPs.	50
12/17/14	PRESENTATION: Partnering with Berkeley County, the ACSEC presented to approximately 100 staff and administration on Carolina Clear programming and messages, including actions for clean water protection.	100
Spring 2014	ONLINE TRAININGS: "Carolina Yards and Neighborhoods Online Guide to Environmentally Friendly Gardening" promoted sustainable landscaping and stormwater BMPs for home gardener.	38
Spring 2014; Fall 2014	ONLINE TRAININGS: Master Gardener training provided to residential audiences online; topics include landscape BMPs.	20
Fall 2014	TELEVISION: Street Interview Series on water resource topics filmed in Summerville, Goose Creek, Mount Pleasant, and Sullivan's Island; aired on Fox News and MyTV as short commercial spot rotation.	20,600
2014	BILLBOARDS: The Carolina Yards billboard series promoted Carolina Yards landscaping program and best management practices.	536,148
2014	BOOKLET: The Carolina Yards Workbook provides information on environmentally friendly gardening practices to residential audiences.	170
2014	BROCHURE: Leaf It On The Lawn; flyer includes tips for proper disposal of lawn debris and is offered in Spanish and English.	100
2014	BROCHURE: Project Impact's Recreational Boater Education Booklet; distributed by Charleston Waterkeeper as part of Boat Pumpout Program.	100
2014	IN-PERSON: Assistance provided to residents from CUCES agents and Master Gardener's on variety of home, garden, and water resource topics.	49,225
2014	MANUAL: The Rain Garden manual provides information on rain gardens to residential audiences.	250

Date of Activity	Activity Description	Estimated Impact
2014	MANUAL: The Rainwater Harvesting manual provides information on rainwater harvesting to residential audiences.	250
2014	NEW PERMANENT EXHIBIT: Clemson REC "Ed Shed" includes education signage and stormwater best management practices.	500
2014	NEW PERMANENT EXHIBIT: Clemson REC Urban Research and Demonstration Area includes rain garden and educational signage.	1,000
2014	NEW PERMANENT EXHIBIT: Rain garden at "Whirlin' Waters" at Wannamaker County Park.	500
2014	NEW PERMANENT EXHIBIT: Rain garden at Caw Caw Interpretive Center.	2,000
2014	NEW SCHOOL PERMANENT EXHIBIT: Cistern at Mitchell Elementary School's Green Hearts Project Garden.	350
2014	NEW SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Ashley River Creative Arts School.	500
2014	NEW SCHOOL PERMANENT EXHIBIT: Two rain barrels at Goodwin Elementary School.	100
2014	ONLINE NEWSLETTER: ACSEC's "Ripple Effect" published bi-monthly and included ACSEC education and involvement opportunities.	1,500
2014	PERMANENT EXHIBIT: Multiple BMPs highlighted at the Sustainability Institute, with tours offered.	150
2014	PERMANENT EXHIBIT: Rain barrel, rain garden, and signage installed at Berkeley County Extension Office.	150
2014	PERMANENT EXHIBIT: Rain barrel display at Charleston Aquarium.	1,000
2014	PERMANENT EXHIBIT: Rain garden and signage at Charleston Towne Landing State Historic Site.	1,000
2014	PERMANENT EXHIBIT: Rain garden at Bowen's Island Restaurant.	1,000
2014	PERMANENT EXHIBIT: Two rain barrels and drip irrigation at St. Julian Divine Community Center.	1,500
2014	PERMANENT EXHIBIT: Two rain gardens, cistern, native plants, and other best management practices at Fort Johnson Community Garden.	5,000
2014	POSTCARD: A More Green Way to Clean; Tips on proper pressure washing to protect water quality.	100
2014	POSTCARD: Better Manage Fats, Oil and Grease (FOGs); Provides information on proper FOG disposal.	200

Date of Activity	Activity Description	Estimated Impact
2014	POSTCARD: Freshwater Shorescapes; Benefits of shorescaping and tips and resources for pond owners.	100
2014	POSTCARD: Septic Systems Care and Maintenance; Tips for maintaining septic systems to reduce impact on water quality.	100
2014	POSTCARD: Trashing Our Environment; Provides information on what can be done to prevent litter in SC.	200
2014	POSTCARD: We All Live Downstream; Tips to preventing stormwater pollution in communities	350
2014	POSTCARD: What is a Rain Barrel?; Promotes the use of rain barrels for better lawn care and water quality.	200
2014	POSTCARD: What is a Rain Garden?; Provides brief description and purpose of a rain garden and links interested individuals to online resources and additional information.	200
2014	POSTCARD: What To Do About Pet Waste; Provides information to pet owners on proper disposal of pet waste.	200
2014	PROMOTIONAL ITEM: ACSEC Koozies distribution	100
2014	PROMOTIONAL ITEM: Clean Water Hero Bracelets distribution	230
2014	PROMOTIONAL ITEM: Dog Bag Dispenser distribution	120
2014	PROMOTIONAL ITEM: Fish Sponges, Includes a "Only Rain Down the Storm Drain!" message, distribution	120
2014	PROMOTIONAL ITEM: Pocket Ashtray distribution	50
2014	PROMOTIONAL ITEM: Thank You! For Protecting Waterways Reusable Bags distribution	100
2014	PROMOTIONAL ITEM: www.ashleycooper.org sticker distribution	500
2014	PROMOTIONAL ITEMS: Life in the Salt Marsh, information of salt marsh ecology and ecosystem health	100
2014	PROMOTIONAL ITEMS: Stormwater Pond Management Sticker distribution	180
2014	RADIO: "Your Day" One-hour weekly radio program addressing home and garden questions.	30,000
2014	SCHOOL PERMANENT EXHIBIT: Cistern at the College of Charleston's Political Science Building.	500
2014	SCHOOL PERMANENT EXHIBIT: Rain barrel system at Early Childhood Education Center.	100
2014	SCHOOL PERMANENT EXHIBIT: Rain garden, cistern, rain barrels, and other best management practices at Grice Green Teaching Garden.	500

Date of Activity	Activity Description	Estimated Impact
2014	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Ashley River Creative Arts School.	500
2014	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Stono Park Elementary.	400
2014	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system for school garden at Alston Middle School.	900
2014	SOIL SAMPLES: Soil samples processed in the Tri-County by Clemson Ag Services Lab; provides fertilizer recommendations.	4,083
2014	TRAININGS: Charleston Waterkeeper's program trained new volunteers to monitor water quality in Charleston Harbor.	7
2014	TRAININGS: Clemson Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program; impacts reflects current Tri-County certifications.	221
2014	TRAININGS: Clemson Department of Pesticide Regulation training and certification of pesticide applicators; impact reflects certified applicators in ACSEC region in 2015.	847
2014	TRAININGS: SC DNR'S SCORE program trained new volunteers to monitor water quality in Charleston Harbor.	9
2014	WEBSITE: Total unique views in 2014 for the Carolina Clear, ACSEC, Stormwater Pond Management and Carolina Yards.	40,000
2014	WEBSITE: Total views for the ACSEC Facebook page in 2014.	14,798
2014	YOUTH PRESENTATION: CCWSD-sponsored EnviroScape activities and a poster contest at local schools.	45,400
2014	YOUTH PRESENTATIONS: Keep Charleston Beautiful's offered school-based litter prevention programs for K-8 youth.	1,700
2014	YOUTH PRESENTATIONS: SC DNR's SCORE program provided in-school programs on "Oysters as Living Shorelines" and water quality.	300
1/8/15	PRESENTATION: Stormwater pond management discussion as part of South Carolina Vegetation Association's Annual Conference.	200
1/11/15	ARTICLES: "Buffers Protect Tidal Creeks" in <i>The Post and Courier</i> , written by CUCES agents, focused on importance of buffers along waterways.	96,005
1/14/15	WORKSHOP: SC DNR ACE BASIN NERR CTP's "Breaking Through Barriers"; placed emphasis on development of communication skills for discussing environmental issues with diverse audiences	62
1/22/15	YOUTH PRESENTATION: ACSEC EnviroScape presentation to James Island Elementary .	24

Date of Activity	Activity Description	Estimated Impact
2/7/15	FAIRS/FESTIVALS: ACSEC hosted a booth at Charleston STEM Festival and used Enviroscope with visiting youth and parents.	7,500
2/10/15	WORKSHOP: "2015 Turf School" was offered for commercial landscapers; topics included fertilizer management and IPM.	40
2/13/15	FAIRS/FESTIVALS: CCSWD hosted a booth at the Southeastern Wildlife Expo and provided information on natural resources and stormwater management.	2,500
2/24/15-2/25/15	CONFERENCES: Conservation District's Annual Partnership Conference included sessions on water quality and other related topics.	300
3/5/15	PRESENTATION: ACSEC presented to the Moncks Corner Rotary Club on stormwater management and actions residents can take to prevent pollution at home and in the landscape.	24
3/5/15	YOUTH PRESENTATION: CCSWD used Enviroscope to discuss waterway protection at Math & Science Fair at Eaglenest Elementary School.	350
3/14/15	FAIRS/FESTIVALS: Charleston County Stormwater Management hosted a booth at the 2015 Black Expo.	85
3/14/15	WORKSHOP: Carolina Yard Gardening School, "Healthy Soils" edition; included soil and fertilizer management.	100
3/25/15	YOUTH PRESENTATION: Enviroscope Presentation to CE Williams School.	110
4/9/15	FAIRS/FESTIVALS: FAIRS/FESTIVALS: ACSEC hosted a booth at the Berkeley County Backyard Naturescope, Kids Who Care Festival; used Enviroscope to discuss community connection to waterways.	2,000
4/15/15	FAIRS/FESTIVALS: ACSEC hosted table as part of Santee Cooper's Earth Day; provided information on upcoming ACSEC education and involvement opportunities.	250
4/15/15	FAIRS/FESTIVALS: ACSEC hosted a booth as part of MUSC's Earth Day Festival; provided information on upcoming ACSEC education and involvement opportunities.	1,000
4/26/15	FAIRS/FESTIVALS: ACSEC hosted table at the Charleston County Earth Day event	1,500
5/10/15	FAIRS/FESTIVALS: Multiple ACSEC partners hosted booths at the Mount Pleasant <i>Shem Dig</i> ; provided information on upcoming ACSEC education and involvement opportunities.	150
5/10/15	FAIRS/FESTIVALS: Multiple ACSEC partners hosted tables at Ashley Riverfest; provided information on upcoming ACSEC education and involvement opportunities.	2,000
5/26/2015 - 6/03/15	YOUTH PRESENTATIONS: CCSWD hosted eleven education outreach award presentations to students, teachers, and families on water quality contest topics	385
6/1/15	ARTICLES: <i>Naturally Kiawah's</i> "Native Plants for Lowcountry Gardens" featured Clemson Extension guidance on native plant use and benefit to waterways	6,636

Date of Activity	Activity Description	Estimated Impact
6/2/15	PRESENTATION: CCSWD Awards Program honored outstanding educators and Conservationists who promote stormwater, water, and soil quality conservation issues.	50
6/6/15	WORKSHOP: Carolina Yard Gardening School, "Water-Wise Gardening" edition; included topics on rain gardening and rain water harvesting.	50
6/12/15	PRESENTATION: Presentation to Ashland Plantation HOA/pond owners on stormwater pond management and best practices for shorelines.	10
6/13/15	PRESENTATION: "Rainwater Harvesting 101" presentation a part of SC Native Plant Society Annual Conference.	20
6/17/15	PRINT ADVERTISEMENT: "It Drains Here" promotional piece placed in <i>Moultrie News</i> by the Town of Mount Pleasant.	70,607
6/25/15	PRINT ADVERTISEMENT: "Illicit Discharge" promotional piece placed in <i>Moultrie News</i> by the Town of Mount Pleasant.	70,607
7/24/15; 7/25/15	WORKSHOP: SC Sea Grant, SCDNR and CUCES' Carolina Clear's "From Seeds to Shoreline Teacher Workshops," two full day trainings for teachers on watershed outreach, saltmarsh restoration, the school curriculum.	38
9/17/15	YOUTH PRESENTATION; Mount Pleasant Waterways used the Enviroscope to discuss waterway protection as part of its "Customer Appreciation Day."	100
9/18/15	YOUTH PRESENTATIONS: "Life in a Watershed" presentation as part of the Sustainability Symposium	350
9/18/2015	ARTICLES: CCSWD's "The Conservation Corner" Annual Report Newsletter reported on District's initiatives and opportunities.	1,000
9/20/15	ARTICLES: "Using Rain on Garden" in <i>The Post and Courier's</i> newspaper included information on applying harvested rainwater on edibles.	96,005
9/20/15	FAIRS/FESTIVALS: ACSEC hosted a table as part of the Charleston Green Fair; provided information on upcoming ACSEC education and involvement opportunities.	3,000
9/21/15-10/11/15	TELEVISION: Stormwater Pond Commercial; Knology and Comcast rotation	135,385
10/1/15	PRESENTATION: Presentation at Community Association Institute's Annual Conference on purpose of stormwater ponds and maintenance needs.	120
10/1/15	PRESENTATION: "Rain Garden Design" presented at the Hickory Hill Garden Club meeting.	16
10/14/15	YOUTH PRESENTATION: Enviroscope used at Mitchell Elementary School to discuss actions for preventing stormwater pollution.	32
10/17/15	FAIRS/FESTIVALS: Charleston Stormwater Management used the Enviroscope model at the 2015 Truck and Treat to teach youth about their connection to waterways.	525

Date of Activity	Activity Description	Estimated Impact
10/22/15	PRESENTATION: Presentation provided to "Neighbors for Clean Water Pond Conference" on upland management and protecting water quality before the pond.	22
10/22/15	PRESENTATION: Presentation provided to "Neighbors for Clean Water Pond Conference" on shorescaping for healthy ponds.	40
10/22/15	PRESENTATION: Presentation provided to "Neighbors for Clean Water Pond Conference" on stormwater pond management resources.	20
10/26/15	YOUTH PRESENTATIONS: Ashley Hall School used the ACSEC Enviroscope to discuss waterway health.	150
10/27/15	YOUTH PRESENTATION: Enviroscope used with students at Whiteside Elementary to discuss actions on landscape that can help to protect water quality.	87
10/29/15	YOUTH PRESENTATION: Stormwater Jeopardy! Used at Cario Middle School with students.	200
11/15/15	ARTICLES: "Planting for a Rainy Day" in <i>The Post and Courier's</i> newspaper highlighted resources for rain gardens; article written by CUCES agent.	96,005
12/2/15	FAIRS/FESTIVALS: ACSEC hosted a table as part of the MUSC Arbor Day Festival and included information on upcoming ACSEC involvement and education opportunities.	700
12/4/15	YOUTH PRESENTATIONS: As part of Arbor Day, CCSWD's "Twiggy the Tree" discussed benefits of trees to community and stormwater management with schools.	115
11/17/16	WORKSHOP: SC DNR ACE BASIN NERR CTP's "Coastal Wetlands Identification" training.	14
Spring 2015	ONLINE TRAININGS: "Carolina Yards and Neighborhoods Online Guide to Environmentally Friendly Gardening" highlighted landscape BMPs for the home gardener.	34
Summer 2015	ARTICLES: "Native Plants for Lowcountry Gardens" in the Charleston Garden Club's <i>Lowcountry Gardening Guide</i> .	500
Spring 2015; Fall 2015	ONLINE TRAININGS: Master Gardener training is provided to residential audiences online with topics focused on landscape BMPs for stormwater pollution prevention.	78
Fall 2015	ARTICLES: "Planning, Construction, and Operation Guide for Gardens, Greenhouses, and Rain Barrels," developed by CUCES agents, was distributed by local school district; developed by CUCES agents.	100
Fall 2015	ARTICLES: "Extension helps eateries serve waterways a healthier diet" published online and print in the <i>Clemson IMPACTS</i> ; highlighted ACSEC restaurant program.	16,140
Fall 2015	TRAININGS: Tri-County Master Gardener training; topics discussed include multiple stormwater BMP practices.	28

Date of Activity	Activity Description	Estimated Impact
2015	ARTICLES: SC DNR and SC Sea Grant's "Low Impact Development in Coastal South Carolina: A Planning and Development Guide;" impact represent number of downloads from host site location.	23,662
2015	BILLBOARD: Carolina Yard billboard series promoting landscape BMPs and the Carolina Yards program were located in high-visibility in 2015.	536,148
2015	BOOKLET: The Carolina Yards Workbook provides information on environmentally friendly gardening practices to residential audiences.	200
2015	BROCHURE: <i>Leaf It On The Lawn</i> ; flyer that includes tips for proper disposal of lawn debris and is offered in Spanish and English.	100
2015	IN-PERSON: Assistance provided to residents from CUCES agents and Master Gardener's on variety of home, garden, and water resource topics.	49,500
2015	MANUAL: The Rain Garden manual provides information on rain gardens to residential audiences.	200
2015	MANUAL: The Rainwater Harvesting manual provides information on rainwater harvesting to residential audiences.	200
2015	NEW PERMANENT EXHIBIT: Clemson REC "Ed Shed" includes education signage and stormwater best management practices.	500
2015	NEW PERMANENT EXHIBIT: Clemson REC Urban Research and Demonstration Area includes a rain garden, rain barrels, and educational signage.	1,000
2015	NEW PERMANENT EXHIBIT: Rain garden and cistern installed at a Berkeley County library location.	350
2015	NEW PERMANENT EXHIBIT: Rain garden and rain barrel installed at Dorchester County Government Building.	1,000
2015	NEW PERMANENT EXHIBIT: Rain garden and signage installed at Mount Pleasant fire station and recreation area.	800
2015	NEW PERMANENT EXHIBIT: Rain garden installed at Camp St. Christopher; tour of garden included as part of camp program.	650
2015	NEW PERMANENT EXHIBIT: Shorescaping planting and signage installed at Charleston County Government's stormwater pond.	100
2015	NEW SCHOOL PERMANENT EXHIBIT: Rain barrel and rain garden installed at Cape Romain Environmental Education Center.	175
2015	NEW SCHOOL PERMANENT EXHIBIT: Rain barrel and rain garden installed at Charleston Towne Montessori School	100
2015	ONLINE NEWSLETTER: ACSEC's "Ripple Effect" is published bi-monthly and provided ACSEC education and involvement opportunities.	2,310

Date of Activity	Activity Description	Estimated Impact
2015	OUTREACH MATERIALS: Packet of FOG management materials prepared for restaurant and food prep staff and distributed by multiple ACSEC partners.	30
2015	PERMANENT EXHIBIT: Rain barrel display at Charleston Aquarium.	1,000
2015	PERMANENT EXHIBIT: Rain garden and signage at Charleston Towne Landing State Historic Site.	1,000
2015	PERMANENT EXHIBIT: Rain garden at "Whirlin' Waters" at Wannamaker County Park.	500
2015	PERMANENT EXHIBIT: Rain garden at Bowen's Island Restaurant.	1,000
2015	PERMANENT EXHIBIT: Rain garden and signage at Caw Caw Interpretive Center.	2,000
2015	PERMANENT EXHIBIT: Two rain barrels and drip irrigation at St. Julian Divine Community Center.	1,500
2015	PERMANENT EXHIBIT: Two rain gardens, cistern, native plants and other best management practices at Fort Johnson Community Garden.	5,000
2015	PERMANENT EXHIBIT: Multiple BMPs installed at Sustainability Institute; tour of BMPs offered through organization.	150
2015	POSTCARD: A More Green Way to Clean; Tips on proper pressure washing to protect water quality.	100
2015	POSTCARD: Better Manage Fats, Oil and Grease (FOGs); Provides information on proper FOG disposal.	100
2015	POSTCARD: Freshwater Shorescapes; Benefits of shorescaping and tips and resources for pond owners.	200
2015	POSTCARD: Septic Systems Care and Maintenance; Tips for maintaining septic systems to reduce impact on water quality.	100
2015	POSTCARD: Trashing Our Environment; Provides information on what can be done to prevent litter in SC.	100
2015	POSTCARD: We All Live Downstream; Tips to preventing stormwater pollution in communities.	300
2015	POSTCARD: What is a Rain Barrel?; Promotes the use of rain barrels for better lawn care and water quality	200
2015	POSTCARD: What is a Rain Garden?; Provides brief description and purpose of a rain garden and links interested individuals to online resources and additional information.	200
2015	POSTCARD: What To Do About Pet Waste; Provides information to pet owners on proper disposal of pet waste.	300
2015	PROMOTIONAL ITEM: ACSEC Koozies distribution	200
2015	PROMOTIONAL ITEM: Be Wise if you Fertilizer Sticker distribution	50

Date of Activity	Activity Description	Estimated Impact
2015	PROMOTIONAL ITEM: Clean Water Hero Bracelets distribution	200
2015	PROMOTIONAL ITEM: Dog Bag Dispenser distribution	150
2015	PROMOTIONAL ITEM: Dog Bandannas distribution	50
2015	PROMOTIONAL ITEM: Fish Sponges, Includes a "Only Rain Down the Storm Drain!" message, distribution	50
2015	PROMOTIONAL ITEM: Pocket Ashtray distribution	75
2015	PROMOTIONAL ITEM: Thank You! For Protecting Waterways Reusable Bags distribution	75
2015	PROMOTIONAL ITEM: www.ashleycooper.org sticker distribution	200
2015	PROMOTIONAL ITEMS: Life in the Salt Marsh, information of salt marsh ecology and ecosystem health	100
2015	PROMOTIONAL ITEMS: Stormwater Pond Management Sticker distribution	200
2015	SCHOOL PERMANENT EXHIBIT: Cistern at Mitchell Elementary School's Green Hearts Project Garden.	350
2015	SCHOOL PERMANENT EXHIBIT: Cistern at the College of Charleston's Political Science Building.	500
2015	SCHOOL PERMANENT EXHIBIT: Four rain barrels at James Island Charter High School.	390
2015	SCHOOL PERMANENT EXHIBIT: Rain barrel system at Early Childhood Education Center.	100
2015	SCHOOL PERMANENT EXHIBIT: Rain garden, cistern, rain barrels, and other best management practices at Grice Green Teaching Garden.	500
2015	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Ashley River Creative Arts School.	500
2015	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Stono Park Elementary.	400
2015	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system for school garden at Alston Middle School.	900
2015	SCHOOL PERMANENT EXHIBIT: Two rain barrels at Goodwin Elementary School.	100
2015	SOIL SAMPLES: Soil samples processed in the Tri-County by Clemson Ag Services Lab; provided fertilizer recommendations.	4,426
2015	TELEVISION: SCETV and Clemson Extension's "Making It Grow" shares home and garden information for South Carolina residents; a water quality tip is included each week during the broadcast.	24,358

Date of Activity	Activity Description	Estimated Impact
2015	TRAININGS: Carolina Clean Watershed Restaurant program; trained and certified restaurant and staff in best practices in food prep industry, with a focus on fats, oils, and grease management.	20
2015	TRAININGS: Charleston Waterkeeper's program trained new volunteers to monitor water quality in Charleston Harbor.	7
2015	TRAININGS: Clemson Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program; impacts reflects current Tri-County certifications.	151
2015	TRAININGS: Clemson Department of Pesticide Regulation training and certification of pesticide applicators; impact reflects certified applicators in ACSEC region in 2015.	1,135
2015	TRAININGS: SC DNR'S SCORE program trained new volunteers to monitor water quality in Charleston Harbor.	10
2015	WEBSITE: Total unique views in 2015 for the Carolina Clear, ACSEC, Stormwater Pond Management and Carolina Yards.	45,996
2015	WEBSITE: Total views for the ACSEC and Carolina Clear Facebook page in 2015.	42,621
2015	YOUTH PRESENTATION: Charleston Waterkeeper's "In-School Education Program" for youth focused on waterway protection.	578
2015	YOUTH PRESENTATIONS: Keep Charleston Beautiful's offered a school-based litter prevention program for K-8 youth.	1,000
2015	YOUTH PRESENTATIONS: Keep Dorchester County Beautiful's youth education program focused on recycling and litter prevention.	478
2015	YOUTH PRESENTATIONS: SC DNR's SCORE program provided in-school programs on "Oysters as Living Shorelines" and water quality.	824

MCM 2, Public Involvement		
Date of Activity	Activity Description	Estimated Impact
July 2013-June 2014	LITTER SWEEPS: Beach Sweep/River Sweep, sponsored by SC Sea Grant and SC DNR; coordinated volunteer efforts to clean rivers and beaches.	1,770
July 2013-June 2014	LITTER SWEEPS: Adopt-A-Highway; Tri-county clean up coordinated volunteers to help pick up litter along state-owned highways and roadways.	2,726
July 2013-June 2014	LITTER SWEEPS: Keep Charleston Beautiful sponsored community cleanups throughout the City of Charleston community.	927

Date of Activity	Activity Description	Estimated Impact
July 2013-June 2014	LITTER SWEEPS: Multiple litter cleanups held or supported by Keep Dorchester County Beautiful.	245
July 2013-June 2014	LITTER SWEEPS: Regular litter cleanups are sponsored on island communities by Surfrider Foundation.	100
July 2013-June 2014	OYSTER REEF CONSTRUCTION: SC DNR's SCORE program facilitated 28 oyster reef building events and 32 oyster bagging events.	1,836
July 2013-June 2014	MONITORING: SC DNR's SCORE program facilitated volunteer water quality monitoring at multiple Tri-County waterway locations.	72
July 2013-June 2014	MONITORING: Charleston Waterkeeper implements a volunteer-based water quality monitoring program in Charleston Harbor.	11
July 2013-June 2014	MONITORING: Surfrider Foundation's "Blue Water Task Force" worked with volunteers to collect and analyze water samples in the Folly River.	10
2/22/14	DUNE RESTORATION: SC Native Plant Society organized a dune restoration event which used volunteers to transplant native grasses from Sullivan's Island to Folly Beach.	100
3/22/14	NATIVE PLANT SALE: SC Native Plant Society sponsored a fall and spring native plant sale; native plant use is considered a best management practice.	150
4/1/14-4/30/14	LITTER SWEEPS: "Clean Cities Sweep" promoted community-sponsored litter cleanup and beautification projects in the City of Charleston and North Charleston; sponsored by Keep Charleston Beautiful and North Charleston Beautiful affiliates.	1,821
Spring 2014	RAIN BARREL SALE: ACSEC rain barrel sale offered in partnership with regional manufacturer and community partners; offered Ivy rain barrels at a discounted price to residents.	257
2014	STORM DRAIN MARKING: Multiple storm drain marking programs hosted by ACSEC partners in the Tri-County; drains marked and literature distributed to surrounding community. Impact number represents volunteer participation.	394
2014	LITTER SWEEPS: Keep Charleston Beautiful and CARTA's "Adopt-A-Stop" program used volunteers to service bus stops and litter prevention.	10
2014	YARD CERTIFICATION PROGRAM: Certified yards recognized for their adoption of landscape BMPs; through the CUCES Carolina Yards program	20
2014	YARD CERTIFICATION PROGRAM: Surfrider Foundation's Ocean Friendly Gardens certified two landscapes in the Tri-County.	2

Date of Activity	Activity Description	Estimated Impact
2014	BOAT PUMPOUT PROGRAM: Charleston Waterkeeper and SC DNR partnership provided sewage pumpout service to boat owners. During 2014, 10,053 gallons of sewage removed and disposed. Impacts reflect number of regularly serviced boats.	39
2014	BMP INSTALLATIONS: Five new best management practices were installed with the assistance of diverse program participants and volunteers. BMPs included rain gardens and shoredscaping projects. Impacts are not referenced here as project impact has been reported as part of other listed activities.	*See description
3/14/15; 10/24/15	NATIVE PLANT SALE: SC Native Plant Society sponsored a fall and spring native plant sale; native plant use is considered a best management practice.	500
4/18/15; 7/18/15	LITTER SWEEPS: Town of Mount Pleasant sponsored two roadside cleanups with Charleston Running Club.	30
4/25/15	LITTER SWEEPS: Clean Marine event, sponsored by multiple ACSEC partners; focus on reducing marine debris through multi-day collection event. Volunteers man drop-off locations and assist community with disposal.	66
5/28/15-5/30/15	RAIN BARREL SALE: ACSEC rain barrel sale offered in partnership with regional manufacturer and community partners; offered Ivy rain barrels at a discounted price to residents.	501
9/2/15; 9/8/15	LITTER SWEEPS: "Litter Butt Study" and pickup sponsored by DHEC-OCRM, Surfrider Foundation, and others.	29
9/15/15	LITTER SWEEPS: Beach Sweep/River Sweep, sponsored by SC Sea Grant and SC DNR; coordinated volunteer effort to pickup litter on popular river and beach shorelines.	1,631
2015	BOAT PUMPOUT PROGRAM: Charleston Waterkeeper and SC DNR partnership provided sewage pumpout service to boat owners. During 2015, 310 pumpouts performed with 19,960 gallons of sewage removed and disposed. Impacts reflect number of regularly serviced boats.	76
2015	PET WASTE BAG DISPENSER PROGRAM: Keep Charleston Beautiful program sponsored pet waste bag dispensers and signage in strategic public space locations. Impact is bag distribution number.	283,200
2015	LITTER SWEEPS: Keep Charleston Beautiful sponsored multiple community cleanups during 2015.	1877
2015	LITTER SWEEPS: Multiple litter cleanups were held or supported by Keep Dorchester County Beautiful in 2015.	228

Date of Activity	Activity Description	Estimated Impact
2015	LITTER SWEEP: Adopt-A-Stop program, Keep Charleston Beautiful and CARTA program used volunteers to service bus stops in region.	13
2015	LITTER SWEEPS: Adopt-A-Highway; Tri-county wide clean up effort coordinated volunteer participation to pick up litter along state-owned highways and roadways.	3,530
2015	STORM DRAIN MARKING: Multiple storm drain marking programs hosted by ACSEC partners in the Tri-County; drains marked and literature distributed to surrounding community.	169
2015	OYSTER REEF CONSTRUCTION: SC DNR's SCORE program facilitated 28 oyster reef building events and 32 oyster bagging events using volunteer participation.	2,397
2015	MONITORING: SC DNR's SCORE program facilitated volunteer water quality monitoring at multiple Tri-County waterway locations.	32
2015	MONITORING: Charleston Waterkeeper implemented a volunteer-based water quality monitoring program in Charleston Harbor.	15
2015	YARD CERTIFICATION PROGRAM: Certified yards recognized through the Carolina Yards program for their adoption of landscape BMPs.	61
2015	YARD CERTIFICATION PROGRAM: Surfrider Foundation's Ocean Friendly Gardens has certified two landscapes in the Tri-County.	2
2015	PET WASTE BAG DISPENSER PROGRAM: Surfrider Foundation program sponsors pet waste bag dispensers and signage at Folly Beach locations. Impact is bag distribution number.	30,000
2015	BMP INSTALLATIONS: Eight new best management practices were installed with the assistance of diverse program participants and volunteers. BMPs included rain gardens and shoring projects. Impacts are not referenced here as project impact has been recorded as part of other activities.	*See description

MCM 1 and 2, Public Education/Outreach and Involvement

Date of Activity	Activity Description	Estimated Impact
4/25/14	YOUTH WORKSHOP: Enviroscape demonstration and rain garden installation with youth group at the Wannamaker County Park's Whilin' Waters.	20

Date of Activity	Activity Description	Estimated Impact
5/2/14	YOUTH INVOLVEMENT: SC Envirothon; CCSWD sponsored local student attendance to week-long, hands-on environmental learning workshop.	120
5/12/14	YOUTH PRESENTATION: Surfrider Foundation used the Enviroscape activity with students at Fort Dorchester High School; program followed by a storm drain marking project.	5
June 2014; July 2014	YOUTH: "4-H2O Exploring Lowcountry Waterways Summer Camp" provided learning and involvement opportunities for 10-13 year olds in Tri-County.	35
11/20/14	WORKSHOP: "Bioretention Workshop" focused on design and maintenance protocol for facility and maintenance staff. Program included participant installation of a bioretention cell.	15
7/15/14	WORKSHOP: Carolina Schoolyards Teacher Rain Garden Workshop focused on design and creation of environmentally-friendly school landscape curriculum; included a rain garden installation project.	5
11/6/14	WORKSHOP: Rain Garden presentation and installation workshop at Park Circle Community Center	35
Spring 2014	YOUTH INVOLVEMENT: "From Seeds to Shoreline" youth saltmarsh restoration initiative; students learn about coastal watersheds through <i>Spartina alterniflora</i> planting projects and curriculum.	724
Spring 2014	TRAININGS: Master Naturalist Training provided training on the natural world and the stewardship of shared resources; included installation of a rain garden.	12
Fall 2014	TRAININGS: Tri-County Master Gardener training; topics included multiple stormwater BMP practices. Program included installation of a rain garden.	32
5/1/15	WORKSHOP: SC Envirothon sponsored by DNR and statewide Conservation Districts. CCSWD sponsored 126 local youth to attend and learn about water resource topics through hands-on activities.	126
5/21/15	WORKSHOP: Rain garden presentation and rain garden installation with staff and volunteers at Dorchester County Government.	16
June 2015; July 2015	YOUTH INVOLVEMENT: 4-H2O "Exploring Lowcountry Waterways Summer Camp" provided learning and involvement opportunities for 10-13 year olds in Tri-County.	42
6/21/15 - 6/27/15	WORKSHOP: CCSWD environmental camp for youth; provided hands-on opportunities for water resource learning.	150
10/9/15	WORKSHOP: "Naturalist Gardening for the Green Thumb" presentation and rain garden installation at the 2015 SC Master Naturalist Conference.	14

Date of Activity	Activity Description	Estimated Impact
10/14/15	WORKSHOP: CUCES, Carolina Clear, and SC DNR ACE BASIN NERR CTP's "Shorescaping Workshop" included a series of presentations and a hands-on shoreline planting installation.	19
Spring 2015, Fall 2015	TRAININGS: Master Naturalist Training provided training on natural world and the stewardship of shared resources; included rain garden installation as part of the Spring 2015 training.	24
Spring 2015; Fall 2015	TRAININGS: "Rain Gardens for Professionals;" full-day presentations and rain garden installation for landscape professionals. Program offered twice in ACSEC in 2015.	36
Spring 2015; Fall 2015	HYBRID TRAININGS: Master Pond Manager course; online and field based course in pond maintenance providing stormwater maintenance instruction and hands-on application.	52
Summer 2015	HYBRID TRAININGS: Post-Construction BMP Inspector course; online and field based course providing instruction and hands-on application for BMP maintenance.	35
2015	YOUTH INVOLVEMENT: "From Seeds to Shoreline" youth saltmarsh restoration initiative; students learn about coastal watersheds through <i>Spartina alterniflora</i> planting project curriculum.	989

ASHLEY COOPER

STORMWATER EDUCATION CONSORTIUM



Annual Report of Activities

YEAR 7 / JANUARY 2015 - DECEMBER 2015

FEBRUARY 2016



The Ashley Cooper Stormwater Education Consortium's Year Seven Annual Report of Activities summarizes outreach and involvement programming offered by the Ashley Cooper Stormwater Education Consortium (ACSEC) community and education partners in 2015. The ACSEC implements a region-wide outreach strategy to educate Charleston Tri-County residents on water quantity, quality and the cumulative impacts of stormwater. Education programming is steered by the ACSEC Stormwater Outreach Strategic Plan 2012-2017, which identifies priority issues to address through messaging and outreach that targets residential and commercial audiences. The year 2015 marks the fourth year of strategic plan implementation and allows for opportunities for evaluation and evolution of new and existing programs.

During 2015, new programming was implemented that provided for hands-on education and involvement trainings for technical and commercial audiences, including the Carolina Rain Garden Initiative's Rain Garden for Professionals Workshop, the Master Pond Manager course, Post-Construction BMP Inspector certification course, and the Carolina Clean Watershed Restaurant program. Several of these programs resulted in the development of new permanent exhibits across the Tri-County, including a first for the ACSEC, a shorescaping demonstration site at a stormwater pond.

New mass media efforts focused on stormwater pond management, with a commercial rotation featuring best practices for stormwater pond function and performance. The commercial was rotated in the ACSEC region in Fall 2015 and garnered 135,385 views. Mass media efforts are ongoing and the commercial is slated for broadcast again during Spring 2016.

Existing programming also grew during 2015, reaching new audiences across the Tri-County region. Highlights include the Seeds to Shoreline restoration program targeting youth and teachers, water resource-related training for Master Gardener and Master Naturalist volunteers, residential workshops on rain garden installation and design, the ACSEC 3rd annual Ivy rain barrel sale, and more. ACSEC's impact on print and publications continue to be a strength of the program, with new opportunities and topics to reach across the state of South Carolina.

As a result of these new and existing efforts, the ACSEC recorded almost an estimated 1.7 million educational impacts including 1.3 million through indirect outreach methods and almost 400,000 through direct. As the ACSEC's Strategic Plan exists as a "living" document, the ACSEC will incorporate strategies in 2016 to address bacteria management in runoff through programming targeting dog owners and homeowners in the community. The ACSEC partners look forward to 2016 and our work in and around Lowcountry waterways.



ACSEC Co-Coordinators

Kim Counts Morganello (left) and Guinn Wallowover (right) are Water Resource Agents for the Clemson Extension Cooperative Extension Service. As part of their work with the Carolina Clear program, they co-coordinate the Ashley Cooper Stormwater Education Consortium. Kim's professional interests include landscape-level best management practices, rainwater harvesting, rain gardens, and community involvement projects. Guinn's professional interests include water quality monitoring, stormwater pond management, and commercial and construction best management practices. In their spare time, both Kim and Guinn can be found outside enjoying SC's water resources.

2015 Highlights

- In 2015, the ACSEC was excited to announce the recognition of its first two “Carolina Clean Watershed Restaurants.” Through training and adoption of best management practices in the workplace, Carolina Clean Watershed Restaurants take proactive steps to reduce fats, oils, and grease, bacteria, and other pollution in our waterways.
- The Carolina Rain Garden Initiative made a splash in 2015 with new resources for residential and commercial audiences alike, including a “Rain Garden Workshop for Professionals Workshop” training. This training, hosted twice in the ACSEC, provided hands-on application for contractors in rain garden design and installation.
- The Master Pond Manager course and Post-Construction BMP Inspector course launched in the Tri-County in 2015. These courses, developed as a partnership between Clemson Extension, The Center for Watershed Excellence, and Clemson Online, provide professional level training to staff involved in maintenance of stormwater best management practices. These courses are “hybrid” trainings with both online classroom and field day curriculum.
- The College of Charleston Masters of Environmental Studies program and the ACSEC wrapped up a multi-year study evaluating the use and application of harvested rainwater. The implications of this work have led to the development of several resources through Clemson Extension on the use of harvested rainwater on edibles in the home and school setting.
- The latest mass media airings focused on stormwater pond management tips and resources for pond owners. During the Fall of 2015, the pond-focused television commercial aired, reaching 135,385 views in the ACSEC region.

OUTREACH ACTIVITIES AND TOTAL NUMBER REACHED *(estimated)*

1. ACSEC Internet Resources including ACSEC E-newsletter, Facebook page, factsheet series, and website.
NUMBER REACHED: 90,927
2. Mass Media Campaign including television and billboard efforts to reach homeowners and pond owners.
NUMBER REACHED: 695,891
3. Permanent Demonstration Sites across the Ashley Cooper region demonstrate diverse best management practices for protecting water quality.
NUMBER REACHED: 20,415
4. ACSEC representation at fairs and festivals, providing information on ACSEC and ways to protect water quality.
NUMBER REACHED: 20,210
5. Diverse array of public workshops, trainings, presentations, and conferences pertaining to stormwater.
NUMBER REACHED: 61,545
6. ACSEC Public Involvement opportunities including rain garden installations, storm drain marking, litter sweeps, oyster reef construction, water quality monitoring, and rain barrel sales.
NUMBER REACHED: 326,068

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The majority of designated Small Municipal Separate Storm Sewer Systems (SMS4) communities in the Charleston Urbanized Area, representing approximately 90% of the population, have committed to the ACSEC regional collaboration. These communities are represented by a dedicated group of public servants who have been engaged for many years in building the partnership.

Local SMS4 Consortium Representatives: 2015

Berkeley County	Clint Busby, Kelsey Gagnon
Charleston County	John Carullo, Frank Pandullo, Stuart Ruelle, Chris Wannamaker, Taylor Anthony
Dorchester County	Kacy Byrd
City of Charleston	Laura Cabiness, Kinsey Holton
City of Folly Beach	Represented by Charleston County via Inter-Governmental Agreement (IGA)
City of Goose Creek	Steve Price, Chuck Denson
City of Isle of Palms	Represented by Charleston County via IGA
Town of James Island	Represented by Charleston County via IGA
Town of Lincolnville	Represented by Charleston County via IGA
Town of Mount Pleasant	Hillary Repik, Brett Champion
City of North Charleston	Mike Dalrymple, John Peckham, Merry Barton
Town of Sullivan's Island	Represented by Charleston County via IGA
Town of Summerville	Russ Cornette, Bonnie Miley



Collaboration is integral in developing and delivering a successful watershed-scale outreach program that reaches diverse audiences. The ACSEC is fortunate to have a variety of organizations in the Charleston Tri-County region that have joined the effort. Education partners include universities, state and local government agencies, utilities, and non-profits. Each brings unique expertise, resources, ideas, and programs to the ACSEC. The ACSEC fosters communication among organizations and through this cooperative effort programs are being created or enhanced.



ACSEC Education Partners



ACSEC MISSION STATEMENT

Improve water quality within the Ashley and Cooper River basins by providing educational opportunities on stormwater impacts and our community roles in supporting healthy, fishable, and swimmable waterways.

PROGRAM GOALS

- Develop and implement an education plan that defines a cohesive education strategy which outlines target audiences and associated target pollutants relevant to the region using a prioritized approach.
- Facilitate compliance with existing and future educational regulatory requirements by capitalizing on local resources and service providers.
- Foster citizen involvement in stormwater management through ACSEC education and participation programs.
- Encourage behavioral change towards environmental quality improvement through stormwater education.
- Utilize mainstream and developing technologies and tools to maximize citizen exposure to ACSEC stormwater goals and objectives.
- Create an interactive reporting process to facilitate information exchange and dissemination among member entities.





Education and Involvement Program History

To meet the ACSEC program goals, community and education partners meet twice a year or more frequently as needed to work collaboratively in the development, implementation, and evaluation of new and existing programming. These meetings and decision making process is also open to the public.

ACSEC programming priorities were identified and developed through the Ashley Cooper Stormwater Education Consortium Stormwater Outreach Strategic Plan 2012-2017. The Strategic Plan can be found online at: www.ashleycooper.org. The Strategic Plan provides a framework for prioritizing regional issues, developing target outreach methods, and determining program evaluation metrics to improve the delivery and impact of ACSEC efforts. It is considered a “living” document to allow for refinement, supplementation, and flexibility as regional efforts evolve over the five-year period. The development of the Strategic Plan was a multi-year effort that involved community and education partner input and an evaluation of geography, pollutant concerns, and public perception as identified from the 2008 Carolina Clear Statewide Survey.

The Strategic Plan process helped identify priority issues and education strategies to address pollutants of concern in the region. The ACSEC residential and commercial audience priorities are as follows:

RESIDENTIAL AUDIENCE PRIORITIES		COMMERCIAL AUDIENCE PRIORITIES	
ISSUE	GOAL	ISSUE	GOAL
Home landscaping nutrient management	Proper application of fertilizer, use of low or no-phosphorous fertilizers	Landscapers and pond management company nutrient management	Proper application of fertilizer, use of low or no-phosphorus fertilizers, post construction BMP (pond) maintenance
Residential stormwater pond management	Proper maintenance, homeowner association responsibilities, and neighborhood awareness	Restaurants and hospitality fats, oils, and grease (FOG) management	Proper disposal of fats, oils, and grease
Home auto repair hazardous material	Proper management and disposal of oil, grease and other automotive fluids	Automotive businesses oil, grease and hazardous fluids management	Proper management and disposal of petroleum and hazardous materials

These priority issues have formed the core of efforts by the ACSEC; education strategies include five-year timelines for program implementation (see Appendix B.). To evaluate the effectiveness of outreach and involvement campaigns, evaluation metrics include but are not limited to:

- Five-year surveys to gauge perceptions, knowledge gained, and behavior change of residents living in the consortium area.
- Google Analytics to evaluate impacts of web-based programming and outreach.
- Short and long-term program evaluation to evaluate workshop and training success in delivering information, assisting participants in overcoming barriers to practice implementation, and meeting the needs of the target audience.
- Other methods including analysis of distribution numbers.

The ability of the ACSEC to implement and deliver consistent messaging and programming as well as leverage partner-lead initiatives helps the Consortium-model to successfully address community priorities and concerns across multiple waterway “lines.”

Annual Report of Activities Format

The annual report utilizes the same general format as the first six ACSEC reports and the other regional stormwater consortiums in South Carolina. This annual report, the seventh for the consortium, is intended to give the reader a comprehensive look at the ACSEC from January 1, 2015 through December 31, 2015. This report delineates activities into public education and public involvement categories. For each activity, a brief description is provided as well as information on lead provider, supporting partners, date, number of impacts, and target audiences. Furthermore, public education activities are identified as either direct or indirect outreach strategies.

Clemson Extension's Carolina Clear program developed an online database in the first ACSEC reporting cycle to record detailed information on activities conducted by consortium partners. The data collected in the online database includes information on target audiences, pollutants addressed, activity type, lead service providers, supporting partners, number of impacts, location, and several other categories. This annual report provides a condensed version of the information collected in the online database as well as additional, supplementary information sourced from ACSEC partners.

The activities in the report are listed in table format. Due to space limitations, target audiences are abbreviated as follows:

Target Audience Abbreviations

GP	General Public
R	Residential: Homeowners and Renters
YT	K-12 Youth and Teachers
HE	Higher Education
T	Technical: Engineers, Contractors, Landscapers, Developers, Staff
EA	Elected and Appointed Officials and High Level Staff
C	Commercial
SP	Stormwater Pond Managers
B	Boat Owners, Boat Operators, and Marinas
P	Pet Owners (i.e. dog owners)

Rainwater Harvesting: A Tool for Stormwater Outreach

Research: The Clemson Extension Service partnered with the College of Charleston Master of Science in Environmental Studies Program to sponsor a student thesis research project on water quality in harvested rainwater systems. The objective of the research was to examine the effectiveness of the first flush diverter on bacteria concentration, as well as other pollutant indicators, in two cistern systems in the Charleston region. Findings were used to create management recommendations incorporated in new resources and training opportunities.

New Resources: Two newly published Clemson Extension HGIC publications:
HGIC 1728 “Best Practices for Application of Harvested Rainwater on Edibles”
HGIC 1729 “Rainwater Harvesting Systems Guidance for Schoolyard Applications”

Additionally, a rainwater harvesting interpretive sign was created for use in demonstration areas to provide information on system components, design, and recommendations for use.

Education & Public Involvement: Rainwater harvesting training was provided to technical audiences during the **Post-Construction BMP Inspector Course**, which was piloted in the Charleston region during the summer of 2015. This hybrid course includes a seven-week online portion and full day in the field for hands-on training. The field day took place at Trident Technical College (TTC) on September 9, 2015 with 35 participants taking part; the field day included a visit to cisterns as well as other BMPs on the TTC campus.

Information on rainwater harvesting was provided to residential audiences during the **Carolina Yards Gardening School Water-Wise Edition** on June 6, 2015 at Trident Technical College. Hosted by Clemson Extension, the Tri-County Master Gardeners, Carolina Clear and the ACSEC, programming was provided on rainwater harvesting and other “water-wise” practices to over 50 participants.

The **Carolina Schoolyard Program** was piloted in the ACSEC region with focus on rainwater harvesting. Teachers were trained in the practice and two area schools received standards-based curriculum on rainwater harvesting and schoolyard implementation of a rain barrel and rain garden.

The **2015 ACSEC Ivy Rain Barrel Sale** took place from May 28th to 30th with pickup locations at Gahagan Park in downtown Summerville, the City of Goose Creek’s Water Tower, and the Charleston County Public Services Building in North Charleston. The ACSEC partnered with Rainwater Solutions to provide Ivy Rain Barrels at a near 50% reduced price to the general public. Through this partnership, over 500 rain barrels were purchased, nearly twice as many as were purchased in the 2014 sale.



Public education activities are classified into two broad categories, **direct** and **indirect** outreach methods, to express mechanisms by which information has been communicated to the public. Direct methods include activities that are implemented via direct personal contact. Examples of direct methods include workshops, presentations, trainings, and public involvement activities. In contrast, indirect outreach methods refer to contacts through traditional media channels including television, radio, print, and billboards. Indirect methods generally reach a much greater portion of the population due to the nature of their mediums; however, it is often more difficult to gauge specific impacts. When dealing with direct methods, smaller numbers of people are reached yet the ones that are reached generally provide a forum for direct evaluation and feedback. Each method is important in the overall education campaign, and both are part of the five year educational strategy for the ACSEC. Throughout the document, the words “direct” or “indirect” are provided at the top of each reporting table to indicate which categorize efforts.

Data provided are as accurate as possible and are reviewed by multiple individuals involved in the reporting process. However, due to the nature of indirect outreach initiatives, indirect impact numbers are typically estimates.

Internet (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear		Website, Clemson Extension (stormwater related only), Carolina Yards, Carolina Clear, and ACSEC: Impacts are based on Google Analytics unique page views.	Continuous	45,996	GP, R, SP, P, T, B, C



WEBSITE: The ACSEC website is part of the Carolina Clear website, which continues to add new features for the public, including links to free resources like the SCWaterWays factsheet series, an ACSEC Facebook feed, and archived editions of the ACSEC’s e-newsletter, the “Ripple Effect.” The ACSEC website also includes archived information including annual report and meeting minutes, and the ACSEC Strategic Education Plan. Clemson Extension maintains a Stormwater Pond Management website and the Carolina Yard website. The Stormwater Pond Management website provides targeted information on pond inspection and maintenance to ensure stormwater pond function and water quality protection; the Carolina Yard website serves as a gateway to information on best management practices for an environmentally-friendly lawn and gardens.

Internet (Indirect) continued

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	ACSEC SMS4 and Education Partners	ACSEC Electronic Newsletter: <i>The Ripple Effect</i> : Bimonthly Consortium e-newsletter.	Bi-monthly (6 editions Total)	2,310	GP, R, HE, EA, SP, P, T, B, C



WEBSITE: *The ACSEC e-newsletter “Ripple Effect” is designed to provide awareness of ACSEC-related activities, including past, ongoing, and future events. The “Ripple Effect” also includes links to pertinent electronic resources providing information on good stewardship practices. The “Ripple Effect” is issued on a bi-monthly basis. ACSEC community and education partners are encouraged to submit information for inclusion in the “Ripple Effect” and also to distribute the e-newsletter to others. The “Ripple Effect” is archived on multiple partner websites and the number of impacts is likely underestimated. Archived editions can be viewed at www.ashleycooper.org.*

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	ACSEC Partners	ACSEC and Carolina Clear Facebook Pages: Provides daily/weekly information regarding ACSEC and Carolina Clear activities, news, and events.	Continuous	42,621	GP, R, SP, P, T, B, C



ACSEC FACEBOOK PAGE: *The ACSEC Facebook page is visually driven, utilizing photographs to provide awareness of ACSEC-related activities and information. The page also provides time sensitive information including camp and workshop registration deadlines, volunteer opportunities, watershed stewardship reminders, and other pertinent news items. Facebook allows for an additional avenue for communication as followers may post to the page or message the administrators (ACSEC co-coordinators). A live news feed of the ACSEC Facebook page is provided on www.ashleycooper.org.*

During Year Seven, 393 people followed the ACSEC Facebook page, 100 posts were made totaling 24,243 “views.” Average Facebook views were 242 per post.

Television (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension	SC ETV	Television, <i>Making It Grow</i> : Award-winning weekly one-hour TV program on ETV. Live call-in show airs Tuesday evenings from 7-8PM and answers home gardening and landscape questions from around South Carolina.	Continuous	24,358	GP, R
Clemson Extension, Carolina Clear	Knology, Comcast	Television, Stormwater Ponds Commercial: Commercial rotation on Knology and Comcast stations that featured best management practices for a stormwater pond management, and highlighted resources available through the Clemson Extension service and Carolina Clear program. For more information, see Highlight, p. 11-12.	September 21, 2015 through October 11, 2015	135,385	GP



Making It Grow, a production of Clemson Extension, is a live call-in television show hosted on ETV. It features Clemson Extension agents and special guests to answer questions on home gardening and landscaping topics. A member of the Clemson Extension Water Resources program team and Carolina Clear program is a host on the show; each week, she highlights a water-related stewardship practices and addresses questions concerning best management practices for protecting water quality.

**Making
It Grow**

Billboards (Indirect)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear		Billboard, <i>Buffer Zones</i> : Part of the Carolina Yards billboard series. Two locations: Interstate 26 at Montague Avenue; Highway 17 South, approximately 15 miles south of downtown Charleston.	Continuous	205,540; 12,000	GP
Clemson Extension, Carolina Clear		Billboard, <i>Healthy Soils</i> : Part of the Carolina Yards billboard series. Billboard located on Interstate 26, three miles west of Heriot Street.	Continuous	250,672	GP
Clemson Extension, Carolina Clear		Billboard, <i>Give it a Rest</i> : Part of the Carolina Yards billboard series. Billboard located on Interstate 26, four miles east of State Route 453.	Continuous	67,936	GP



BILLBOARD: *The statewide “Carolina Yards: Do you have one?” billboard series promoted shoreline buffers, proper grass and lawn maintenance and healthy soil management. Outreach messages were selected to address nutrient reduction in stormwater and pond management. Billboards are located in select Tri-County locations and number of impacts represent daily estimated counts.*



Commercial: Shoreline Management Solutions for Healthy Waterways

To assist connecting residents to information and resources, and in support of widespread efforts focused on nutrient and shoreline management, Carolina Clear filmed its latest media campaign along the shoreline of a pond in South Carolina. With assistance from an animated water drop, the commercial seeks to educate viewers on five simple actions to protect pond health:

1. Raise mowers and mow less often along the shoreline.
2. Create a fertilizer and herbicide-free zone around the full perimeter of your pond.
3. Plant pond-friendly and native plants along the shoreline to prevent erosion and bank loss.
4. Do not feed Canada geese, as high fiber foods, like bread, upset their simple digestive system (and encourage them to break their natural migration pattern).
5. Be responsible about stormwater runoff up-gradient of your pond by soil testing and fertilizing only as recommended for plant growth.

With partnership efforts across the state that include shoreline stabilization workshops and demonstrations, the Master Pond Manager course, SC WaterWays fact sheets on shoreline vegetation and resident Canada goose management, floating treatment wetland demonstrations and videos, and the Stormwater Pond Conference, Carolina Clear sought to highlight these to interested viewers by offering assistance and directing viewers to www.clemson.edu/carolinaclear.

The Clemson acting crew arranged plant materials along the shoreline while Guinn Wallover, Extension Agent, conversed with our animated water drop about best practices.



Screen shot of commercial featuring Guinn Wallover, Charly McConnell, and Daniel Dixon.

Commercial: Shoreline Management Solutions for Healthy Waterways

The commercial was tested before release to evaluate its impression on 50 South Carolina viewers; feedback included the following:

- The majority of viewers perceived this as an environmental protection piece, and not solely about pond health.
- Approximately 75% of respondents agreed that the topic is important to their community, and over half agreed that the topic is important to themselves and their family.
- Much of the feedback focused on benefits to wildlife that result from better care of waterways (in this case, ponds).
- Panelists commented that they were previously unaware of the hazards of feeding geese or that fertilizer could result in algae in ponds.
- 84% of panelists felt that the segment made it clear what the individual could do, and 75% agreed that their action in response to this segment would make a difference.



Wordle created from Water Words That Work panelists' descriptors of commercial.

The ACSEC logo was on display in the beginning and end of the commercial aired in the Lowcountry. The commercial aired this past fall on cable and local channels in partnership with Knology, Viamedia and Comcast. The commercial aired 846 times and garnered an estimated 135,385 total views. The ACSEC is looking forward to airing the segment again with broadcast networks in the spring of 2016!

The commercial is available for embedding and sharing through the Carolina Clear YouTube Channel at www.youtube.com/carolinaclear. A billboard for this commercial is being considered for development in 2016. Fifteen billboards are still featured across the state that reference the previous media campaign, encouraging Carolina Yard actions of composting, rainwater harvesting, less mowing, and planting native plants along shorelines.

Publications (Indirect)

ARTICLES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC DNR ACE Basin CTP NERR, SC Sea Grant Consortium, North Inlet-Winyah Bay CTP NERR		ARTICLES, Manual: <i>Low Impact Development in Coastal South Carolina: A Planning and Design Guide</i> ; manual is hosted on North Inlet-Inlet Winyah Bay website.	Continuous	23,662	T, C, EA
The Post and Courier	Clemson Extension, Carolina Clear	ARTICLES, Newspaper: "Buffers Protect Tidal Creeks."	January 11, 2015	96,005	GP, R
The Gardeners Guide for Charleston and the Lowcountry	Garden Club of Charleston, Clemson Extension, Carolina Clear	ARTICLES, Guide: "Native Plants for Lowcountry Gardens"; chapter featured in the Charleston Garden Club's <i>The Gardener's Guide for Charleston and the Lowcountry</i> publication.	Summer 2015	500	GP, R, C
Naturally Kiawah	Clemson Extension, Carolina Clear	ARTICLES, Magazine: "Native Plants for Lowcountry Gardens."	Summer/Fall 2015	6,636	GP, R



LOW IMPACT DEVELOPMENT
IN COASTAL SOUTH CAROLINA:
A PLANNING AND DESIGN GUIDE



The "Low Impact Development in Coastal South Carolina: A Planning and Design Guide" was produced through a partnership between the SC Department of Natural Resources ACE Basin NERR CTP, SC Sea Grant Consortium, the University of South Carolina's North Inlet-Winyah Bay NERR CTP, NOAA's National Estuarine Research Reserve (NERR), and the Center for Watershed Protection. The manual provides guidance for South Carolina stormwater management and design community on the use of low impact development in coastal communities. Since its publication on the North Inlet-Winyah Bay NERR website in early 2015, the manual has been downloaded 23,662 times by interested constituents.

Publications (Indirect)

ARTICLES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
The Conservation Corner Annual Report Newsletter	Charleston Soil & Water Conservation District	ARTICLES, Newsletter: "The Conservation Corner Annual Report Newsletter" reported on the District's 2015 initiatives and opportunities.	September 18, 2015	1,000	GP, R, EA, T
The Post and Courier	Clemson Extension, Carolina Clear	ARTICLES, Newspaper: "Using Rain on Garden" described best practices for application of harvested rainwater on edibles.	September 20, 2015	96,005	GP, R
Charleston County School District	Clemson Extension, Carolina Clear	ARTICLES, Online Guide: "Planning Construction and Operation Guide for Gardens, Greenhouses and Rain Barrels", included in a manual on the CCSD website.	Fall 2015	100	YT, GP
Clemson IMPACTS	Clemson Extension, Carolina Clear	ARTICLES, Magazine and Online: "Extension helps eateries serve waterways a healthier diet."	Fall 2015	16,140	GP, R, C
The Post and Courier	Clemson Extension, Carolina Clear	ARTICLES, Newspaper: "Planting for a Rainy Day" focused on efforts in the ACSEC region to increase rain garden awareness and use.	November 15, 2015	96,005	GP, R

In 2015, "Clemson IMPACTS" and "Naturally Kiawah" both featured articles highlighting ACSEC programs and messaging. "Clemson IMPACTS" is a publication of the Clemson University Public Service and Agriculture and is distributed to agriculture and natural resource clientele, Clemson Extension offices, and Clemson University staff. "Naturally Kiawah" is a publication of the Kiawah Conservancy; its readership includes Kiawah Island surrounding community residents and visitors. For a copy of these and other articles, see Appendix A.



PRINT ADVERTISING

The Moultrie News	Town of Mount Pleasant	PRINT ADVERTISING: "It Drains Here" promotional piece	June 17, 2015	70,607	GP, R
The Moultrie News	Town of Mount Pleasant	PRINT ADVERTISING: "Illicit Discharge" promotional piece	June 25, 2015	70,607	GP, R

THE MOULTRIE NEWS In summer 2015, two quarter-page stormwater education print advertisements were sponsored by the Town of Mount Pleasant and included in The Moultrie News. See Appendix A for examples.

Carolina Clean Watershed Restaurant Program

Improper handling and disposal of fats, oils, and grease (FOGs) from restaurants can contribute to sanitary and stormwater sewer system blockages and the degradation of downstream water quality. As part of its Strategic Plan development, input from municipal and county level stormwater management programs in the ACSEC showed a demonstrated demand for outreach encouraging restaurant industry staff to adopt stormwater pollution prevention practices.

To address the identified industry audiences as well as community needs, in 2015, the ACSEC kicked off the Carolina Clean Watershed recognition program for restaurant and food preparation services. The Carolina Clean Watershed Restaurant program encourages adoption of proper FOG disposal and pollution prevention best management practices through the recognition of participants as watershed stewards. This recognition can be used as a marketing tool in a growing Tri-County community that has a increased interest in sustainable or environmentally friendly opportunities. The Carolina Clean Watershed program included a facility walkthrough, a user workbook, a toolbox of resources including spill kit, posters and training guides, and a Train-the-Trainer session with managers and staff resulting in potential modifications to work practices.

The ACSEC is proud to announce that two restaurants have been certified in the Charleston Tri-County region, including Triangle Char and Bar in Mount Pleasant and Triangle Char and Bar in West Ashley, with others in the initial stages of participation. Recognized restaurants have taken steps to modify outdoor area management, spill cleanup, and employee training to address the potential for polluted runoff from the workplace. Train-the-Trainer sessions with restaurants have been conducted, directly impacting 20 managerial staff and owners but with indirect impacts on all restaurant staff (estimated 30-40 each). Through work with these pilot restaurants, feedback, lessons learned, and additional needs were identified; modifications were incorporated to strengthen the Carolina Clean Watershed program delivery and impacts.

The ACSEC looks forward to working with new restaurant participants in the community. This program offers a role model for how a unique partnership between multiple stakeholders can address community wide concerns for water quality protection.

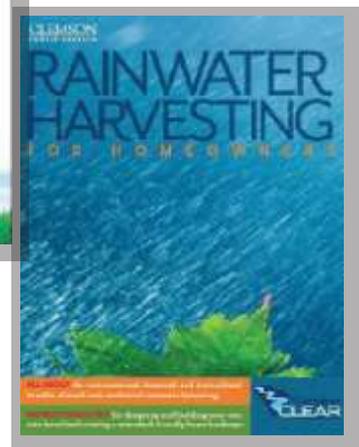


Outreach Materials (Indirect)

BROCHURES, BOOKLETS, MANUALS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	SCDHEC	Booklet, <i>Carolina Yardstick Workbook</i> : Highlights Carolina Yards principles for sustainable landscapes.	Continuous	170	GP, R, P
Clemson Extension, Carolina Clear		Brochure, <i>Leaf it on the Lawn</i> : Discusses tips for proper disposal of lawn debris; flyer in Spanish and English.	Continuous	100	C, R, GP
Clemson Extension, Carolina Clear		Manual, <i>Rain Gardens - Green Solutions to Stormwater Pollution</i> : Provides overview and procedures for installing a rain garden in the landscape.	Continuous	250	GP, R
Clemson Extension, Carolina Clear		Manual, <i>Rainwater Harvesting for Homeowners</i> : Provides an overview and procedures for installing and maintaining a residential rainwater harvesting system.	Continuous	250	GP, R
Clemson Extension, Carolina Clear	Multiple	Poster, Stickers, Magnets, "Fats, Oils, and Grease (FOG) Restaurant Guidance": Materials distributed for use in food-prep areas focused on proper handling and management of FOG.	Continuous	30	C

Carolina Clear produced both a rainwater harvesting and rain garden manual specifically geared towards residential audiences in South Carolina. The rainwater harvesting manual is written to assist homeowners with designing and installing small-scale rainwater harvesting systems, primarily rain barrels. The rain garden manual provides information on constructing a rain garden and emphasizes the step-by-step planning process including site selection, plant design, and soil preparation. Both manuals are distributed at public events, including fairs and festivals, as well as to individuals attending workshops and presentations. The publications are also made available, as free low-resolution downloads, in the Carolina Clear toolbox.



Outreach Materials (Indirect) continued

POSTCARDS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>What is a Rain Garden?</i> : Provides brief description and purpose of a rain garden and links interested individuals to online resources and additional information.	Continuous	200	GP, R, YT
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>Trashing Our Environment</i> : Provides information on what can be done to prevent litter in SC.	Continuous	100	GP, R, YT
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>What To Do About Pet Waste</i> : Provides information to pet owners on the hazards of pet waste in runoff and how to properly dispose of waste.	Continuous	300	GP, R, YT, P
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>We All Live Downstream</i> : Highlights that stormwater is not treated; includes tips to preventing stormwater pollution.	Continuous	300	GP, R, YT
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>Septic Systems Care and Maintenance</i> : Tips for maintaining septic systems to reduce negative impacts on water quality.	Continuous	100	GP, R
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>Better Manage Fats, Oils, and Grease (FOGs)</i> : Provides information on the hazards of FOGs in our sewer system; includes information on proper FOG disposal.	Continuous	100	GP, R, C
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>A More Green Way to Clean</i> : Tips on proper pressure washing to protect water quality.	Continuous	100	GP, R, C
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>What is a Rain Barrel?</i> : Describes rainwater harvesting; promotes the use of rain barrels for smarter lawn care as well as for water quality.	Continuous	200	GP, R, YT
Clemson Extension, Carolina Clear	Multiple	POSTCARD, <i>Freshwater Shorescapes</i> : Describes the benefits of shorescaping and tips and resources for pond owners.	Continuous	200	GP, R, SP

Educational postcards provide a take-home outreach material for distribution to residents and visitors at tabling events, workshops and presentations, office displays and more. All postcards provide links to free resources for more information. Postcard impacts are in thanks to distribution by the ACSEC education and community partners.



Outreach Materials (Indirect) continued

PROMOTIONAL ITEMS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear		PROMOTIONAL ITEMS, Stormwater Pond Management Sticker: Promotes the Clemson Stormwater Pond Management website.	Continuous	200	P, T, C, R, GP, SP
Clemson Extension, Carolina Clear		PPROMOTIONAL ITEM, www.ashleycooper.org Sticker: ACSEC logo and website utilized to promote website visitation and ACSEC awareness.	Continuous	200	GP, R, YT
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Pocket Ashtray: Encouraged responsible disposal of cigarette butts.	Continuous	75	GP, R
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Clean Water Hero Bracelets: Promoted water stewardship, distributed to youth during programs.	Continuous	200	GP, YT
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Thank You! Reusable Bags: Promoted the ACSEC and protection of local waterways.	Continuous	75	GP, R
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, ACSEC Koozies: Promoted the ACSEC and includes a "Ask About Watersheds" message. Distributed at events and programs.	Continuous	200	GP, R
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Rain Drop Sponges: Includes a "Only Rain Down the Storm Drain!" message. Distributed to at tabling events and presentations.	Continuous	50	GP, YT
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Dog Bag Dispenser: Distributed to dog owners at tabling events to remind owners to pick up pet waste.	Continuous	150	GP, R, P
SC DNR, SC Sea Grant Consortium		PROMOTIONAL ITEM, Life in the Salt Marsh Poster: Provides information on salt marsh ecology and ecosystem health; distributed as part of Seeds to Shoreline training.	Summer 2015	100	YT

Permanent Exhibits (Indirect)

SITE DEVELOPMENT

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	Tri-County Master Gardeners	PERMANENT EXHIBIT DEVELOPMENT: Clemson University Research and Education Center's "Ed Shed."	Continuous	500	GP, R, YT, HE, T, EA, P, C

The "Ed Shed" located at Clemson University's Coastal Research and Education Center, provides a demonstration and training area with several examples of stormwater best management practices to include pervious pavers, pervious concrete, both above-ground and below-ground rainwater harvesting systems, rain gardens, and landscaping utilizing native plants and no-till gardening techniques. During Year Seven, "Carolina Yards" interpretive signage was added to highlight environmentally-friendly gardening. The "Ed Shed" was used to host 4-H2O summer camp, teacher workshops, ACSEC meetings, Master Naturalist and Master Gardener trainings, film education videos, and more.



LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Tri-County Master Gardeners	Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: Urban Research and Demonstration Area Rain Garden	Continuous	1,000	GP, R, YT, HE, T, EA, P, C

In the fall of 2015, the rain garden at the Clemson Urban Research and Demonstration Area, located on the premises of the Clemson Coastal Research and Education Center, was revamped. This effort required removal of existing trees, which were too large for the rain garden, and reshaping the area to provide ponding depth. The soil was amended, native perennials and grasses were planted, and cedar mulch added. This project was completed in partnership between the Clemson Research and Education Center staff, Master Gardeners, and the ACSEC members. A rain barrel and interpretive signage was added to the existing kiosk.



Permanent Exhibits (Indirect)

SITE DEVELOPMENT

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Town of Mount Pleasant	Clemson Extension, Carolina Clear, SC DNR ACE Basin NERR CTP	PERMANENT EXHIBIT DEVELOPMENT: A rain garden was installed at the Town of Mount Pleasant Fire Station #2; interpretive signage was also installed.	Continuous	800	GP, R, YT, T



As part of the Rain Garden for Professionals Workshop, a rain garden was installed at the Town of Mount Pleasant's Fire Station Number 2. This rain garden captures water off of a portion of the fire station roof surface; any overflow is directed towards adjacent turf area and stormwater pond. Interpretive signage was also present. The rain garden is also in close proximity to a Town of Mount Pleasant Recreation Center.

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Berkeley County, Keep Hanahan Beautiful	Clemson Carolina Clear, SC DNR ACE Basin NERR CTP	PERMANENT EXHIBIT DEVELOPMENT: A rain garden and cistern were installed at the Hanahan Library as part of Keep Hanahan Beautiful's Butterfly Garden.	Continuous	350	GP, R, YT



As part of Keep Hanahan Beautiful's Butterfly Garden, located at a Berkeley County Public Library, a rain garden and 500-gallon cistern were installed. The rain garden features butterfly plantings and interpretive signage. The cistern captures water from a portion of the library roof surface area; overflow is then directed towards the rain garden.

Permanent Exhibits (Indirect)

SITE DEVELOPMENT

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Camp St. Christopher, Clemson Extension, Carolina Clear	SC Master Naturalists, CCPRC	PERMANENT EXHIBIT DEVELOPMENT: A rain garden was installed at the Camp St. Christopher's Activity Hall on Seabrook Island. A visit to the garden is included in the camp's "Human Impacts" class that is offered to visitors.	Continuous	650	GP, R



As part of the Master Naturalist State Conference, a rain garden was installed on the campus of Camp St. Christopher adjacent to the activities center. The rain garden is highlighted as part of an ongoing class offered at the camp; the class educates visitors on human impacts on the environment and ways to mitigate those impacts.

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Dorchester County, Keep Dorchester County Beautiful	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: A rain garden and rain barrel were installed at the bus stop in front of the Dorchester County Government Building.	Continuous	1,000	GP, R, EA, T



Before



After

In partnership with Keep Dorchester County Beautiful and Dorchester County Government, a new BMP demonstration site was established at the County building located in Summerville. A rain barrel captures the runoff from a bus stop waiting area; the overflow is directed to an adjacent rain garden. Overflow from the rain garden enters the existing storm drain system. Interpretive signage was also installed at this location.

Permanent Exhibits (Indirect)

SITE DEVELOPMENT

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston County	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: A shoreline planting project was installed at a stormwater pond located on the Charleston County Public Services Building campus.	Continuous	100	GP, R, SP, EA, T, C

As part of the Master Pond Manager class in Spring 2015 and the Shorescaping Workshop in Fall 2015, a planted shoreline was installed at a stormwater pond on the Charleston County Public Services Building's campus in North Charleston. This new demonstration site is a first for the ACSEC and showcases best management practices that can be used in stormwater ponds to provide for erosion control and bank stabilization, as well as other potential water quality and habitat benefits.



Permanent Exhibits (Indirect)

SITE DEVELOPMENT - SCHOOL INITIATIVES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Cape Romain Environmental Education Charter School (CREEC)	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: As part of the Carolina Schoolyards Initiative, a rain garden and rain barrel were installed at the CREEC School.	Continuous	175	YT
Charles Towne Montessori School	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: As part of the Carolina Schoolyards Initiative, a rain garden was installed at Charles Towne Montessori School.	Continuous	100	YT

The Carolina Schoolyard Initiative was piloted in 2015 to provide standards-based curriculum to teachers and students on watershed stewardship topics. This pilot effort placed particular emphasis on the practices of rain gardens and rainwater harvesting; participating schools received a rain barrel and rain garden installation.



Permanent Exhibits (Indirect)

EXISTING SITES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Native Plants Society	Charles Towne Landing State Historic Site, Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: Rain garden demonstration site at the Legare-Waring House at Charles Towne Landing State Historic Site. This site includes interpretive signage and is frequented by public walking the grounds of Charles Towne Landing, as well as those visiting for other public and private events.	Continuous	1,000	GP, R
SC Aquarium	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: Rain barrel display at the SC Aquarium; site located at Aquarium entrance.	Continuous	1,000	GP, R, YT, HE, T, EA, P, C
Clemson Extension, Carolina Clear	Tri-County Master Gardeners	PERMANENT EXHIBIT EXISTING: Bowens Island rain garden is a 900-square foot large-scale rain garden managing nearly 2000-square feet of roof area runoff. This popular dining destination provides rain garden exposure to the public.	Continuous	1,000	GP, R, C
St. Julian Divine Community Center	City of Charleston, Charleston Horticulture Society, Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: Two 55-gallon rain barrels are installed at the entry way to the St. Julian Divine Community Center. The rain barrels are connected to drip irrigation system utilized for adjacent landscaping.	Continuous	1,500	GP, YT, R



Permanent Exhibits (Indirect)

EXISTING SITES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Department of Natural Resources	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: <i>Ft. Johnson Community Garden</i> is a demonstration garden adjacent to the SCDNR outdoor classroom at the Marine Resources Center on James Island. Stormwater best management practices present include two rain gardens, a 1500-gallon cistern, over 30 species of native plants, and multiple waterwise irrigation practices. An additional demonstration site exists on the Fort Johnson Campus at the Marine Turtle Conservation Office, at this location a small-scale cistern and rain garden are present with interpretive signage.	Continuous	5,000	GP, R, HE, YT
Charleston County Park and Recreation Commission	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: <i>Caw Caw Interpretive Center</i> is home to a full-shade rain garden located at the park's picnic shelter. The site includes a 50-gallon rain barrel which overflows into the rain garden. This Caw Caw location is visited by school groups, birding groups, and various other visitors.	Continuous	2,000	GP, R, YT
Charleston County Park and Recreation Commission	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: <i>Wannamaker County Park's "Whirlin Waters"</i> is home to a residential scale, full-sun rain garden that was installed with the help of area youth. The rain garden captures stormwater from surrounding impervious areas, including sidewalks and patios, and includes educational signage.	Continuous	500	GP, R, C

Permanent Exhibits (Indirect)

EXISTING SITES - SCHOOL INITIATIVES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
College of Charleston	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: The <i>Green Teaching Garden</i> demonstrates stormwater best management practices at the Grice Marine Lab. Features include a rain garden, cistern, multiple rain barrels, composting station, native plants, and raised beds. Tours are provided upon request.	Continuous	500	HE, GP, R, YT
College of Charleston	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Rainwater harvesting cistern and pump located adjacent to the Political Science Building on College of Charleston's downtown campus.	Continuous	500	HE, GP, R, YT, C
College of Charleston	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Early Childhood Development Center features rain barrels to raise awareness of water quality sustainability features.	Continuous	100	YT, HE, GP, R
Farms to Schools Initiative	Clemson Extension, Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Alston Middle School utilizes harvested rainwater and drip irrigation for raised beds.	Continuous	900	YT, GP
Charleston Children's Garden Project	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: 300-gallon rainwater harvesting system installed at Stono Park Elementary School.	Continuous	400	YT, GP



Permanent Exhibits (Indirect)

EXISTING SITES - SCHOOL INITIATIVES

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Green Hearts Project, Keep America Beautiful, Keep Charleston Beautiful	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Mitchell Elementary School; As part of the Green Hearts Project, a 1550-gallon cistern was installed to supply water to surrounding raised beds using drip irrigation. The cistern is located adjacent to the school's outdoor classroom and captures runoff from the structure's roof.	Continuous	350	YT
Clemson Extension, Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Ashley River Creative Arts School; Bicycle pump installed on existing 300-gallon cistern. Students peddle the stationary bicycle as part of the bicycle pump system that moves water from the cistern to garden areas.	Continuous	500	YT
Clemson Extension, Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Goodwin Elementary School; Two 50-gallon rain barrels were installed adjacent to the school's small greenhouse and butterfly garden area.	Continuous	100	YT
Clemson Extension, Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: James Island Charter High School; Four 50-gallon rain barrels were installed at a school garden used by biology students, science club, and camp youth.	Continuous	390	YT



Public Events (Indirect)

FAIRS AND FESTIVALS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Lowcountry STEM Collaborative	Multiple	EXHIBITS: <i>Charleston STEM Festival</i> ; Youth visited multiple education partners as part of this one-day Science, Technology, Engineering, and Math Festival; the ACSEC hosted a booth and used the Enviroscape to discuss connections with waterways.	February 7, 2015	7,500	YT
Charleston Soil and Water Conservation District	SC DNR, NRCS	EXHIBITS: <i>Southeastern Wildlife Exposition</i> ; Exhibits in the Conservation Tent provided program informational handouts on water quality, soils, and other conservation topics.	February 13-15, 2015	1,500	GP, YT, R, C
Charleston County	Clemson Extension, Carolina Clear	EXHIBITS: <i>The Black Expo 2015</i> ; Informational handouts and giveaways accompanied stormwater education program discussion at this event held at the North Charleston Coliseum.	March 14, 2015	85	GP
Berkeley County	Clemson Extension, Carolina Clear	EXHIBITS: <i>Naturescope/Kids Who Care</i> ; Enviroscape used as part of the Berkeley County K-5 Naturescope "Kids Who Care" program.	April 9, 2015	2,000	YT
Santee Cooper	Clemson Extension, Carolina Clear	EXHIBITS: <i>Santee Cooper Earth Day Festival</i> ; Discussed ACSEC programming and opportunities with Santee Cooper employees.	April 15, 2015	250	GP, R
Medical University of South Carolina	Clemson Extension, Carolina Clear, Community Pride, Inc.	<i>MUSC Earth Day Festival</i> : Hosted on the MUSC campus, multiple ACSEC partners were present to provide information to MUSC staff, students, visitors, and the public.	April 15, 2015	1,000	HE, GP, R, YT



Public Events (Indirect) continued

FAIRS AND FESTIVALS

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston County	Multiple	EXHIBITS: <i>Charleston County Earth Day Festival</i> ; This festival is a hands-on, science-based experience; multiple ACSEC education partners in attendance provided information on watershed stewardship.	April 15, 2015	1,500	GP, R, YT
Town of Mount Pleasant	Clemson Extension, Carolina Clear, Charleston Waterkeeper	EXHIBITS: <i>Shem Dig</i> ; With twenty booths representing multiple ACSEC partners, the Shem Dig was hosted at Shem Creek Park along the boardwalk. Visitors learned how to protect area waterways through interactive exhibits.	May 10, 2015	150	GP, R, YT, BO
Ashley Scenic River Advisory Committee	Multiple	EXHIBITS: <i>Oakbrook Ashley Riverfest</i> ; Event held along the Ashley River at Jessen Boat Landing and Colonial Dorchester State Park. Participants met representatives from various natural resource organizations.	May 10, 2015	2,000	GP, R, YT, BO
Charleston Green Fair	Multiple	EXHIBITS: <i>Charleston Green Fair</i> ; Held at James Island County Park, the Green Fair provides a venue for participants to learn about environmental stewardship. ACSEC tabled the event and provided information on watershed stewardship topics.	September 20, 2015	3,000	GP, R, YT
Charleston County	Clemson Extension, Carolina Clear	EXHIBITS: <i>Truck or Treat</i> ; Held at the North Charleston Coliseum, the Enviroscene was used to discuss community connections to waterways with youth.	October 17, 2015	525	YT
Medical University of South Carolina	Multiple	EXHIBITS: <i>Charleston Arbor Day</i> ; Hosted on the MUSC campus, multiple ACSEC partners were present to provide information to MUSC staff, students, visitors and public.	December 2, 2015	700	HE, GP, R



In-Person, Phone, Email (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Tri-County Master Gardeners		In-Person, Phone, Email: In the Tri-County, Clemson Extension Agents and Master Gardeners answered questions relating to a variety of home landscaping issues; topics including compost, mulch, fertilizers, native plants, irrigation, etc.	Continuous	49,000	GP, R, C
Clemson Extension		In-Person, Phone, Email: Clemson Extension Agents answered questions and provided services to a variety of home owners, pond owners, commercial, and teachers throughout the Tri-county area.	Continuous	500	SP, R, C, YT
Clemson Extension, Clemson's Agricultural Service Lab		Soil Samples: Clemson Extension, in cooperation with Clemson's Agricultural Service Lab, processed soil samples for the Tri-county residents and commercial audiences.	Continuous	Tri-County Total: 4,426	R, C



The Charleston Tri-County area is home to 12 Clemson Extension Agents and nearly 450 active Master Gardeners. Every year, Extension Agents and Master Gardeners in the Berkeley, Charleston and Dorchester County Extension offices respond to calls, walk-ins, and emails from the public, as well as field questions during public events. Information is provided to individuals from both the private and commercial sector, with diverse interests ranging from agriculture, forestry, home landscaping, horticulture, and pond management. Extension offices also provide services in concert with the University, including soil sample analysis and fertilizer recommendations, irrigation water analysis, plant and weed identification, and identification of plant problems.



Presentations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SCDNR SCORE		PRESENTATION: "Oysters as living shorelines" on the water quality, shoreline stabilization and habitat effects of oyster reefs (five separate presentations).	Continuous	125	R, HE
Clemson Extension, Carolina Clear		PRESENTATION: Presentation focused on stormwater pond management and new resources available through Clemson Extension; provided at "SC Vegetation Management Association" annual meeting.	January 8, 2015	200	GP, SP, C
Charleston County Soil and Water Conservation District		PRESENTATION: Presentation provided to legislators on program updates and water quality initiatives through statewide Soil and Conservation Districts.	February 24, 2015	310	EO
Clemson Extension, Carolina Clear		PRESENTATION: Presentation provided to Moncks Corner Rotary Club on community water resources and actions to protect water quality.	March 5, 2015	24	GP, R
Charleston County Soil and Water Conservation District		PRESENTATION: Presentation at the Charleston District's Environmental Awards Recognition Program honored outstanding educators and Conservationists who promote stormwater, water, and soil quality conservation issues.	June 2, 2015	50	GP, R, YT, EO
Clemson Extension, Carolina Clear		PRESENTATION: Presentation provided to Ashland Plantation HOA Garden Club on the benefits of shoreline plantings for stormwater ponds.	June 12, 2015	10	R
Clemson Extension, Carolina Clear	SC Native Plant Society	PRESENTATION: "Rainwater Harvesting 101" presentation provided at SCNPS Symposium; presentation described the basic premises of rainwater harvesting.	June 13, 2015	20	GP, R, C
Clemson Extension, Carolina Clear		PRESENTATION: Presentation to Hickory Hill Garden Club on rain garden design in the residential landscape.	October 1, 2015	15	GP, R
Clemson Extension, Carolina Clear		PRESENTATION: Presentation at the SC Community Association Institute's Annual Conference focused on the purpose of stormwater ponds and their maintenance needs.	October 1, 2015	120	GP, SP, C, R

Presentations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	ACE Basin NERR CTP, SC Sea Grant	PRESENTATION: “Resources for Your Community” presentation at the “Neighbors for Clean Water Stormwater Pond Conference” provided information on stormwater pond management resources.	October 22, 2015	20	GP, SP, C, R,
Clemson Extension, Carolina Clear	ACE Basin NERR CTP, SC Sea Grant	PRESENTATION: “Upland Management: Protecting Water Quality Before the Pond” presentation at the “Neighbors for Clean Water Stormwater Pond Conference” provided information on protecting pond health through best landscaping practices.	October 22, 2015	22	GP, SP, C, R,
Clemson Extension, Carolina Clear	ACE Basin NERR CTP, SC Sea Grant	PRESENTATION: “Shorescaping for Healthy Ponds” presentation at the “Neighbors for Clean Water Stormwater Pond Conference” provided information on benefits of shorelines buffers, as well as installation and design tips.	October 22, 2015	40	GP, SP, C, R,



Youth Presentations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC DNR SCORE		YOUTH PRESENTATION: "Oysters as living shorelines" focuses on water quality, shoreline stabilization, and habitat benefits of oyster reefs.	Continuous	824	YT
Keep Charleston Beautiful	Palmetto Pride	YOUTH PRESENTATION: School-based litter prevention programs for grades K-8; 18 programs held in 2015.	Continuous	1,000	YT
Charleston Waterkeeper		YOUTH PRESENTATION: In-School education program for youth focused on waterway protection; 12 programs held in 2015.	Continuous	578	YT
Keep Dorchester County Beautiful	Dorchester County	YOUTH PRESENTATION: Youth education program focused on recycling and litter prevention.	Continuous	478	YT
SC Sea Grant Consortium		YOUTH PRESENTATION: Enviroscape model used with James Island Elementary School students to discuss community connection with local waterways.	January 22, 2015	24	YT
Charleston County Soil and Water Conservation District	NRCS	YOUTH PRESENTATION: Coastal watershed demonstration provided for Math & Science Fair at Eaglenest Elementary School.	March 5, 2015	350	YT
SC Sea Grant Consortium		YOUTH PRESENTATION: Enviroscape model used with CE Williams Elementary School students to discuss community connection with local waterways.	March 25, 2015	110	YT
Charleston County Soil and Water Conservation District		YOUTH PRESENTATION: "Essay Award Presentations;" Education outreach awards presentations by students, teachers, and families on water quality topics.	May 26 to June 3, 2015	385	YT, R



Youth Presentations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Mount Pleasant Waterworks	Clemson Extension, Carolina Clear	YOUTH PRESENTATION: Presentation used the Enviroscape model to teach youth about their connection to community waterways.	September 17, 2015	30	YT
Charleston County School District	Clemson Extension, Carolina Clear	YOUTH PRESENTATION: "Life in a Watershed" presentation provided to youth at the CCSD's Sustainability Symposium; students learned about their shared connection with local waterways and actions to protect.	September 18, 2015	350	YT
SC Sea Grant Consortium		YOUTH PRESENTATION: Enviroscape model used with Mitchell Elementary School students to discuss community connection with local waterways.	October 14, 2015	32	YT
Ashley Hall School	Clemson Extension, Carolina Clear	YOUTH PRESENTATION: Ashley Hall teachers worked with the Enviroscape model to discuss stormwater and actions to protect water quality in the community.	October 26, 2015	150	YT
SC Sea Grant Consortium		YOUTH PRESENTATION: Enviroscape model used with Whitesides Elementary School students to discuss community connection with local waterways.	October 27, 2015	87	YT
Town of Mount Pleasant, Clemson Extension, Carolina Clear		YOUTH PRESENTATION: Students at Cario Middle School learned about watershed stewardship through the interactive and hands-on Stormwater Jeopardy! activity.	October 29-30, 2015	200	YT
Charleston County Soil and Water Conservation District		YOUTH PRESENTATION: "Twiggy the Twig" visited area schools to discuss benefits of trees to communities, including their role in stormwater management.	December 4, 2015	115	YT



Workshops - Residential Audiences (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Tri-County Master Gardener Association		WORKSHOP: Carolina Yard Gardening Series, "Healthy Soils" edition; Participants learned about multiple aspects of soil health, including best practices for fertilizer application.	March 14, 2015	100	GP, R
Clemson Extension, Carolina Clear	Berkeley County, Keep Hanahan Beautiful	WORKSHOP: A rain garden workshop for homeowners including a rain garden installation at Berkeley County's Hanahan Library.	May 27, 2015	15	GP, R
Clemson Extension Tri-County Master Gardener Association, Carolina Clear		WORKSHOP: Carolina Yard Gardening Series, "Water-Wise Gardening" edition; Participants learned a variety of water smart practices for landscaping. Sessions included the lecture and hands-on discussion of rain garden design, installation, and maintenance, entitled "Somewhere Over the Rain Garden."	June 6, 2015	50	GP, R



Workshops - Residential Audiences (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston County Soil and Water Conservation District	SC DNR	WORKSHOP: Hands-on outdoor environmental camp that provides the knowledge and appreciation needed to protect and manage natural resources. Instruction is given in areas of fisheries, water quality, and other related natural resource topics.	June 21-27, 2015	150	YT
SC Sea Grant Consortium	SC DNR, Clemson Extension, Carolina Clear	WORKSHOP: <i>From Seeds to Shoreline (S2S) Teacher Workshops (2)</i> : Two full-day trainings held at the Fort Johnson Marine Center. Provided curriculum and step-by-step information for teachers on how to grow <i>Spartina alterniflora</i> with students. Workshop allowed for hands-on training opportunities including greenhouse construction and salt marsh exploration. Presentations included "Carolina Schoolyards" and "The Salt Marsh Watershed."	June 24, 2015; June 25, 2015	21; 17	YT
Clemson Extension, Carolina Clear	Master Naturalist Program	WORKSHOP: <i>Naturalist Gardening for the Green Thumb</i> ; Workshop held as part of the SC Master Naturalist Annual Conference. This workshop focused on best practices in the home landscape and included a rain garden installation.	October 9, 2015	14	GP, R
Clemson Extension, Carolina Clear, ACE Basin NERR CTP	Charleston County	WORKSHOP: <i>Shorescaping Workshop: Planted Shorelines For Your Pond</i> ; Half-day workshop for pond owners and managers focused on shoreline management for stormwater ponds. Workshop included classroom lecture and shoreline plant installation at a pond on Charleston County's Public Services Building complex.	October 14, 2015	19	GP, R, SP



Workshops - Professional Audiences (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
ACE Basin NERR CTP	North Inlet Winyah Bay NERR CTP	WORKSHOP: <i>Breaking Through Barriers</i> ; The Breaking Through Barriers series provided big concepts and practical tips to help professionals communicate environmental issues with multiple audiences.	January 14, 2015	62	T, EA
Clemson University	Clemson Extension, Carolina Clear	WORKSHOP: <i>2015 Turf School</i> ; All-day training on turf management for commercial landscapers; topics included fertilizer application and integrated pest management.	February 10, 2015	40	C
Clemson Extension, Carolina Clear	Dorchester County, Keep Dorchester County Beautiful	WORKSHOP: A rain garden workshop for public works and stormwater department staff; the training included an installation of a rain garden at a Dorchester County Government Building.	May 21, 2015	16	EA, T
ACE Basin NERR CTP	Army Corps of Engineers	WORKSHOP: <i>Coastal Wetlands Identification</i> ; This one-day training sought to increase the ability of local decision-makers to identify wetlands and wetland boundaries based on the hydrologic, soil, and vegetative indicators commonly found in Lowcountry wetlands. Training included both classroom and field instruction.	November 17, 2015	14	EA, T



Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson University		TRAININGS: Clemson's Department of Pesticide Regulation provides training and certification for commercial, non-commercial, and private licensed applicators. Number of impacts represents the number of Tri-County licensed applicators current through 2015.	Certification exams given quarterly	1135	C, R, GP, SP
Clemson University		TRAININGS: Clemson provides training and certification for the Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program to assist in pollution prevention control on construction projects. Number of impacts represents the number of Tri-County certifications current through 2015.	Recertification class taught June 10, 2015	151	C, T

Land disturbance activities and sediment pollution have significant potential to adversely impact water quality. The Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program educates field personnel on the proper installation, maintenance, and inspection of erosion prevention and sediment control measures.



LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	Multiple	TRAININGS: Carolina Clean Watershed Restaurant program trains and certifies restaurants who incorporate best management practices for stormwater pollution prevention into their facility and everyday operations. To date, two restaurants have been certified with others taking action to improve their site. Impact numbers represent number of upper management, owners and staff participating in "Train-the-Trainer" program.	Continually	20	C

Triangle Char and Bar in West Ashley and Mount Pleasant were recognized as the first Carolina Clean Watershed Restaurants. See Highlight, pg 15, for more information on the program and restaurant involvement.

CAROLINA CLEAN WATERSHED



RESTAURANT

A SERVICE OF CLEMSON UNIVERSITY EXTENSION



Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension	Tri-County Master Gardener Association, Carolina Clear	TRAININGS: Master Gardener Training; A four-month certification program that includes special topics such as fertilizer application, benefits of native plants, stormwater best management practices (rain gardens and rainwater harvesting), and stormwater ponds.	Fall 2015	28	GP, R

As part of the Master Gardener (MG) coursework training, information and programs are incorporated on both structural and behavioral stormwater best management practices (BMPs). Once an individual has completed the course, their status remains active by performing internship and volunteer hours focused on community outreach. MGs are an enormous asset to the Charleston Tri-County area as each year this dedicated group of volunteers provide garden and landscape information to thousands of people from the public via phone, email, office visits, etc. (as reported in "Direct Contacts," p.30). The MGs provided support to the ACSEC during Year Seven in a variety of ways including assistance with rain barrel sales, workshops, and demonstration site projects.



LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston County Park and Recreation Commission	Clemson Extension, College of Charleston, SCDNR	TRAININGS: Master Naturalist Certification Programs hosted in Spring and Fall 2015.	Spring 2015; Fall 2015	24	GP, R

Charleston County Park and Recreation Commission is the lead provider for the Charleston Area Master Naturalist program. Master Naturalists receive training in a 13-week field study course led by a variety of experts. Participants learn about coastal ecology by visiting unique and diverse habitats. Water resource education is a fundamental component of the program, as participants learn about stormwater runoff and associated water quality issues. During Year Seven, all Master Naturalists in training participated in a rain garden installation project. Master Naturalists help disseminate information to the public, becoming leaders in their community to support conservation and education of coastal resources.



Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear, ACE Basin NERR CTP	Berkeley County, Town of Mount Pleasant	TRAININGS: <i>Rain Gardens for Professionals</i> ; A full-day workshop for landscape professionals that is focused on rain garden purpose and design, installation, and maintenance.	Spring 2015; Fall 2015	36	GP, R

The Rain Gardens for Professionals Workshop is a one-day intensive training developed for landscape professionals interested in learning more about residential-scale rain garden installation and design. The program includes classroom lecture and hands-on training, including installing a rain garden at the workshop host location. In 2015, the workshop was hosted twice in the Tri-County; in the Spring, the ACSEC and ACE Basin NERR CTP partnered with Berkeley County and Keep Hanahan Beautiful to offer the training at the Hanahan Public Library. In the fall 2015, the workshop was hosted in partnership with the Town of Mount Pleasant and offered at its Fire Station Number 2, located at one of the Town's recreation complexes. This workshop is part of the Carolina Rain Garden Initiative and is a requirement to be recognized as a Certified Rain Garden Installer. For more information on the Carolina Rain Garden Initiative, see the highlight on page 40.



LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC DNR-SCORE Program		TRAININGS: SCORE program trained new volunteers to monitor water quality parameters in the Charleston Harbor and vicinity.	Continually	10	GP, YT
Charleston Waterkeeper		TRAININGS: Charleston Waterkeeper trained new volunteers to monitor water quality in the Charleston Harbor as part of their monitoring program.	Continually	7	GP

The SC Department of Natural Resources' SC Oyster Restoration and Enhancement (SCORE) program trains volunteers to monitor water quality at designated sites around the Charleston Harbor vicinity. Charleston Waterkeeper's water quality monitoring program trains and works with volunteers to monitor bacteria concentration in popular waterways in the Charleston Harbor area. Read more about the impacts of these programs in the "Public Involvement" section of this report.

Carolina Rain Garden Initiative

The goal of the Carolina Rain Garden Initiative, piloted and launched in the ACSEC region in 2015, is to increase stormwater awareness and promote behavior change through the installation of residential-scale “pocket” rain gardens in South Carolina. The program brings together new and existing resources that provide awareness and practical information on the practice, installation, and maintenance of rain gardens.

As part of this initiative, one of the newly developed resources is the **Professional Rain Garden Design and Installer Certification Program**. This full-day training was hosted at a Berkeley County Library in Spring 2015 and a Town of Mount Pleasant Fire Station in Fall 2015 with a total of 36 participants attending. These individuals represented 16 private sector businesses, 12 university staff, ten county/municipal government and two non-profit organizations. Individuals who attended this training have the option to become a Certified Rain Garden Design and Installer through submittal of a rain garden portfolio to a review committee. In 2015, four professionals were certified with more expected in 2016; a list of those recognized is provided on the Carolina Rain Garden Initiative website: www.clemson.edu/extension/raingarden/professional.html

Also as part of the Carolina Rain Garden Initiative, the **Virtual Rain Garden** was developed to provide a step-by-step approach for rain garden design, installation, and maintenance. This series of 17 short videos guides the viewer through all aspects of rain gardening including site assessment, soil analysis, rain garden sizing, design, plant selection, maintenance, and more. The Virtual Rain Garden is intended to assist with flood management and erosion control in the home landscape, as well as provide information to those interested in environmentally-friendly gardening practices.

Other Carolina Rain Garden Initiative’s resources, including the **Rain Garden Tracker**, **Rain Garden of the Month**, Virtual Garden, and plant selection tools, can all be viewed at: www.clemson.edu/extension/raingarden.



Master Pond Manager

South Carolina's unique water resources provide for agriculture, recreation, tourism, and commercial industry opportunities that help support the state's economy. Recreational and stormwater pond systems can play a significant role in watershed function and, if poorly managed, may impact the health of the pond and services provided, adjacent land values and profitability, and potentially, downstream water quality. As the result of a demonstrated demand across the state for in-depth and comprehensive pond management resources, including in the ACSEC community, the Master Pond Manager course was launched in 2015 through a partnership between Clemson Extension, the Center for Watershed Excellence and Clemson Online.

The Master Pond Manager (MPM) certification course provides participants with the tools to assist in developing an integrated pond management approach that provides for healthy pond function and water quality. Curriculum incorporates multi-week online and field based training, allowing for participants to learn in a self-paced and hands-on environment. Course track can be tailored to the individual participant, whether a pond management professional or HOA board member tasked with pond management.

The ACSEC was excited to serve as host for the field days associated with the pilot offering of the Master Pond Manager class in Spring 2015. Field site locations were held at Charleston County and Charleston County Park and Recreation Commission facilities and included a shoreline planting installation at a newly retrofitted stormwater pond. More than 30 participants across the state took part in the pilot Master Pond Manager offering, resulting in the certification of 11 professionals.

The course was offered again in the Fall 2015, with 23 individuals participating representing South Carolina, Georgia, and North Carolina. Field days were hosted in the Waccamaw region, at the Baruch Institute and Horry County Government locations.

With a growing demand for the course across the region, look for another course to be hosted in the spring of 2016! For more information on the Master Pond Manager program, visit: www.clemson.edu/watershed/mpm.



Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Clemson Online, Center for Watershed Excellence	Multiple	HYBRID TRAINING: <i>Master Pond Manager</i> ; Course provides online and field-based training in stormwater and recreational pond management. The class was offered twice in 2015; there were 52 total participants with more than 20 pursuing certification.	Spring 2015; Fall 2015	52	C, SP, R, T

The statewide *Master Pond Manager* course offers research-based pond management strategies to pond owners and managers through online classroom and in-person field training. The course was offered twice in 2015; in the spring, field days were hosted at the Charleston County Park and Recreation Commission and Charleston County Government sites. In the fall, field days were hosted at Clemson University and Horry County Government facilities. For more information on the *Master Pond Manager*, see the highlight on page 41.



LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Clemson Online, Center for Watershed Excellence	Carolina Clear	HYBRID TRAINING: <i>Post-Construction BMP Inspector</i> ; Online and field-based training focused on inspection and maintenance of best management practices used for stormwater management. The class was offered once in 2015, with field days hosted at the Trident Technical College Campus.	Summer 2015	35	C, SP, T

Another hybrid training offered through Clemson Extension, the *Post-Construction BMP Inspector* course is a statewide technical training with lectures hosted in an online classroom and field days sponsored in different communities to allow for applied learning. In the Summer 2015 course, field days were hosted at the Trident Technical College's campus; students had a chance to discuss and view bioswales, dry detention basins, wet detention basins, green roofs, pervious pavement, rainwater harvesting, and more.



Training and Certifications (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension	Carolina Clear	ONLINE TRAINING: <i>Carolina Yards and Neighborhoods, Online Guide to Environmentally Friendly Gardening</i> ; Online course based on Carolina Yards principles with an emphasis on stormwater best practices for residential audiences.	Spring 2015	34	GP, R
Clemson Extension		ONLINE TRAINING: Master Gardener Online Training; Online horticulture programs training and certifying Master Gardeners. Two online classes were offered in 2015.	Spring 2015; Fall 2015	78	GP, R

The Carolina Yards and Neighborhoods Online Guide to Environmentally Friendly Gardening is a five-week course that was first piloted in the Charleston Tri-County area during Spring 2013. Deemed a success, the class is now offered statewide. Participants learn about the Carolina Yards principles through interactive presentations and discussion forums, complete tasks in their own home landscape and have the opportunity to certify their yard as a "Carolina Yard."

Conferences (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Statewide Conservation Districts	Charleston County Soil and Water Conservation District	CONFERENCE: <i>Conservation District's Annual Partnership Conference</i> ; This event highlights awards and achievements accomplished in conservation and water quality. Presentations and displays are provided and include brochures and handouts on water quality and other conservation topics. As part of the program, speakers addressed ways to improve water quality initiatives in communities.	February 24-25, 2015	300	GP, EA, T



Litter Sweeps (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Sea Grant Consortium	SC DNR	LITTER SWEEPS: Beach Sweep/River Sweep	September 15, 2015	1,631	GP, R, C

During the 2015 Beach Sweep/River Sweep litter cleanup, 1,631 volunteers in Berkeley, Charleston, and Dorchester Counties collected 16,822 pounds of litter from the local beaches, waterways, and surrounding uplands. A total of 85.44 miles of shoreline were cleaned. By participating in Beach Sweep/River Sweep, the public is more informed about natural resource issues, such as litter's detrimental effects on the landscape and wildlife, and people are empowered to take action and become environmental stewards. Results are available online at: www.scseagrant.org



LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Sea Grant Consortium	Multiple	LITTER SWEEPS: Clean Marine	April 25, 2015	66	GP, R, C

During 2015, SC Sea Grant Consortium worked with multiple ACSEC partners, including Charleston County Park and Recreation Commission, Charleston Waterkeeper, SC DNR, Clemson Extension, Keep Charleston Beautiful, and the City of Charleston to host the Clean Marine event series. Clean Marine focused on reducing and preventing marine debris in the Charleston Harbor and surrounding waterways by sponsoring litter dropoff events, removing marine debris from waterways, and launching an anti-litter campaign. A two-day litter collection event included nine drop-off sites at popular public boat ramps; 66 volunteers were on hand to help receive 9.64 tons of material and equipment, including fishing gear, used oil, and boats from residents. By helping to facilitate proper disposal, volunteers helped protect waterways by keeping this type of material and equipment from becoming marine debris. For more information, visit: www.scseagrant.org.



Litter Sweeps (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Keep Charleston Beautiful (KCB)	Multiple	LITTER SWEEP: Community groups host two-hour cleanups in marshes, parks, and green spaces.	Continuous	1,877	GP, HE, R, C, YT
Keep Charleston Beautiful (KCB)	CARTA	LITTER SWEEP: <i>Adopt-A-Stop</i> ; Volunteers collect litter and service trash cans once a week at local CARTA bus stops.	Continuous	13	GP

Keep Charleston Beautiful (KCB) promotes the cleanliness and beautification of the City of Charleston through education, public awareness, and community involvement. KCB strives to teach litter prevention and waste responsibility through education programs and public awareness campaigns, all of which are offered free of charge to the community. During the 2015 reporting year, KCB organized 1,877 citizens who volunteered 3797 hours of community service and removed 40,321 pounds of trash.



LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Town of Mount Pleasant		LITTER SWEEP: Along with Charleston Running Club, 30 participants helped remove 500 pounds of trash from marshes near Cove Bay and Ben Sawyer Causeway.	April 18, 2015; July 18, 2015	30	GP, R
Keep Dorchester County Beautiful	Multiple	LITTER SWEEP: Community cleanups were hosted in partnership with concerned citizen groups to remove litter along area waterways and roadways.	Continuous	228	GP, R, YT, C

Keep Dorchester County Beautiful (KDCB) promotes public interest in the general improvement of the environment of Dorchester County through coordination of programs for litter control and recycling. During the 2015 reporting year, KDCB worked with 228 citizens to help remove 12,160 pounds of trash from roadways and waterways.



Litter Sweeps (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
DHEC-OCRM	Surfrider Foundation Charleston Chapter, Folly Green, NOAA	LITTER SWEEP: "Litter Butt Study"; Volunteers collected littered cigarette butts from Folly Beach public spaces and completed a survey on prevalence and impact in landscape.	September 2, 2015; September 8, 2015	29	GP, R, YT, C

The Charleston Chapter of The Surfrider Foundation is a volunteer organization that concentrates on reducing litter in area beaches and waterways and works to raise awareness of the importance of ocean stewardship. The Charleston Chapter of The Surfrider Foundation has roughly 300 members and offers educational programming and litter removal efforts throughout the year. A highlight for 2015 included the "Litter Butt Study."



LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Adopt-a-Highway, Community Pride Inc., Clemson Extension	SC DOT	LITTER SWEEPS: Adopt-a-Highway conducts four sweeps seasonally each year. Volunteers adopt a two mile stretch of highway.	Quarterly	3,530	GP, R, C

Initiated in South Carolina in 1988, the Adopt-A-Highway program utilizes volunteered time of concerned citizens to combat litter along SC highways. The program eliminates thousands of pounds of debris from roadsides, which can end up in nearby waterways, as well as improve South Carolina's scenic beauty. During 2015, 3,530 volunteers adopted 658 miles of highway to remove 117,536 pounds of litter in the Tri-County.



2015 ADOPT-A-HIGHWAY TOTALS FOR TRI-COUNTY

County	Total Pounds Collected	Total Miles Adopted	Total Groups Participating	Total Volunteers Participating
Berkeley	42,594	166	46	468
Charleston	64,442	412	206	2,898
Dorchester	10,500	80	41	164
Totals	117,536	658	293	3,530



Storm Drain Marking (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	Charles Towne Montessori	STORM DRAIN MARKING: The 12 volunteers worked to mark 30 storm drains along the West Ashley Greenway.	February 18, 2015	12	YT
Clemson Extension, Carolina Clear	Charleston Good	STORM DRAIN MARKING: The five volunteers worked to mark 25 storm drains in Downtown Charleston.	March 9, 2015	5	GP, R
Clemson Extension, Carolina Clear	Ashley Hall School	STORM DRAIN MARKING: The 82 volunteers worked to mark 50 storm drains in Downtown Charleston.	March 20, 2015	82	YT
Town of Mount Pleasant		STORM DRAIN MARKING: The two volunteers helped mark 18 storm drains in Glen Lakes subdivision.	July 25, 2015	2	GP, R
Clemson Extension, Carolina Clear		STORM DRAIN MARKING: A volunteer marked four storm drains along Dorchester Road.	September 8, 2015	1	R
Clemson Extension, Carolina Clear	Surfrider Foundation	STORM DRAIN MARKING: The 10 volunteers worked to mark 26 storm drains along Middle Street on Sullivan's Island.	November 16, 2015	10	GP, R, C
Town of Mount Pleasant		STORM DRAIN MARKING: The seven volunteers, including six youth, from Cario Middle School helped to mark eight storm drains in the community.	November 17, 2015	7	YT
Clemson Extension, Carolina Clear	College of Charleston	STORM DRAIN MARKING: The 18 volunteers marked 94 storm drains in downtown Charleston.	November 21, 2015	18	HE
Clemson Extension, Carolina Clear	College of Charleston	STORM DRAIN MARKING: The eight volunteers marked 39 storm drains in downtown Charleston.	December 5, 2015	8	HE
Clemson Extension, Carolina Clear	Ashley Hall School	STORM DRAIN MARKING: The 24 volunteers marked 13 storm drains around Ashley Hall School.	December 15, 2015	24	YT

During the 2015 reporting year, 169 individuals participated in storm drain marking, resulting in 307 newly marked storm drains in the Tri-County. Messaging on both the ACSEC's plastic and metal storm drain markers read "Don't Pollute, Flows to Waterways" as a reminder. Reported impact numbers are conservative as nearly all houses or businesses located along marking routes received a door hanger with information on watershed stewardship.



Best Management Practice Installations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension	Cape Romain Environmental Education Charter School (CREEC)	RAIN GARDEN INSTALLATION: As part of the Carolina Schoolyards Initiative, the ACSEC worked with students and teachers at CREEC to install a rain garden.	Spring 2015	See Site Development, p. 22	YT
Clemson Extension, CCPRC		RAIN GARDEN INSTALLATION: Participants in the Spring 2015 Master Naturalist in Training program helped to install a rain garden at the CREC "Ed Shed."	Spring 2015	See Training, p. 38	GP, R
Charleston County	Clemson Extension, Carolina Clear, ACE Basin NERR CTP	SHORESCAPING INSTALLATION: As part of the Master Pond Manager class and Shorescaping Workshop, a planted shoreline was installed by program participants at the Charleston County Public Services Building.	Spring 2015; October 14, 2015	See Training (p.35) and Workshops (p.42)	SP, R, C, EA, T
Dorchester County, Keep Dorchester County Beautiful	Clemson Extension, Carolina Clear	RAIN GARDEN INSTALLATION: "Rain Garden Workshop for Public Works" As part of this workshop, a rain garden was installed at a Dorchester County Government building by Public Works staff and volunteers with Keep Dorchester County Beautiful.	May 21, 2015	See Workshops (p. 34) and Trainings (p. 39)	T, EA

The installation of best management practices in trainings and workshops allows residential, commercial, and youth audiences the opportunity to learn about practices through hands-on experience and involvement. For the practices installed and included as part of this "Best Management Practice Installation" section, please use the associated workshop, presentation, site development, or training participant impact number as highlighted in the "Public Education" chapter of this report.



Best Management Practice Installations (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Berkeley County, Keep Hanahan Beautiful	Clemson Extension, Carolina Clear	RAIN GARDEN INSTALLATION: As part of trainings associated with the Rain Garden for Professionals program, as well as a residential workshop training for homeowners, a rain garden was installed by participants at the Hanahan Library.	May 27, 2015	See Training, p. 39	GP, R, C
Clemson Extension, Camp St. Christopher	Charleston County Park and Recreation Commission	RAIN GARDEN INSTALLATION: A rain garden was installed with Master Naturalists at the "Gardening for the Green Thumb" program, held at Camp St. Christopher and part of the SC Master Naturalist Annual Conference.	October 9, 2015	See Presentations, p. 35	GP, G
Clemson Extension, Tri-County Master Gardener Association	Carolina Clear	RAIN GARDEN INSTALLATION: As part of the Fall 2015 Master Gardener in training program, a rain garden was installed at the Clemson Research and Education Center.	October 29, 2015	See Training, p. 38	GP, R
Town of Mount Pleasant	Clemson Extension, Carolina Clear, ACE Basin NERR CTP	RAIN GARDEN INSTALLATION: Participants involved in the Fall 2015 Rain Garden for Professionals program helped to install a rain garden at Fire Station #2 in Mount Pleasant.	November 5, 2015	See Training, p. 39	GP, R, C



Oyster Reef Construction (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC DNR SCORE	Multiple	OYSTER REEF CONSTRUCTION: SCORE facilitated 28 oyster reef building events and 32 oyster bagging events.	Continuous	2,397	GP, R, YT, HE

The SC DNR's South Carolina Oyster Restoration and Enhancement (SCORE) program coordinates oyster shell recycling and community-based restoration. During the 2015 ACSEC reporting year, SCORE utilized 1,149 individuals volunteering 2,092 hours of time to construct the bags for oyster reef builds. An additional 1,248 people donated 2,615 hours of volunteer time to construct oyster reefs in the Berkeley, Charleston, and Dorchester County areas. The total combined number of volunteers and hours for bagging oyster shell and reef building events was 2,397 volunteers donating 4,707 hours. The SCORE program not only involves the public and provides awareness of water quality and the need to recycle oysters, but the reefs themselves help to improve water quality as new oysters develop on them and provide for water filtration.



Water Quality Monitoring (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC DNR SCORE	Multiple	MONITORING: SCORE program utilized trained volunteers to gather water quality parameters at multiple sites. During 2015, 32 volunteers donated 250 hours to monitor water quality in the Tri-County area at twelve locations. Data can be found at: score.dnr.sc.gov .	Weekly - Monthly	32	GP, R, HE
Charleston Waterkeeper	College of Charleston	MONITORING: Charleston Waterkeeper implements a volunteer-based water quality monitoring program to conduct bacteria monitoring in the Charleston Harbor vicinity from May to October. In 2015, eight volunteers participated in monitoring 15 sites and helped to collect and analyze 390 samples. Results from samples were published weekly to alert public to recreational concerns. Data can be found at: charlestonwaterkeeper.org	Weekly - Monthly	15	GP, B

Rain Barrel Sales (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Rainwater Solutions, Clemson Extension, Carolina Clear	Charleston County, City of Goose Creek, Town of Summerville	RAIN BARREL SALE: ACSEC general public sale held at three centralized locations in the Tri-County; 501 barrels were sold at a discounted rate through partnership with Rainwater Solutions and community partners.	May 28-30, 2015	501	GP, R

Rainwater harvesting provides a platform to increase awareness of impervious surfaces, volume of stormwater runoff, and potential pollutants that may be picked up with runoff. Furthermore, harvested rainwater can be utilized for a number of household needs, primarily irrigation, to help conserve water. In order to raise awareness about the practice, the ACSEC partnered with Rainwater Solutions to provide Ivy Rain Barrels at a discounted price to the general public. Through this partnership, there were 501 rain barrels purchased in the ACSEC region during the Spring 2015 sale. Funds generated from the ACSEC rain barrel program are utilized to support community-based rainwater harvesting education projects and awareness.



Native Plant Sales (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Native Plant Society		NATIVE PLANT SALE: The biannual SCNPS native plant sale is open to the public and offers a variety of native plants for home landscaping.	March 14, 2015; October 24, 2015	500	GP, R



Landscaping with native plants requires little to no fertilizer, and typically requires less irrigation, or no irrigation, once established. Therefore, use of native plants in landscaping is considered an important best management practice for protecting water resources. The Lowcountry Chapter of the Native Plant Society sponsors two native plant sales per year; the plant sales are open to the public, free of charge, and provide an opportunity to purchase native plants for home landscaping that may not be readily available otherwise.

Yard Certification Programs (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension Service, Carolina Clear		Yard Certification Program: <i>Carolina Yards</i> is a yard certification program offered by Clemson Extension Service that encourages environmentally friendly gardening practices. In the Tri-County, there are 61 yards currently certified through the program, with 30 of those yards certified in 2015 alone.	Continuous	61	R
Surfrider Foundation	Charleston Chapter of the Surfrider Foundation	Yard Certification Program: <i>Ocean Friendly Gardens</i> is a yard certification program offered by Surfrider Foundation that encourages water conservation, permeability, and retention in the home landscape.	Continuous	2	R



Pet Waste Bag Dispenser Programs (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Keep Charleston Beautiful, City of Charleston		Pet Waste Bag Dispenser Program: Keep Charleston Beautiful's "Pick Up After Your Pet" program has sponsored the installation of 100 pet waste bag stations and bags in the City of Charleston; in 2015, the community distributed 283,200 bags as part of the program.	Continuous	283,200	P
Surfrider Foundation		Pet Waste Bag Dispenser Program: Since 2007, the Surfrider Foundation has sponsored the "Mutt Mitt" program which stocks pet waste pickup stations at sites on Folly Beach. In 2015, an estimated 30,000 bags were used by residents and visitors in the beach community.	Continuous	30,000	P

To encourage proper pet waste disposal and prevention of bacteria in stormwater runoff, multiple partners sponsor pet waste pickup and dispensing stations in the community. The bags and stations often contain signage on the benefits of pet waste pickup and tips for proper disposal.

Boater Pumpout Program (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston Waterkeeper	SCDNR	BOAT PUMPOUT PROGRAM: Charleston Waterkeeper provides a sewage pumpout service to boat owners in the Charleston Harbor.	Continuous	76	B

In an effort to reduce the discharge of untreated sewage to our waterways, Charleston Waterkeeper, in partnership with SCDNR's Clean Vessel Act Program, offers a free sewage pumpout program to boat owners in the Charleston Harbor community. In 2015, the Charleston Waterkeeper's "No. 2" pumpout boat helped properly dispose of 19,960 gallons of sewage from boat sanitary waste tanks through 310 pumpouts. Currently, the "No. 2" services 76 regular customers with 20 of those new as of 2015.



Youth Involvement Events (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Charleston County Soil and Water Conservation District	SC DNR; state-wide conservation districts	WORKSHOP: SC Envirothon; Youth educational week-long program at Sandhills Research Center in Columbia. Students study soils, water quality, aquatics, and other conservation topics.	May 1, 2015	126 (local)	YT



Youth Involvement Events (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
Clemson Extension, Carolina Clear	SC Sea Grant Consortium, Multiple	YOUTH INVOLVEMENT: 4-H2O “Exploring Lowcountry Waterways” Summer Camp for youth ages 10-13; a week-long day camp emphasizing watershed stewardship and water resource protection.	June 15-19, 2015; July 20-24, 2015	42	YT



The 4-H2O Exploration Program is a statewide effort implemented by Clemson University Cooperative Extension Service and provides hands-on, experiential learning opportunities with emphasis on water quality, conservation, and watershed stewardship. In the ACSEC region, the 4-H2O program is entitled “Exploring Lowcountry Waterways” and is available to children living in Berkeley, Charleston, and Dorchester Counties. During the two week-long sessions, students have the opportunity to learn about and travel through local watersheds, from cypress swamps to barrier islands. Activities include macroinvertebrate sampling, water quality testing, seining, kayaking, fishing, birding, and much more. In the ACSEC region, ACSEC partners play a vital role in the camps’ success with partnerships including the SC Sea Grant Consortium, SC Department of Natural Resources, Charleston County Park and Recreation Commission, and others.



Youth Involvement Events (Direct)

LEAD PROVIDER	SUPPORTING PARTNER	ACTIVITY	DATE	NUMBER OF IMPACTS	TARGET AUDIENCE
SC Sea Grant Consortium	SC DNR, Clemson Extension Service	YOUTH INVOLVEMENT: <i>From Seeds to Shoreline</i> initiative involves students in germination and planting of <i>Spartina alterniflora</i> to emphasize the significance of the salt marsh and actions for clean water.	Continuous	959	YT

From Seeds to Shoreline is the first student driven wetland restoration project in South Carolina. Led by SC Sea Grant Consortium and offered in partnership with SC Department of Natural Resources and Clemson Extension, *Seeds to Shoreline* is a school program aimed at engaging students in hands-on education that includes seed collection, germination, cultivation and planting of *Spartina alterniflora*, the dominant plant in a SC salt marsh. The program creates an opportunity to learn about the importance of salt marsh ecosystems and water quality while participating in a community service learning project, with emphasis on environmental stewardship. Charleston Tri-County schools participating during the 2014-2015 school year included James Island Charter, Fort Johnson Middle, Cape Romain Environmental Education Charter School, James Island Middle, Mason Prep, Whitesides Elementary, James B. Edwards Elementary, Sullivan's Island Elementary, Ashley Hall, University School of the Lowcountry, Garrett Academy, and Stratford High. Collectively, the effort of these schools resulted in over 3,000 seedlings transplanted to multiple local restoration sites.



SC Sea Grant Consortium: Stormwater Pond Research and Management Collaborative

Effective management of stormwater runoff is especially challenging in the SC coastal communities because of the low elevation, shallow water tables, continued rise in population, and sea level rise. Recent estimates indicate about 21,000 engineered ponds exist in the coastal counties alone, but little information exists regarding their effectiveness, long-term functionality, maintenance requirements, and potential impacts on the adjacent coastal landscape.

The SC Sea Grant Consortium has begun establishing partnerships and implementation of the SC Stormwater Pond Research and Management Collaborative program to help address these information gaps. This new program brings together scientists and resource managers from across the state to further investigate and address challenges associated with stormwater ponds in the coastal areas.

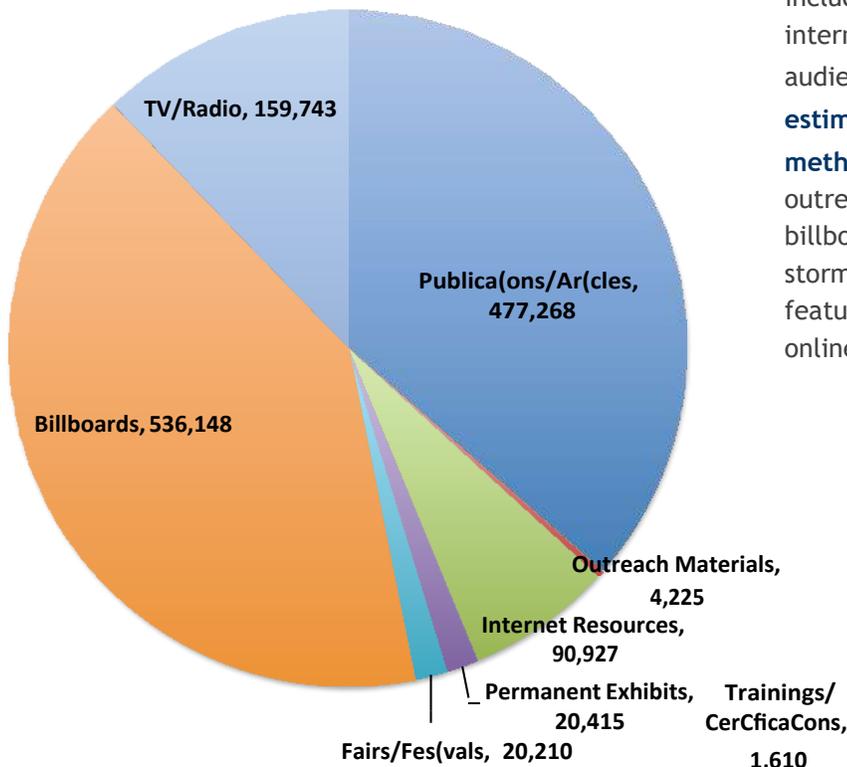
As part of this effort, three products are nearing completion including: a) a geospatial inventory and classification of existing stormwater ponds; b) a State of the Knowledge Report, and; c) a strategy for public awareness and outreach messaging. Several ACSEC partners are involved with this Sea Grant-lead research and outreach collaborative, including: the College of Charleston, the SC Department of Natural Resources and the ACE Basin NERR Coastal Training Program, Clemson Extension, and Clemson University.



Outreach Summary

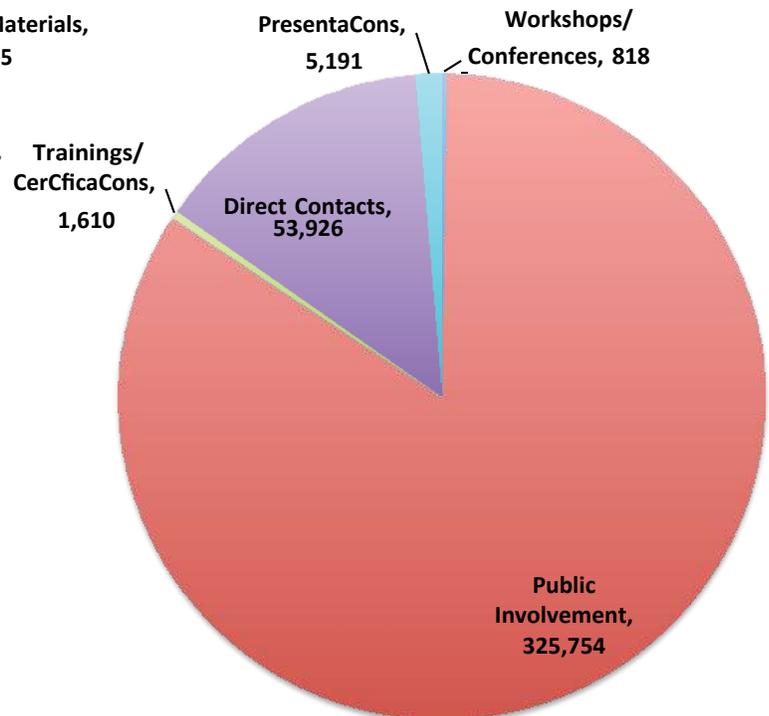
ACSEC program success is, in part, measured by outreach impacts that represent an estimate of individuals reached through direct and indirect education and involvement activities. **Total impacts for the Year Seven reporting year (January 1, 2015-December 31, 2015) total an estimated 1,696,235 individuals.**

INDIRECT METHODS SUMMARY, TOTAL ESTIMATED IMPACTS: 1,308,936



The ACSEC employs indirect outreach methods, including mass-media, permanent exhibits, festivals, internet, and print publications, to reach diverse audiences across the community. **In 2015, total estimated impacts from ACSEC indirect outreach methods reached 1,308,936 individuals.** Indirect outreach highlights included the Carolina Yard billboard series, new permanent exhibits, the stormwater pond commercial, and publications featured in multiple local and statewide print and online resources.

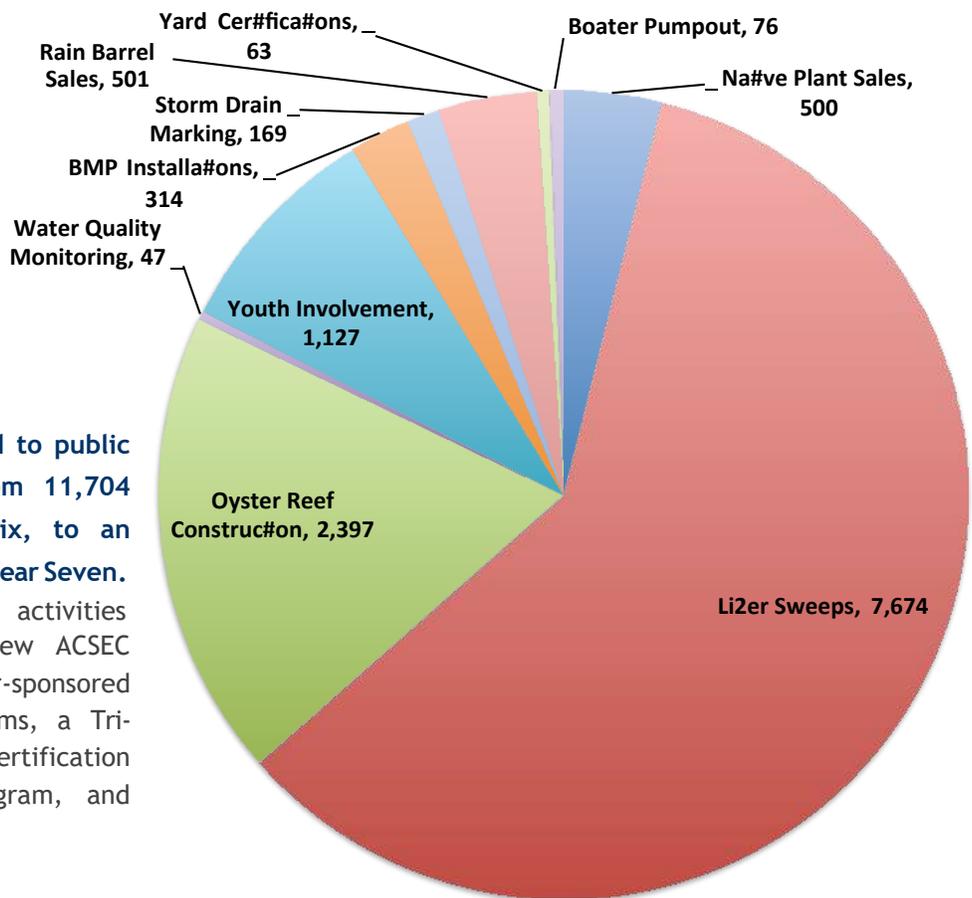
DIRECT METHODS SUMMARY, TOTAL ESTIMATED IMPACTS: 387,299



Outreach Summary

Direct method impacts are a result of programs that include direct contacts, presentations, training and professional development, certification courses, workshops, and public involvement opportunities. Public involvement is considered an activity that provided hands-on opportunities for target audiences to take part in stormwater management and pollution prevention. **During Year Seven, estimated impacts attributed to direct methods of outreach were 387,299.** Total estimated direct method impacts during Year Seven represented more than a 300% growth from direct method impacts reported during Year Six; this significant increase is a result of growth in public involvement opportunities.

**PUBLIC INVOLVEMENT SUMMARY*,
TOTAL ESTIMATED IMPACTS: 326,068**



In 2015, total impacts attributed to public involvement activities grew from 11,704 individuals reported in Year Six, to an estimated 326,068 individuals in Year Seven. This growth in public involvement activities is attributed to inclusion of new ACSEC programming, including partner-sponsored pet waste bag dispenser programs, a Tri-County wide rain barrel sale, yard certification programs, boater pumpout program, and more.

* For this summary, public involvement impacts include those attributed to "BMP Installations" in order to show the impact of this programs when considered separately from education activities. However, to avoid duplication, "BMP Installations" are not included in total direct impacts or total impacts reported for Year Seven (see page 48 for explanation). Pet waste bag dispenser program impacts, which totaled 313,200, were not included in this summary graph in order to show impact of all public involvement activities. Impacts of pet waste bag dispenser programs does contribute to the total estimated impacts of public involvement activities.

Articles

The Summer/Fall 2015 edition of *Naturally Kiawah* (Volume 34) featured an article penned by Clemson Extension agents Amy Dabbs and Kim Counts Morganello. The article focused on native plant use for the South Carolina Lowcountry; native plants require little to no fertilizer, and typically requires less irrigation. Use of native plants in landscaping is considered an important best management practice for protecting water quality.



Articles

The Clemson University *IMPACT* magazine, a magazine of the Clemson University's Public Service and Agriculture service, highlighted the ACSEC's Carolina Clean Watershed Restaurant program initiative as part of its Fall 2015 edition.



Extension helps eateries serve waterways a healthier diet

Scott Miller

No one wants to swim in fat, grease and oil, especially the marine life that are an integral part of Lowcountry cuisine and culture.

Pollutants from restaurants reduce oxygen in water and can impact populations of oysters, shrimp and all kinds of edible fish. That's if the waste reaches the waterways. If not properly disposed of, fats, oils and greases — or FOG — clog drains, creating costly problems for property owners and utilities and contributing to sanitary sewer overflows and untreated wastewater in local creeks, streams and marshes.

Clemson Extension is working to help reduce restaurant-related pollutants in Lowcountry drainage systems and waterways through the new Clean Watershed Restaurant Program.

"Extension is launching the program this year as FOG has thickened in Lowcountry marshes and drains," said Extension water resources agent Guinn Wallover. "Fat, oils and greases are showing up in storm drains leading into the marsh and contributing to expensive sanitary sewer repairs."

In Berkeley County, a family lived two weeks in a hotel while crews cleaned flooding in their home caused by a grease clog in the sewer line, said Doug Tompkins, deputy director of operations at Berkeley County Water and Sanitation.

"We are constantly cleaning lines. We have crews that just do that," Tompkins said. "Customers are paying for it. It's not a cheap proposition to keep these wet wells clean."

Wallover and fellow Extension agents Kim Counts Morganello and Harry Crissy can help restaurants incorporate proper equipment and best practices for managing FOG and other pollution. Restaurants also receive training and a myriad of resources for running clean operations, including tips on landscaping, composting and recycling. Restaurants that complete the Clean Watershed Restaurant Program receive door decals to advertise their environmental stewardship to customers along with recognition on the Carolina Clean Watershed Restaurant website.

"In Charleston, there is a green movement for restaurants to source food locally, buy local seafood. Our community is interested in going to restaurants that are environmentally responsible," Wallover said.

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Articles

The Post and Courier's "Home and Real Estate" section, included in the Sunday edition of the newspaper, featured two stormwater outreach articles. In January, Kim Counts Morganello provided information on the benefits on buffers along tidal creeks for water quality; in September, Morganello offered tips on best practices for using harvested rainwater on vegetables.



Print Advertisements

The Moultrie News, started in 1969, is available both in print and online, with print editions published weekly. Readership is “East of the Cooper” and growing; the paper delivers to 28,243 homes in the greater Mount Pleasant, Daniel Island, Isle of Palms, Sullivan’s Island and Wando River communities. The Moultrie News also has a growing web presence that sees more than 101,000 page views per month. In June 2015, two quarter-page stormwater education print ads were sponsored by the Town of Mount Pleasant.

WHAT GOES IN HERE...

COMES OUT HERE.

Stormwater is generated during rainfall events when rain falls onto the landscape of our neighborhoods, businesses, and roadways. Stormwater has the ability to capture a mixture of urban pollutants people and animals leave behind and transport them into local water bodies. Stormwater runoff is **NOT** treated at the local wastewater treatment facility.

This urban pollutant mixture can contain trash and cigarette butts, automotive fluids from leaking vehicles or improper disposal practices, animal waste left on the ground, unused fertilizers and yard chemicals, and so much more! It is our responsibility to allow **ONLY RAIN** down the drain to protect local waterways.

Town of Mount Pleasant SOUTH CAROLINA

ASHLEY COOPER
STORMWATER EDUCATION CONSORTIUM

For more information, visit us online at www.clemson.edu/carolinaclear

HELP REPORT AND ELIMINATE ILLEGAL DISCHARGES IN OUR WATERWAYS.

When it rains, it pours! And, with this rain, comes all of the pollutants left out on the landscape of our neighborhoods, businesses, and roadways – trash, cigarette butts, sediment, chemical spills, pet waste, oils, grease, and more!

IF YOU SEE THE FOLLOWING IN A RIVER OR LOCAL BODY OF WATER:

- Septic or sewer overflow
- Dirty, soapy or discolored water

OR, IF YOU SEE THE FOLLOWING DUMPED OR FLOWING INTO STORM DRAINS OR DITCHES:

- Construction / paint waste
- Household or cleaning chemicals
- Pesticides or fertilizers
- A chemical or oil spill
- Pitt waste / litter or debris
- Grass clippings or leaves
- Cooking grease

THIS IS AN ILLEGAL DISCHARGE!

Please notify the Town of Mount Pleasant Stormwater Division (843-658-2121) or Police Department.

Town of Mount Pleasant SOUTH CAROLINA

For more information, please visit us online at www.clemson.edu/carolinaclear.

ACSEC 2012-2017 Strategic Plan: Education Timelines

Home Auto Repair

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Clean up engine spills and leaks using absorbent material	Residential	Storm Drain Marking Programs	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits/Ripple Effect recipients
		Interpretive signage			Develop and Pilot	Implement	Store participation, feedback
		Outreach Material	Develop	Develop and Distribute	Distribute	Distribute	Store participation, ACSEC education programs including message & material
Dispose of used motor oil at collection stations	Residential	Mass Media	Develop and Implement				Number of Impacts
		Storm Drain Marking Programs	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits/Ripple Effect recipients
		Outreach Material	Develop	Develop and Distribute	Distribute	Distribute	Store participation, ACSEC programs
		Interpretive signage			Develop and Pilot	Implement	Store participation

Appropriate Fertilizer Application

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Utilize zero to low phosphorus fertilizers in the Tricounty area	Residential	Storm Drain Marking	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, Ripple Effect recipients
		Interpretive signage			Develop	Develop and Pilot	Store participation, feedback
		CYN Series	Develop and Pilot	Pilot	Implement	Implement	Participant feedback
		Outreach Materials		Develop	Pilot	Implement	ACSEC distribution at education programs
		Blue Business		Develop	Develop	Pilot	Business feedback
Reduce the frequency of fertilizer application	Residential	Storm Drain Marking	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, Ripple Effect recipients
		Interpretive signage			Develop	Develop and Pilot	Store participation, feedback
		CYN Series	Develop and Pilot	Pilot	Implement	Implement	Participant feedback
		Outreach Materials		Develop	Pilot	Implement	ACSEC distribution at education programs
		Blue Business		Develop	Develop	Pilot	Business feedback

ACSEC 2012-2017 Strategic Plan: Education Timelines

Stormwater Pond Management

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Awareness Campaign: Only Rain Down the Storm Drain	Residential	Storm Drain Marking Programs	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, Ripple Effect recipients
		Interpretive signage	Develop	Develop	Develop and Pilot	Implement	Host pond sites
		Pond Conference	Develop and Implement		Develop and Implement		Participation, feedback
		Thank You! Campaign	Develop and Pilot	Pilot	Implement	Implement	Number of Impacts
Utilize vegetative buffers to stabilize stormwater pond shorelines	Residential	Outreach Material	Develop	Develop and Pilot	Distribute	Distribute	ACSEC distribution at education programs
		Pond Conference	Develop and Implement		Develop and Implement		Participation, feedback
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, Ripple Effect recipients
		CYN Event Series/ Partner Programs	Develop and Pilot	Pilot	Implement	Implement	Participation, feedback, yard certifications

Commercial Landscaping Practices

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Appropriate Fertilizer Application ("Be Wise When You Fertilize")	Commercial	Blue Business			Develop	Pilot	Program participants, feedback
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, Ripple Effect recipients
		Outreach Materials	Develop and Distribute	Distribute	Develop	Develop and Pilot	Materials distributed
		Interpretive Signage in Stores			Develop	Develop and Pilot	Store participation, feedback
Disposal of Yard Debris ("Only Rain Down the Storm Drain")	Commercial	Blue Business			Develop	Pilot	Program participants, feedback
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, Ripple Effect recipients
		Outreach Material	Develop and Distribute	Distribute	Develop	Develop and Pilot	Materials distributed
		Thank You! Campaign	Develop and Pilot	Develop and Pilot	Implement	Implement	Number of impacts
		Interpretive Signage in Stores			Develop	Develop and Pilot	Store participation, feedback

ACSEC 2012-2017 Strategic Plan: Education Timelines

Restaurant Fats, Oils, and Grease Management

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Maintain grease trap	Commercial	Blue Business		Develop	Pilot	Pilot	Program participants, feedback
		CES Website/ <i>Ripple Effect</i>	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Outreach Materials	Develop and Pilot	Pilot	Distribute	Distribute	Materials distributed
Educate employees about proper FOG management	Commercial	Blue Business		Develop	Pilot	Pilot	Program participants, feedback
		CES Website/ <i>Ripple Effect</i>	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Outreach Material	Develop and Pilot	Pilot	Distribute	Distribute	Materials distributed

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Carolina Clear is a program of the Clemson University Cooperative Extension Service. Information is provided by Faculty and Cooperative Extension Agents. The Clemson University Cooperative Extension Service offers its programs to people of all ages, regardless of race, color, sex, religion, national origin, disability, political beliefs, sexual orientation, marital or family status and is an equal opportunity employer.

Produced 02/22/2016



ACSEC meeting at the Clemson University Coastal Research and Education Center's "Ed Shed." ACSEC Community and Education Partners discuss education strategies and future programming efforts.



www.clemson.edu/carolinaclear



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Appendix F
Berkeley County
City of Hanahan Annual Report

South Carolina NPDES Permit # SCR030000
Small Municipal Separate Storm Sewer System (SMS4)
Annual Report

Permit Coverage #SCR 030000 Reporting Period: 1/1/14-12/31/15

Permittee: City of Hanahan

Program Name: MS4 Stormwater Management Program

Reporting for more than one Program:
(Prepare copies of this page for each Program and attach to this report.)

Responsible Official Information

(Enter the information of the principal executive officer, mayor, or other duly authorized employee/elected official.)

Name: Minnie Newman Blackwell Title: Mayor

Telephone Number: (843) 518-0409 E-mail Address: mblackwell@aol.com

Mailing Address: 1255 Yeamans Hall Road, Hanahan, SC 29410

Program Manager Information

(Enter the information of the person who is responsible for daily implementation of the program.)

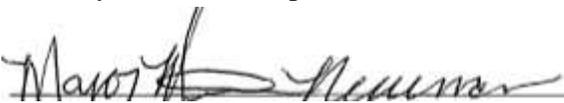
Name: John Cribb Title: City Administrator

Telephone Number: (843) 576-5250 E-mail Address: jcribb@cityofhanahan.com

Mailing Address: 1255 Yeamans Hall Road, Hanahan, SC 29410

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction of supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations

Responsible Official Signature:  Date: 3-31-16

(The responsible official may authorize another person occupying a specific position to certify this report if this authorization is made in writing and submitted to the Department. Please attach a copy of the authorization with this report, if applicable)

Submit the annual report to:
South Carolina Department of Health and Environmental Control
Bureau of Water, Water Pollution Compliance Section
2600 Bull Street
Columbia, SC 29201-1708
Questions? Contact (803) 898-4300

I. Special Conditions Applicable to Stormwater Discharges to Sensitive Waters

A. General (3.1)

1. Has an assessment been conducted to determine if the MS4 discharges to sensitive waters as described in the Permit Part 3? Yes No (what is the target date of completion of the assessment?) _____
2. Does the SWMP specifically address these sensitive waters through BMP, system design, etc.? Yes No
3. Does the MS4 discharge to waters classified as Outstanding Resource, Trout, or Shellfish Harvesting? If so, list the waters (3.5): No Yes _____

B. TMDL Monitoring and Assessment Plan (3.2)

1. Does the MS4 discharge to receiving waters within a TMDL watershed? If yes, list the water body and the pollutant(s) of concern. No Yes _____
2. Which of the TMDL pollutant(s) of concern listed above have the potential to occur within the MS4? N/A
3. Report the current stage of development of a monitoring and assessment plan. Mark one or more that most accurately reflects the current status of the program as a whole:
 Not started Research/Development Implementation
4. Has the plan been submitted to the Department?
 Yes No, target date for submission: Contained in Stormwater Management Plan (SWMP) in Appendix A.
5. Has monitoring been conducted for the pollutant(s) of concern in the past reporting year?
 Yes (summary of data attached) No, target date to begin monitoring: Initiated no more than 18 months from the effective date of an established TMDL.
6. Are there any updates to the plan for this reporting year?
 No Yes (updates attached)
7. Provide a brief description of the progress made on the plan in this reporting year and evaluate its effectiveness.

Due to the fact that there are no TMDLs in the MS4 UA or into which the UA drains, the current Monitoring and Assessment Plan provides the standard operating procedures and protocols for potential monitoring, assessment and implementation only. When any TMDLs are developed for the City's UA then a more detailed TMDL-specific plan will be developed.

C. Discharges to Impaired Water Bodies (3.4)

1. Does the MS4 discharge to receiving waters on the 303(d) list of impaired waters? If yes, list the water body and the pollutant(s) of concern. No Yes See Table below.

Basin	Station Description	Station	Pollutant of Concern	Projected TMDL Date
SANTEE	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	DO	2025
			TP	2025
			CHLA	2025
			ECOLI	2025
SANTEE	GOOSE CREEK RESERVOIR 2.8MI NW OF SPILLWAY NEAR OTRANTO	RL-04390	DO	2025
			CHLA	2025
			TP	2025
SANTEE	GOOSE CK RES 2.3 M S OF GOOSE CREEK TOWN CENTER	RL-01008	DO	2025
SANTEE	GOOSE CREEK RESERVOIR 2 MI N OF SPILLWAY	RL-06434	DO	2025
SANTEE	GOOSE CK RESERVOIR MIDLAKE IN LINE WITH NORTHBROOK BLVD	RL-08065	DO	2025
			TP	2025
SANTEE	GOOSE CK RESERVOIR 0.6 MI NW OF 2ND POWERLINES US OF BOAT RAMP, NEAR W SHORE BTWN 2 WESTERN EMBAYMENTS	RL-07017	DO	2025

II. Storm Water Management Program

A. Ordinance Information (4.1)

(Insert your website address if the ordinance is posted online. If your ordinance is not posted online, please submit a hard copy with this report.)

Website: <https://www.berkeleycountysc.gov/drupal/engineering/storm> **Hard copy attached:** See Appendix A.

B. Storm Water Management Plan (SWMP) (4.1, 4.5)

(Answer the questions below about the SWMP for the current reporting year.)

1. Have there been any changes to the area covered by the MS4? If yes, is this reflected by updates to the SWMP?

X No Yes *(explain):* _____

2. Has your SWMP been reviewed and updated to include the status of your compliance with permit conditions, an assessment of the appropriateness of the identified BMP, progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP, and the measureable goals for each of the minimum control measures. No Yes See Appendix A for updated SWMP. Continued progress has been made on the SWMP over this reporting timeframe. In an effort to further utilize available resources to address water quality/quantity issues in the City's MS4 area, the City has entered into an inter-governmental agreement with Berkeley County. The County has a recently established stormwater utility fee program which is generating monies to address MS4 compliance in the City of Hanahan.

3. Are there any proposed changes to the goals or BMPs (best management practices) in the SWMP? No Yes (*explain*): Updates to address prioritization of identified water quality concerns and progress in SWMP implementation. See Appendix A.

4. Have your proposed changes to the stormwater management programs that are established as permit conditions been updated in your SWMP? No Yes See Appendix A.

5. Has a summary of the stormwater activities you plan to undertake during the next reporting cycle been developed and updated. Yes No See Appendix A.

6. Do you have adequate resources to implement your SWMP? Yes No (*explain*): Have been able to implement the SWMP to date with utilization of building and codes inspection staff and engineering consulting services. The City has entered into an inter-governmental agreement with Berkeley County for the County to perform future SWMP compliance services.

III. Permit Requirements

A. Fiscal Analysis

Include/revise an assessment of controls and the fiscal analysis. In this, include a description of staff resources necessary to meet the requirements of this permit. The City has earmarked \$30,000 to \$55,000 annually since initial permit coverage for MS4 Permit compliance dependent on necessary tasks/deadlines. These expenditures include consultant services for plan reviews, SWMP revisions/updates, Annual Reports, outfall inventories, pollution prevention/good housekeeping, etc. Construction and final closeout site inspections/enforcement are performed by the Building and Codes Department so subsequently there are no full time employees strictly devoted to stormwater compliance. As a result of the recently executed Inter-governmental Agreement (IGA) with Berkeley County, in the future the County will provide resources and personnel for MS4 compliance for the City.

B. Construction Site Inspections

Include a summary describing the number and nature of inspections. The City issued building/stormwater permits for 78 properties for new construction during the 2014/2015 reporting period. These permits covered mostly the Charleston Oaks and Timbercrest developments in Tanner Plantation. There were also several new construction projects in Eagle Landing and new apartments in Bowen Village. All construction sites with issued building/stormwater permits were inspected a minimum of once a month and often on a weekly, or in some

cases, daily basis. In addition, final closeout inspections were performed on all properties prior to issuance of a Certificate of Occupancy.

C. Enforcement Actions

Include a summary describing the number and nature of enforcement actions. The City’s Building and Codes Department was able to have all minor and major violations resolved through the incorporation of letters, emails and verbal warnings describing the nature of the violation and providing a timeframe for corrective action. See Appendix B for sample actions and Appendix A for Enforcement Response Plan (ERP). Pictures were included in the communications to ensure appropriate BMP identification. The City will not issue a final Certificate of Occupancy to the permittee until all violations are corrected which is a very powerful enforcement tool.

D. Public Education/Outreach Programs

Include a summary describing the number and nature of public education programs. The City and their stormwater consultant conducted public meetings/hearings at several City Council meetings as well as separately scheduled stormwater informational workshops during the reporting period. These public education meetings included information related to water quality impacts in the Goose Creek Reservoir and the benefits of non-phosphorus fertilizers and pet waste cleanup/disposal. The importance of stormwater system maintenance by Homeowner’s Associations (HOAs) was another major topic of discussion at these meetings. As a result of the recently executed agreement with Berkeley County, the County has committed to implementing, managing and maintaining a partnership with the Ashley Cooper Stormwater Education Consortium and a partnership and contract with Clemson’s Carolina Clear program for the City as necessary to satisfy future NPDES MS4 Permit Public Education and Outreach requirements.

E. IDDE Corrective Actions

Include any corrective actions taken/resulting enforcement actions to eliminate illicit discharges. The only potential illicit discharge reported or discovered during this reporting period was a sanitary sewer overflow resulting from the early October flooding. Hanahan’s Building and Codes Department received a call on October 10, 2015 on a possible sanitary sewer overflow. Hanahan reported the situation to the Berkeley County Water and Sewer Authority that subsequently responded and removed a sewer blockage. No enforcement action was required. The Enforcement Response Plan (ERP) contained in Appendix A includes procedures to follow in the event of a potential illicit discharge.

IV. Minimum Control Measures (MCM)

A. Sharing Responsibility (4.4)

1. Is responsibility shared for any minimum measures through an agreement with another entity?

No Yes (*name the entity in the chart below*)

MCM 1	Berkeley County, Clemson’s Carolina Clear Program and Ashley Cooper (as per inter-governmental agreement executed November 3, 2015).
MCM 2	Berkeley County, Clemson’s Carolina Clear Program and Ashley Cooper (as per inter-governmental agreement executed November 3, 2015).

MCM 3	Berkeley County. (as per inter-governmental agreement executed November 3, 2015).
MCM 4	Berkeley County. (as per inter-governmental agreement executed November 3, 2015).
MCM 5	Berkeley County. (as per inter-governmental agreement executed November 3, 2015).
MCM 6	Berkeley County. (as per inter-governmental agreement executed November 3, 2015).

If you have indicated that you are sharing responsibility above in any MCM, answer the questions below:

2. Have you submitted notice to the Department that you are relying on another entity?

Yes No (submit a copy of any agreements that have not previously been sent to the Department) **See Appendix C.**

3. If applicable, provide the date of submission of the agreement(s) to the Department: With this Annual Report.

4. Are all control measures as stringent as the permit requires?

Yes No (if no, provide an explanation) _____

5. Did the other entity agree in writing to implement the measure on your behalf?

Yes No (if no, provide an explanation) _____

6. Did the other entity implement the measure and agree to report on your behalf?

Yes No (if no, provide an explanation) _____

7. Is the agreement maintained as part of the SWMP?

Yes No (if no, provide an explanation) _____

8. Have you dissolved any agreements with entities this reporting year?

No Yes (if yes, who?) _____

B. Public Information/Reporting

1. How can the public find information about the SWMP?

<https://www.berkeleycountysc.gov/drupal/engineering/storm>

2. How can the public notify the MS4 of suspected illicit discharges? Contact the Hanahan Building and Codes office at 843-576-5259 to report.

3. How can the public notify the MS4 of possible noncompliance at construction sites?

<https://www.berkeleycountysc.gov/drupal/engineering/storm>

Appendix A
Current Stormwater Management Plan (SWMP)



**City of Hanahan
Stormwater Management Plan (SWMP)**

**1255 Yeamans Hall Road
Hanahan, SC 29410
(843)554-4221**

**July 1, 2014
(Revised December 2015)**

Prepared in accordance with SCDHEC Permit #SCR030000

CERTIFICATION OF STORMWATER MANAGEMENT PLAN

I certify that the City of Hanahan has taken the necessary steps to obtain and maintain full legal authority to implement and enforce each of the requirements contained in the NPDES General Permit for Storm Water Discharges from Regulated Small Municipal Separate Storm Sewer Systems (SMS4), Permit Number SCR030000.

Name (Print)

Title

Signature

Date

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*Table of Contents follows section numbers of #SCR030000. Sections in *gray italics* are not included in the SWMP.

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- Appendix D: Enforcement Response Plan
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List of Acronyms and Abbreviations

BMP	Best Management Practice
CEPSCI	Certified Erosion Prevention and Sediment Control Inspector
CSR	Construction Site Runoff
EPA	Environmental Protection Agency
ERP	Enforcement Response Plan
IECA	International Erosion Control Association
IDDE	Illicit Discharge Detection and Elimination
MCM	Minimum Control Measure
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
PCR	Post Construction Runoff
PEO	Public Education and Outreach
PIP	Public Involvement and Participation
PP&GH	Pollution Prevention and Good House Keeping
SCDHEC	South Carolina Department of Health and Environmental Control
SMS4	Small Municipal Separate Storm System
SOP	Standard Operating Procedure
SWMP	Stormwater Management Plan
SWP3	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load

City of Hanahan, South Carolina

NPDES Stormwater Management Plan (SWMP)

1.0 Introduction

This Stormwater Management Plan (SWMP) is designed to reduce the discharge of pollutants from the City of Hanahan's Small Municipal Separate Storm Sewer System (SMS4) to the maximum extent practicable, to protect water quality and to satisfy the appropriate requirements of the Clean Water Act. The contents are expected to change with time due to the iterative process of developing the SWMP recognized by the Environmental Protection Agency (EPA) and the South Carolina Department of Health and Environmental Control (SCDHEC). EPA predicts that it will likely take two to three SMS4 permit terms (5-year terms) to fully develop and implement the SWMP. The first permit term focused heavily on data collection, organization, development of necessary programs, and initial implementation. During the current second SMS4 permit cycle, the SWMP will need to be amended based on the observed effectiveness of existing plan components and to address the terms and conditions of the new permit. This document is meant to be a living document that will be revisited on an annual basis to reflect accomplishments, potential revisions to plan components, and additions of other or expanded efforts.

This SWMP addresses the requirements of the NPDES General Permit for Discharges from Regulated SMS4s; Permit No. SCR030000, effective January 1, 2014 and expiring December 31, 2018. Specific language from the SMS4 general permit has been copied and pasted into this SWMP for consistency. The section numbers used in this SWMP correspond with the general permit section numbers.

2.0 Notice of Intent (NOI) Information

The following information is applicable to the City of Hanahan.

Table 1: NOI Information Table

General Permit Section	NOI Information	Description
2.2.1 Information on the Permittee:		
2.2.1.1	Name of Municipality:	City of Hanahan
	Mailing Address:	City of Hanahan John Cribb City Administrator 1255 Yeamans Hall Road Hanahan, SC 29410
	Telephone Number:	843-554-4221
2.2.1.2	Public Entity Type:	City
2.2.2 Information on the SMS4:		
2.2.2.1	Map of the City of Hanahan (larger version in Appendix A):	<p><u>SMS4 Location:</u> City of Hanahan</p> <p><u>SMS4 Center Coordinates:</u> Latitude: N32° 54.80' Longitude: W80° 0.19'</p> <p><u>SMS4 Urbanized Area:</u> 11.5 square miles</p> 
2.2.2.2	Major Receiving Waters:	Goose Creek*, Goose Creek Reservoir*, Filbin Creek*, Cooper River

*Listed on the CWA §303(d) list

**Allocated a TMDL

2.2.2.3	Indian Lands:	No portion of the City of Hanahan’s MS4 is located on Indian Country Lands.
2.2.2.4	List of Significant Entities within the City of Hanahan:	The following entities operate a separate storm sewer system within the SMS4 area of the City of Hanahan. <ul style="list-style-type: none"> • SCDOT
2.2.2.5	Other Governmental Entities:	N/A
2.2.2.6	BMP Information:	See Section 4.0 for a discussion of the BMPs for each minimum measure. Each minimum measure contains all available information on the BMPs that are to be implemented, their measurable goals, a schedule for their implementation, and the person(s) responsible.

3.1 Special Conditions Applicable to Permitted Stormwater Discharges to Sensitive Waters

The SMS4 permit requires that the City of Hanahan determine whether its systems discharge to sensitive waters. For the purpose of the permit, sensitive waters are waters:

- With a Total Maximum Daily Load (TMDL) developed and approved, or established by EPA,
- Included in the most recent SC DHEC Section 303(d) list,
- Pursuant to DHEC Water Classifications & Standards (R.61-68) and Regulations (R.61-69) classified as either:
 - Outstanding National Resource Waters (ONRW)
 - Outstanding Resource Waters (ORW)
 - Trout Waters, or
 - Shellfish Harvesting Waters (SFH), and
- In Source Water Protection Areas (SWPA).

3.2 Determination of Receiving Water Conditions and Impacts

The general permit requires the City of Hanahan to determine whether their SMS4 discharges to receiving waters within a TMDL watershed or on the most recent SC DHEC Section 303(d) impaired waters list. To meet this permit requirement, the City of Hanahan has collected

information from SCDHEC on the location of existing TMDLs and impaired waters, as determined from results of the State’s monitoring program, which could potentially be impacted by discharges from the City of Hanahan’s SMS4. The following table provides a list of the impaired waterbodies on the 2014 303(d) list that the City of Hanahan’s SMS4 contributes to, either directly or indirectly.

3.3 TMDL Monitoring and Assessment

In compliance with Section 3.2.1 of the general SMS4 permit, a TMDL monitoring and assessment plan was developed for the City of Hanahan for all TMDL waters receiving SMS4 discharges of pollutant(s) of concern, except where Section 3.1.1.2 of the SMS4 general permit is applicable. As per MS4 Permit requirements, a TMDL monitoring and assessment plan was developed, submitted to SCDHEC, and appended to this SWMP within 12 months of the effective date of permit coverage. Currently there are no TMDLs within the urbanized area of Hanahan or to which Hanahan’s stormwater system discharges.

For newly established TMDLs, the City of Hanahan will complete a more comprehensive monitoring and assessment plan within 12 months of the effective date of the TMDL. As completed, TMDL monitoring and assessment plans will be submitted to SCDHEC and attached to this SWMP in Appendix B. For newly established TMDLs, the City of Hanahan will initiate sampling within 18 months of the effective date of the TMDL.

3.2.1 List of Approved TMDLs

Table 2: List of Approved TMDLs into which the City of Hanahan’s SMS4 Area drains directly or indirectly

TMDL Watershed	Pollutant of Concern	Effective TMDL Date
Ashley-Cooper-Wando-Charleston Harbor	Dissolved Oxygen	March, 2013

The Ashley-Cooper-Wando-Charleston Harbor TMDL waste load allocation (WLA) is for continuous non-stormwater dischargers. Currently available data and modeling indicate that regulated and unregulated stormwater and nonpoint sources do not contribute to the allowable dissolved oxygen (DO) depression on the mainstem segments including Charleston Harbor and the Cooper, Ashley, and Wando Rivers at existing conditions. If, at a later date, a significant non-continuous source is identified, the TMDL will be revised to account for this source.

In this event, should it occur, for existing and future NPDES MS4 Permittees (i.e. Hanahan), compliance with terms and conditions of its NPDES permit would be effective implementation of the WLA to the Maximum Extent Practicable (MEP) and would demonstrate consistency with the assumptions and requirements of the TMDL. For existing and future NPDES Construction

and Industrial stormwater permittees, compliance with terms and conditions of its permit would be effective implementation of the WLA.

3.3 TMDL Implementation and Analysis

In compliance with Section 3.3.2 of the general SMS4 permit, TMDL implementation and analysis plans will be developed for all TMDL waters receiving SMS4 discharges of pollutant(s) of concern, except when Section 3.1.1.2 of the SMS4 general permit is applicable. TMDL implementation and analysis plans will be completed and submitted to SCDHEC within 48 months from the effective date of permit coverage, or, for TMDLs established after the effective date of permit coverage, within 48 months of the effective date of the TMDL.

3.4 Discharges to Impaired Waterbodies

A list of all impaired water bodies receiving discharges from the City of Hanahan’s SMS4 can be found in the table below.

Table 3: 2014 303(d) List of Impaired Stations within the City of Hanahan’s SMS4 Area and/or that the SMS4 Area Drains Into

Basin	Station Description	Station	Pollutant of Concern	Projected TMDL Date
SANTEE	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	DO	2025
			TP	2025
			CHLA	2025
			ECOLI	2025
SANTEE	GOOSE CREEK RESERVOIR 2.8MI NW OF SPILLWAY NEAR OTRANTO	RL-04390	DO	2025
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SANTEE	GOOSE CREEK RESERVOIR 1.0 MI NW OF SPILLWAY NEAR W SHORELINE	RL-03340	CHLA	2025
			DO	2025
			TP	2025
SANTEE	LAKE, GOOSE CK RESERVOIR 2.5MI SW OF POPPENHEIM CROSSING	RL-10108	DO	2025
			CHLA	2025
			TP	2025
SANTEE	GOOSE CREEK RESERVOIR 0.55 MI W OF DAM	RL-05412	TP	2025
SANTEE	GOOSE CK RESERVOIR AT 2 ND POWERLINES US OF BOAT RAMP	ST-033	TP	2025
SANTEE	GOOSE CREEK RESERVOIR 100 M US OF DAM	ST-032	CHLA	2025
			TP	2025
SANTEE	GOOSE CK AT S-08-136 BRIDGE	MD-039	ENTERO	2025
SANTEE	GOOSE CK RESERVOIR 0.1 MILE NE OF BETTIS BOAT LANDING	RL-09081	CHLA	2025
			TP	2025
SANTEE	GOOSE CK RESERVOIR APPROXIMATELY 1.3 MILES UPSTREAM FROM THE DAM	RL-11118	CHLA	2025
			TP	2025
			PH	2025

3.5 Discharges to Classified Waters

The City of Hanahan does not discharge to waters classified as Outstanding Resource (ORW), Trout (TM,TPGT, & TPT), or Shellfish Harvesting (SFH), pursuant to SC DHEC Bureau of Water Classifications & Standards (R.61-68) Classified Waters(R.61-69).

3.6 Discharges to Source Water Protection Areas

For discharges to Source Water Protection Areas, protection will be provided through BMP applications conducted through implementation of the minimum control measures in sections 4.2. Currently there are no source water protection areas within the urbanized area of Hanahan or into which the City's stormwater system discharges.

4.0 Stormwater Management Plan (SWMP)

Table 4: SWMP Requirements

SWMP REQUIREMENTS			
Develop and Implement SWMP	Not Started: In Progress: Completed: <input type="checkbox"/>		
	Section: 4.1.2		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Revise and update written SWMP document and submit the SWMP to SCDHEC Bureau of Water.	Deadline: July 1, 2014	Once	Building and Codes Department
Update Stormwater Management Ordinance	Not Started: In Progress: Completed: <input type="checkbox"/>		
	Section: 4.1.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Review and revise the Stormwater Management Ordinance, or adopt any new ordinances or other regulatory mechanisms that provide adequate legal authority to control pollutant discharges into and from the SMS4, and to meet the requirements of the MS4 permit.	Deadline: January 1, 2015	Once	Building and Codes Department
Develop Enforcement Response Plan (ERP)	Not Started: In Progress: Completed: <input type="checkbox"/>		
	Section: 4.1.5		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Implement an enforcement response plan (ERP).	Deadline: January 1, 2015	Once	Building and Codes Department
Update Stormwater Management Plan	Not Started: In Progress: <input checked="" type="checkbox"/> Completed:		
	Section: 4.1.10		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Review and revise the SWMP document to keep it up to date during the term of the permit.	Throughout the Permit Term	Annually	Building and Codes Department

4.1.1 Requirements of the NPDES SMS4 General Permit

The City of Hanahan will implement this SWMP to reduce the discharge of pollutants from its SMS4 to the maximum extent practicable to protect water quality.

4.1.2 SWMP Development

The City revised and updated the written SWMP document and submitted the original SWMP to the SCDHEC Bureau of Water before July 1, 2014.

4.1.3 Contents of the SWMP

At a minimum, the City must include ordinances, or other regulatory mechanisms, providing the legal authority necessary to implement and enforce the requirements of the SMS4 general permit. See Appendix C for the City of Hanahan Stormwater Management Ordinance. The City has reviewed and revised the Stormwater Management Ordinance to provide adequate legal authority to control pollutant discharges into and from the SMS4, and to meet the requirements of the SMS4 general permit.

4.1.4 Requirement to Develop Adequate Legal Authority

At a minimum the legal authority addresses the following:

- Authority to Prohibit Illicit Discharges
- Determination of Allowable Non-Stormwater Discharges
- Authority to Prohibit Spills or Other Releases
- Authority to Require Compliance
- Authority to Require Installation, Implementation, and Maintenance of Control Measures
- Authority to Receive and Collect Information
- Authority to Inspect
- Response to Violations
- Monetary Penalties
- Civil/Criminal Penalties
- Interagency Agreements (if applicable)

A certification statement has been included in this SWMP that certifies the City of Hanahan has taken the necessary steps to obtain and maintain full legal authority to implement and enforce each of the requirements contained in the NPDES SMS4 general permit (see Page i).

4.1.5 Enforcement Measures and Tracking

The City has implemented an enforcement response plan (ERP), see Appendix D, and will revise as necessary. The ERP describes the City of Hanahan's potential responses to violations and addresses repeat and continuing violations through progressively stricter responses as needed to achieve compliance.

4.1.5.2 Enforcement Tracking. The City will track instances of non-compliance either in hard-copy files or electronically.

4.1.5.3 Recidivism Reduction. - The City will summarize inspection results by consuetudinary violators and include incentives, disincentives, or an increased inspection frequency at the operator's sites.

4.1.6 Report Requirements

The City of Hanahan will at a minimum submit the following information in the report (See Section 5.3 for details).

- The status of implementing the components of the SWMP that are established as permit conditions;

-
- Proposed changes to the SWMP that are established as permit conditions;
 - Revisions, if necessary, to the assessment of controls and the fiscal analysis, including a description of staff resources necessary to meet the requirements of the permit;
 - A summary of data, including monitoring data, that is accumulated throughout the reporting year; and,
 - A summary describing the number and nature of enforcement actions, inspections, and public education programs.

4.1.7 SWMP Minimum Control Measure Requirements

The City of Hanahan SWMP will include the following information for each of the six minimum control measures.

Each (MCM) is described in Section 4.2 of this SWMP in detail:

- Best management practices (BMP) that the City of Hanahan or another entity will implement for each of the MCM;
- Measurable goals for each of the BMP including, as appropriate, the months and years in which the City of Hanahan will undertake required actions, including interim milestones and the frequency of the action; and,
- Person, or persons, responsible for implementing or coordinating the BMP for the City of Hanahan SWMP.

4.1.9 SWMP Modifications

SCDHEC Bureau of Water may notify the City of Hanahan of the need to modify the SWMP document to be consistent with the permit, in which case the City of Hanahan will have 90 days to finalize such changes to the program.

The City of Hanahan will keep the SWMP document up to date during the term of the permit. Where the City of Hanahan determines that Ordinance modifications are needed to address any procedural, protocol, or programmatic change, such changes must be made as soon as practicable, but not later than 360 days.

4.2 Minimum Control Measures

In compliance with the SMS4 general permit requirements; this SWMP includes a description of the six minimum control measures (MCMs) and details on the development and implementation of the program to address MCM requirements. The details on each minimum measure include the proposed BMP measurable goals for each proposed BMP, the responsible departments and staff to implement the BMP, and the implementation schedule for the BMP (i.e. start date, frequency of activities, etc.).

4.2.1 Public Education and Outreach (Minimum Measure #1)

4.2.1.1 Permit Requirements

In order to meet the requirements of Minimum Measure #1, the City of Hanahan shall continue to implement, and revise if necessary, a comprehensive stormwater education/outreach program in accordance with items noted below.

Table 5: Minimum Measure #1 Permit Requirements

4.2.1.1.1 Identify the pollutant(s) of concern (POC) within City of Hanahan’s watershed area(s).
4.2.1.1.2 Analyze the POC(s) listed, above, to be targeted.
4.2.1.1.3 Initiate a planning process that defines the goals and objectives of the program as they relate to at least three high priority community issues with potential to decrease the POC’s effect on water quality.
4.2.1.1.4 Identify and analyze audience(s) that is believed to have an influence on the POC identified and that is believed to have an influence on the goals and objectives identified.
4.2.1.1.5 Create appropriate message(s) directed at the target audience(s) listed above to achieve the program goals and objectives.
4.2.1.1.6 Develop education campaign(s) and materials, as needed, to convey any messaging created in accordance with program goals and objectives and based on knowledge of the target audience(s).
4.2.1.1.7 Determine methods and process of distribution for campaign materials in accordance with a knowledgebase of the target audience(s).
4.2.1.1.8 To the MEP utilize quantitative and/or qualitative formative assessment of programs to guide and/or change the program goals and objectives and/or program activities as needed. Evaluate the effectiveness of the program.
4.2.1.1.9 Utilize public input into the development of this program to the MEP.
4.2.1.1.10 Implement the program goals and objectives identified to the MEP.
4.2.1.1.11 Assess the stormwater education/outreach program annually. Adjust education materials and the delivery of such materials to address any shortcomings found as a result of these assessments.

4.2.1.2 BMP Implementation

The following BMP’s were developed by considering the permit requirements listed in Table 5. Evaluation of the success of this minimum measure will be through careful analysis of the measureable goals for each BMP included in this minimum measure. Measureable goals for each BMP were selected by formulating attainable goals for the various BMP implementation steps or tasks.

In order to meet the requirements of Minimum Measure #1, the City of Hanahan will implement the following BMPs:

- Develop and Update Campaign Materials
- Sponsor/Support Community Events
- Distribute Campaign Materials
- Assess the Public Education Plan
- Develop Annual Adjustments for the Public Education and Outreach Plan

The following sections describe the components of the City of Hanahan’s Public Education and Outreach program.

Table 6: Best Management Practices - Minimum Measure #1

PUBLIC EDUCATION AND OUTREACH BMPS			
Develop and Update Campaign Materials	Not Started: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.1.1.6		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
<p>The City of Hanahan will continue to update, publish, and distribute educational literature (including information on the potential benefits of picking up pet waste, as well as the impacts of dumping chemicals, oils, and other hazardous materials).</p> <p>The City will update the information shared at educational seminars.</p> <p>The City of Hanahan will update the website to include updated material.</p>	December 31, 2014	Once During the Permit Term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> • Update campaign materials. 			
<ul style="list-style-type: none"> • Update seminar information. 			
<ul style="list-style-type: none"> • Maintain the website. 			
Sponsor/Support Community Events	Not Started: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.1.1.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
The City of Hanahan will sponsor/support community events by: promoting/advertising events, distributing water quality awareness campaign items, and providing other general assistance as resources allow.	Throughout Permit Term Beginning in Year 2	Annually	Building and Codes Department

4.2.2 Public Involvement/Participation (Minimum Measure #2)

4.2.2.1 Permit Requirements

The City of Hanahan intends to work in cooperation and support existing community events in order to efficiently reach as many citizens as economically possible through public involvement and participation efforts. The City will support events by; promoting events to increase event attendance, provide resources for stream clean-up, and may provide hands-on demonstrations with a watershed model. The City’s public participation efforts will target specific events to strategically reach a diverse group of citizens.

Table 7: Minimum Measure #2 Permit Requirements

4.2.2.1.1	Create opportunities for citizens to participate in the implementation of stormwater controls.
4.2.2.1.2	Ensure the public can easily find information about the permittee’s SWMP.
4.2.2.1.3	Incorporate written procedures for implementing the public involvement/participation (PIP) MCM in the SWMP.

4.2.2.2 BMP Implementation

The following BMP’s were developed by considering the permit requirements listed in Table 7. The BMPs selected in this section describe how the citizens will be informed about the SWMP and lists activities for public participation. The measureable goals for each BMP for the Public Participation and Involvement minimum measure will be used to evaluate the success of each BMP. The following sections describe the components of the City of Hanahan’s Public Involvement/Participation program:

In order to meet the requirements of Minimum Measure #2, the City of Hanahan will:

- Sponsor Support Citizen Participation Events
- Provide Access to Information for the SWMP

The following sections describe the components of the City of Hanahan’s Public Involvement/Participation program:

Table 8: Best Management Practices - Minimum Measure #2

PUBLIC INVOLVEMENT/PARTICIPATION BMPS			
Sponsor/Support Citizen Participation Events	Not Started: <input type="checkbox"/> In Progress : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.2.1.1		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party

City of Hanahan will sponsor/support community events by: promoting/advertising events, distributing water quality awareness campaign items, and providing other general assistance as resources allow. City of Hanahan intends to sponsor/support the following events:	Throughout Permit Term Beginning in Year 2	Annually	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Number of clean up days, trainings, and presentations. 			
Provide Access to Information for the SWMP	Not Started: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.2.1.2		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Ensure the public can easily find information about the SWMP.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Include SWMP on the City's Stormwater Management webpage. 			

4.2.3 Illicit Discharge Detection and Elimination (Minimum Measure #3)

4.2.3.1 Permit Requirements

The City of Hanahan will locate and eliminate illicit discharges by developing BMPs in accordance with the SMS4 general permit requirements. Priority areas will be established based on the higher likelihood of illicit connections, and outfalls located within the priority areas will be visited to check for dry weather flow. Outfalls with dry weather flow will be screened to identify potential illicit discharges. Prior to illicit tracking activities, the City will develop illicit tracking procedures. After illicit tracking procedures have been established, illicit discharges will be tracked to a source and eliminated when possible. Illicit tracking activities will be documented for review. A list of illicit priority areas has been developed based on an identification of areas with a higher likelihood of illicit connections. The list is contained in Appendix E and will be updated annually.

Table 8: Minimum Measure #3 Permit Requirements

4.2.3.2.1 Develop storm sewer system map.
4.2.3.2.2 Identify priority areas.
4.2.3.2.3.a Conduct field screening to detect illicit discharges.
4.2.3.2.3.b Assess field screening to detect illicit discharges.

4.2.3.2.3.c Notify another MS4 of an illicit discharge if illicit connection or illicit discharge is observed.
4.2.3.2.3.d Address a notification of an illicit discharge by another operator.
4.2.3.2.3.e Include procedures for implementing program into SWMP document.
4.2.3.2.4/5 Develop procedures for tracing the source of an illicit discharge and include the minimum investigation requirements stated in NPDES General Permit for Storm Water Discharges from Regulated SMS4, SCR03000.
4.2.3.2.6 Determine and document the source of the illicit.
4.2.3.2.7 Follow the Corrective Action plan to eliminate illicit discharges as seen in NPDES General Permit SCR030000.
4.2.3.2.8 Promote, publicize, and facilitate a reporting mechanism for the public and staff to report illicit discharges.
4.2.3.2.9 Train appropriate employees regarding illicit discharges and illicit connections.

4.2.3.2 BMP Implementation

The following BMP's were developed by considering the permit requirements listed in Table 9. In order to meet the requirements of Minimum Measure #3, the City of Hanahan has listed BMPs that focus on the detection and elimination of illicit discharges into the SMS4. Evaluation of the success of this minimum measure will be based on the level of implementation of the BMPs included in this minimum measure. The responsibility for implementation of this minimum measure is described with each BMP procedure. The following sections describe the components of the City's Illicit Discharge Detection and Elimination (IDDE) program.

In order to meet the requirements of Minimum Measure #3, the City of Hanahan will:

- Update Legal Authority to Implement IDDE Program
- Update the Storm Sewer Map
- Identify Priority Areas for Illicit Discharges
- Identify Screening Points
- Conduct Field Screening (Dry Weather Screening)
- Develop Illicit Tracking Procedures
- Conduct Illicit Tracking
- Eliminate Illicit Discharges
- Document Illicit Discharge Investigations
- Assess Field Screening Procedures
- Provide Employee Training on Illicit Discharge Identification

Table 9 describes the components of City of the Hanahan’s Illicit Discharge Detection and Elimination (IDDE) program.

Table 9: Best Management Practices - Minimum Measure #3 -

IDDE BMPs			
Update Legal Authority to Implement IDDE Program	Not Started: In Progress: Completed: <input type="checkbox"/>		
	Section: 4.2.3.2		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Update the previously adopted ordinance (Ordinance #8-2007) as needed, to include the necessary updates for the IDDE program.	Deadline: December 31, 2014	As Needed	Building and Codes Department/Legal Department
Measurable Goal:			
<ul style="list-style-type: none"> Update the IDDE ordinance. 			
Update Storm Sewer Map	Not Started: In Progress: Completed: <input type="checkbox"/>		
	Section: 4.2.3.2.1		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Update the storm sewer map as needed to show the location of all outfalls and names and locations of all waters of the United States that receive discharge from those outfalls.	Current map complete	As Needed	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Update storm sewer map as needed to show new outfalls. 			
Identify Priority Areas	Not Started: In Progress: Completed: <input type="checkbox"/>		
	Section: 4.2.3.2.2		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Create a list of illicit priority areas based on an identification of areas with a higher likelihood of illicit connections. The list will be updated annually.	Deadline: December 31, 2014	Annually	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> A map which sets the boundaries for SMS4 Dry-Weather Screening. 			
Identify Screening Points	Not Started: <input type="checkbox"/> In Progress: Completed:		
	Section: 4.2.3.2.3a		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Identify all field screening points within the priority area. Include a schedule for conducting the screening.	Deadline: December 31, 2014	Annually	Building and Codes Department
Measurable Goal:			

<ul style="list-style-type: none"> A list of all field screening points. 			
<ul style="list-style-type: none"> A schedule for conducting the field screening. 			
Conduct Field Screening	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.3.2.3a		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Conduct dry weather flow screening at outfalls in the priority area and at known dry weather discharges.	Deadline: June 31, 2015	Annually	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Locate potential illicit discharges in the priority area. 			
Develop Illicit Tracking Procedures	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.3.2.4/5/8		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
The City of Hanahan will update the existing procedures for tracking illicit discharges. The illicit tracking procedures will include minimum investigation requirements in section 4.2.3.2.5. In addition, the illicit tracking procedures will include requirements for responding to public notices. (section 4.2.3.2.8.a/b)	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Develop illicit tracking procedures. 			
Conduct Illicit Tracking/Determine Source of Illicit Discharge	Not Started: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.3.2.4/5		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
The City of Hanahan will conduct illicit tracking at outfalls identified as potential illicit discharges by the field screening effort.	Confirmed illicit discharges will be tracked within a timeframe listed in section 4.2.3.2.4/5	As Needed	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Determine the source of potential illicit discharges identified during field screening. 			
Eliminate Illicit Discharges	Not Started: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.3.2.7		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Once the source of an illicit discharge has been determined, the City of Hanahan will follow procedures (a-e) of section 4.2.3.2.7 of the permit to eliminate the illicit discharge	Confirmed illicit discharges will be eliminated within the timeframe listed in section 4.2.3.2.7.b	As Needed	Building and Codes Department

City of Hanahan

Measurable Goal:			
<ul style="list-style-type: none"> Documentation of eliminated illicit discharges. 			
Document Illicit Discharge Investigations		Not Started: In Progress: <input checked="" type="checkbox"/> Completed:	
		Section: 4.2.3.2.5/6	
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
The City of Hanahan will document illicit discharge tracking and elimination activities to include the following information: <ul style="list-style-type: none"> Date(s) the illicit discharge was observed Results of the illicit investigation Results of any follow-up investigations; Date the investigation was closed. Source of illicit discharge Documentation for unresolved illicit tracking investigations in which no source is located. (as required by section 4.2.3.2.6.a of the permit) Documentation for intermittent illicit discharges (as required by section 4.2.3.2.6.b of the permit) 	Documentation will begin the same day when practicable but no later than 48hrs.	As Needed	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Document illicit tracking and elimination activities. 			
Field Screening Assessment		Not Started: <input checked="" type="checkbox"/> In Progress: Completed:	
		Section: 4.2.3.2.3b	
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Assess the effectiveness of the Field Screening program by the end of permit year 3.	Deadline: December 31, 2016	Once during permit term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> A summary assessing the effectiveness of the Field Screening program. 			
Employee Training		Not Started: In Progress: <input checked="" type="checkbox"/> Completed:	
		Section: 4.2.3.9	
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
The City of Hanahan will implement a training program for all appropriate municipal field staff	Start-up deadline: January 1, 2015	Annually	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Provide IDDE training to appropriate field staff. This BMP will be implemented through training for Pollution Prevention in Section 4.2.6.5 			

4.2.4 Construction Site Stormwater Runoff Control (Minimum Measure #4)

4.2.4.1 Permit Requirements

The City of Hanahan will revise the construction program by developing and implementing BMPs in order to meet the SMS4 general permit requirements. The City will update appropriate design requirements and revise the corresponding SWP3 plan review requirements. Site inspection procedures will be updated to conform to the SMS4 permit requirements, and an enforcement response plan has been developed to determine how the City will use specific type of responses to address various types of violations. In addition, the City will develop a communication process with construction operators to educate them about areas in which improvements are needed.

Table 10: Minimum Measure #4 Permit Requirements

4.2.4.4.1	Develop and implement a regulatory mechanism for erosion and sediment controls as well as sanctions to ensure compliance.
4.2.4.4.2	Develop and implement requirements for erosion and sediment controls and soil stabilization practices.
4.2.4.4.3	Develop and implement requirements for pollution prevention measures.
4.2.4.4.4	Develop and implement requirements for Stormwater Pollution Prevention Plans (SWP3).
4.2.4.4.5	Implement site plan review procedures of SWP3 that meet the requirements stated in the NPDES General Permit SCR030000.
4.2.4.4.6	Maintain an inventory of all active construction projects and inspect construction projects in accordance with the frequency stated in the NPDES General Permit SCR030000.
4.2.4.7	Develop an Enforcement Response Plan (ERP).
4.2.4.8	Ensure that the appropriate MS4 staff are trained.
4.2.4.9	Construction Site Operator and Public Involvement:
4.2.4.9.a	Develop and implement an effective communication process with construction contractors to educate them on areas in which improvements are needed and to enforce any required actions.
4.2.4.9.b	Implement procedures for receipt and consideration of information submitted by the public.

4.2.4.2 BMP Implementation

The following BMP's were developed by considering the permit requirements listed in Table 11. In order to meet the requirements of Minimum Measure #4, the City of Hanahan has listed BMPs that focus on the reduction of pollutants in stormwater runoff to the SMS4 from construction activities that result from a land disturbance of greater than or equal to one acre. The City of Hanahan will continue and improve existing BMPs that provide assistance and ensure compliance through routine inspections. Evaluation of the success of this minimum measure will be through careful analysis of the measurable goals for each BMP included in this minimum measure. Measurable goals for each BMP were selected by formulating attainable

goals for the various BMP implementation steps or tasks. In order to meet the requirements of Minimum Measure #4, the City of Hanahan will:

- Update Pollution Prevention BMP Requirements
- Revise SWP3 Submittal & Review Requirements
- Update SWP3 Review Procedures for Discharges to Impaired Waters
- Modify and Maintain a Construction Site and Site Inspection Inventory
- Develop/Modify Site Inspection Procedures
- Develop Section of ERP for Construction Activities
- Construction Operator Training/Education

Table 11 describes the components of the City of Hanahan’s construction site stormwater runoff control program:

Table 11: Best Management Practices - Minimum Measure #4

CONSTRUCTION RUNOFF BMPs			
Update Pollution Prevention Requirements	Not Started: In Progress: Completed: <input type="checkbox"/>		
	Section: 4.2.4.4.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Update the Stormwater Ordinance to include all requirements for Pollution Prevention Measures listed in Section 4.2.4.4.3.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> • Add Pollution Prevention requirements to the Stormwater Ordinance. 			
Revise SWP3 Submittal & Review Requirements	Not Started: In Progress: Completed: <input type="checkbox"/>		
	Section: 4.2.4.4.5.b/c		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Update the Stormwater Ordinance and other guidance documents to include new requirements from the 2012 Construction General Permit.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Update the Stormwater Ordinance and other guidance documents to ensure SWP3 submittals include a rationale used for selecting control measures, including how the control measure protects a waterway or stormwater conveyance.		Once during permit term	Building and Codes Department
Update plan review procedures to address new requirements listed above.		Once during permit term	Building and Codes Department
Measurable Goal:			

ERP for Construction Activities		Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>	
		Section: 4.2.4.7	
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Develop enforcement responses for permit violations, SWP3 violations, and EPSC BMP installation, operation, and maintenance violations.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Develop an ERP for construction activities. 			
Construction Operator Training/Education		Not Started: <input checked="" type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input type="checkbox"/>	
		Section: 4.2.4.9	
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
The City of Hanahan will develop and implement construction operator training to implement an effective communication process to educate contractors on areas in which improvements are needed and to enforce any required actions.	Throughout Permit Term Beginning in Year 2	Annually	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Develop and implement a training course for construction operators. 			

4.2.5 Post-Construction Stormwater Management for New Development and Redevelopment (Minimum Measure #5)

4.2.5.1 Permit Requirements

The post-construction stormwater management program is designed to give the City of Hanahan the authority to require structural and non-structural stormwater quality BMPs on sites being developed. The City of Hanahan currently provides design requirements to control stormwater discharges from new development and redeveloped sites and has established performance standards for addressing the first inch of runoff. The City of Hanahan will improve the post-construction program by ensuring post-construction BMPs are inspected and maintained.

Table 12: Minimum Measure #5 Permit Requirements

4.2.5.1	Implement a Post-Construction Stormwater Management Program.
4.2.5.2	Establish, implement, and enforce Site Performance Standards.

4.2.5.3	Implement project review, approval, and enforcement procedures for site plan review.
4.2.5.4	Ensure the long-term maintenance of post-construction stormwater control measures.
4.2.5.5	Maintain an inventory of post-construction stormwater control measures.
4.2.5.6	Inspections and Enforcement:
4.2.5.6.1	Conduct inspections of each project site covered under Part 4.2.5.2 performance standards, at least one time during the permit term.
4.2.5.6.2	Conduct post-construction inspection within 30 days of completion of construction.
4.2.5.6.3	Document inspection findings and inspection reports. Maintain records of inspection findings and enforcement actions.

4.2.5.2 BMP Implementation

The following BMP's were developed by considering the permit requirements listed in Table 13. Evaluation of the success of this minimum measure will be through careful analysis of the measurable goals for each BMP included in this minimum measure. Measurable goals for each BMP were selected by formulating attainable goals for the various BMP implementation steps or tasks. In order to meet the requirements of Minimum Measure #5, the City of Hanahan will:

- Implement Post-Construction Stormwater Management Program
- Modify Site Performance Standards
- Develop Long Term Maintenance Requirements for Post-Construction BMPs
- Create Post-Construction BMP Inventory
- Develop Post-Construction BMP Inspection Program

Table 13 describes the components of the City of Hanahan's Post-Construction stormwater management program:

Table 13: Best Management Practices - Minimum Measure #5

POST-CONSTRUCTION RUNOFF BMPs			
Implement Post-Construction Stormwater Management Program	Not Started: <input type="checkbox"/> In Progress : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.5.1		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Develop written procedures for implementing the post-construction stormwater management program.	Deadline: December 31, 2015	Once during permit term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> • Implement post-construction stormwater management program. 			

Modify Site Performance Standards	Not Started: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.5.2		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Develop additional site performance standards in addition to the existing “first inch” standard.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Update post-construction site performance standards. 			
Post-Construction BMP Inventory	Not Started: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.5.5		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Develop an inventory of all City permitted post-construction BMPs constructed since the effective date of permit SCR030000 (January 1, 2014).	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Update City permitted Post-Construction BMP Inventory.	Throughout Permit Term Beginning in Year 2	Annually	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> Provide an inventory of City permitted post-construction BMPs. 			
Post-Construction BMP Inspections Program	Not Started: <input type="checkbox"/> In Progress: <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.5.4/6		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Develop procedures and forms for post-construction BMP installation inspections.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Conduct post-construction BMP inspections on City permitted post-construction BMPs within 30 days of construction completion to ensure BMP is installed per approved plans.	Throughout Permit Term Beginning in Year 2	Annually	Building and Codes Department
Develop procedures and forms for post-construction BMP maintenance inspections.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Conduct post-construction BMP inspections on City permitted post-construction BMPs to ensure BMPs are maintained properly.	Throughout Permit Term Beginning in Year 2	Once during permit term	Building and Codes Department
Document and maintain records of inspection findings and enforcement actions and make them available for review by the permitting authority.	Throughout Permit Term Beginning in Year 2	Annually	Building and Codes Department
Measurable Goal:			

<ul style="list-style-type: none"> • Develop procedures and forms for Post-Construction BMP installation inspections and include procedures in this document.
<ul style="list-style-type: none"> • Inspect all City permitted post-construction BMPs within 30 days of construction completion.
<ul style="list-style-type: none"> • Develop procedures and forms for Post-Construction BMP maintenance inspections and include procedures in this document.
<ul style="list-style-type: none"> • Inspect appropriate construction sites to ensure City permitted Post-Construction BMPs are maintained and operating correctly.
<ul style="list-style-type: none"> • Provide documentation of Post-Construction BMP inspections.

4.2.6 Pollution Prevention / Good Housekeeping (Minimum Measure #6)

4.2.6.1 Permit Requirements

In order to meet the requirements of Minimum Measure #6, the City of Hanahan will implement a range of BMPs targeted to reduce pollutants from City-Owned facilities and storm sewer systems. A Citywide inventory of major municipal facilities will be developed, and each facility will be assessed for the potential pollutant discharges. Based on the assessment, a list of high priority facilities will be developed, and annual inspections will be conducted at the high priority facilities. The City of Hanahan will prioritize their owned and /or operated stormwater management systems and implement a maintenance schedule. All City-Owned structural controls (stormwater BMPs) will be inspected and maintained. In addition, the City will develop a set of pollution prevention measures for operation and maintenance activities. The City of Hanahan will provide training to appropriate employees to ensure pollution prevention and good housekeeping activities are practiced throughout the City's separate departments.

Table 14: Minimum Measure #6 Permit Requirement

4.2.6.1	Develop a municipal facility and stormwater control inventory.
4.2.6.2.1	Develop a comprehensive assessment of pollutant discharge potential.
4.2.6.2.2	Identify high priority facilities.
4.2.6.2.3	Document comprehensive assessment results.
4.2.6.3	Perform annual comprehensive inspections of high priority facilities.
4.2.6.4	Storm Sewer System Maintenance Activities - MS4 Maintenance:
4.2.6.4.1	Prioritize and implement a maintenance schedule for MS4 owned and operated catch basins.
4.2.6.4.2	Develop pollution prevention measures for operation and maintenance activities that will reduce the discharge of pollutants in stormwater.
4.2.6.4.3	Inspect and maintain municipally-owned and/or maintained structural stormwater controls.

4.2.6.5	Develop an annual employee training program for appropriate employees involved in implementing pollution prevention and good housekeeping practices.
4.2.6.6	Provide oversight of contractor activities to ensure that contractors are using appropriate control measures and procedures. Contractors must be contractually required to comply with all of the SMS4 stormwater control measures, good housekeeping practices, and facility-specific stormwater management procedures.

4.2.6.2 BMP Implementation

The following BMP's were developed by considering the permit requirements listed in Table 15. Evaluation of the success of this minimum measure will be through careful analysis of the measurable goals for each BMP included in this minimum measure. In order to meet the requirements of Minimum Measure #6, the City of Hanahan will:

- Develop a Municipal Facility Inventory
- Conduct Assessment of Non-Permitted Municipal Facility & Identify High Priority Facilities
- Conduct High Priority Facility Inspections
- Prioritize stormwater management systems/structures
- Develop and Implement Pollution Prevention Measures for Operation and Maintenance Activities
- Inspect and Maintain City-Owned Structural Controls (stormwater BMPs)
- Conduct Pollution Prevention and Good House Keeping Employee Training

Table 15 describes the components of the City of Hanahan's pollution prevention/good housekeeping for municipal operations program:

Table 15: Best Management Practices - Minimum Measure #6

POLLUTION PREVENTION / GOOD HOUSEKEEPING BMPS			
Municipal Facility Inventory	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input checked="" type="checkbox"/>		
	Section: 4.2.6.1.1		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Develop an inventory of all City-owned facilities and stormwater controls that are not covered under a separate NPDES permit. In addition, include a list of all municipally owned facilities that are covered under a separate NPDES permit.	Deadline: December 31, 2014	Once during the permit term	Building and Codes Department
Measurable Goal:			
<ul style="list-style-type: none"> • An inventory of non-permitted municipal facilities. • A list of all municipally owned facilities that are covered under a separate NPDES permit. 			

Assessment of Non-Permitted Municipal Facilities	Not Started: <input checked="" type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.6.2.1		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Conduct a GIS analysis based on type of facility/use, locations to waterbody, City owned BMPs to rank City facilities.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Based on the results of the GIS analysis, identify high priority facilities.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Create a site evaluation checklist that will be used to conduct an assessment of all facilities.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Conduct facility site inspections with evaluation checklist at each facility identified in the inventory from Section 4.2.6.1.	Deadline: December 31, 2018	Once during permit term	Building and Codes Department
Document results of facility evaluations.	Deadline: December 31, 2018	Once during permit term	Building and Codes Department
<u>Measurable Goal:</u>			
• A GIS analysis to identify potential high priority facilities.			
• A site evaluation checklist for facility assessment.			
• Conduct inspections at municipal facilities and complete site evaluation checklist.			
• Documentation of site evaluation checklists.			
• A list of high priority facilities.			
Conduct High Priority Facility Inspections	Not Started: <input checked="" type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.6.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Create inspection report template with sections for identified deficiencies and corrective action taken for each site inspection.	Deadline: December 31, 2015	Once during permit term	Building and Codes Department

Conduct facility site inspections including evaluations of potential “pollutant generating” areas.	Throughout Permit Term Beginning in Year 3 (January 1, 2016)	Annual	Building and Codes Department
Document inspection reports.	Deadline: January 1, 2018	Annual	Building and Codes Department
<u>Measurable Goal:</u>			
<ul style="list-style-type: none"> A high priority facility inspection report form. 			
<ul style="list-style-type: none"> Conduct inspections and determine potential “pollutant generating” areas at high priority facilities. 			
<ul style="list-style-type: none"> Documentation of facility inspection report forms. 			
Prioritize MS4 Stormwater Management Systems/Structures	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.6.4.1		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Prioritize stormwater management systems / structures.	Deadline: March 1, 2015	Once during permit term	Building and Codes Department
Implement a maintenance schedule for stormwater management systems/structures.	Deadline: May 1, 2015	Once during permit term	Building and Codes Department
<u>Measurable Goal:</u>			
<ul style="list-style-type: none"> A schedule to maintain the stormwater management system. 			
Develop and Implement Pollution Prevention Measures for Operation and Maintenance Activities	Not Started: <input type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.6.4.2		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Develop a written set of pollution prevention measures for municipal operation and maintenance activities.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Implement pollution prevention measures for municipal operation and maintenance activities.	Deadline: June 1, 2015	Throughout permit term	Building and Codes Department
<u>Measurable Goal:</u>			
<ul style="list-style-type: none"> A written set of pollution prevention measures for operation and maintenance activities. 			
Inspect and Maintain City-Owned Structural Controls	Not Started: <input type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.2.6.4.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party

Create a structural control inspection and maintenance form.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Conduct inspections for City-Owned structural controls.	Deadline: April 31, 2015	Annually	Building and Codes Department
Perform necessary maintenance for City-Owned structural controls.	Deadline: December 31, 2015	Annually	Building and Codes Department
<u>Measurable Goal:</u>			
<ul style="list-style-type: none"> • A structural control inspection and maintenance form. 			
<ul style="list-style-type: none"> • Conduct inspections for City-Owned structural controls. 			
<ul style="list-style-type: none"> • Conduct maintenance for City-Owned structural controls. 			
<ul style="list-style-type: none"> • Documentation of completed inspection and maintenance forms. 			
Conduct Pollution Prevention and Good House Keeping Employee Training	Not Started: In Progress: <input checked="" type="checkbox"/> Completed:		
	Section: 4.2.6.5		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Develop an annual employee training program for appropriate employees involved in implementing pollution prevention and good housekeeping practices. Include training for IDDE.	Deadline: December 31, 2014	Once during permit term	Building and Codes Department
Conduct pollution prevention and good house keeping training.	Start-up deadline: January 1, 2015	Annually	Building and Codes Department
Create a list of employees that have been identified for pollution prevention training.	Deadline: December 31, 2014	Annually	Building and Codes Department
<u>Measurable Goal:</u>			
<ul style="list-style-type: none"> • A written pollution prevention employee training plan/program. 			
<ul style="list-style-type: none"> • A list of employees participating in the training program. 			
<ul style="list-style-type: none"> • Conduct staff training. 			

4.5 Reviewing and Updating Stormwater Management Plans

Table 16: Reviewing and Updating SWMP

SWMP REQUIREMENTS			
Update Stormwater Management Plan	Not Started: <input type="checkbox"/> In Progress : <input checked="" type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.5.1 & 4.5.2		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Review and revise the SWMP document to keep it up to date during the term of the permit.	Deadline: December 31, 2018	Annually	Building and Codes Department
Stormwater Management Plan Updates Required by SCDHEC	Not Started: <input checked="" type="checkbox"/> In Progress : <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 4.5.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
SCDHEC requested changes to the SWMP.	Deadline: December 31, 2018	As Required	Building and Codes Department

This SWMP is a living document and will be updated and revised throughout the permit term, as necessary. In accordance with Section 4.5.2 of the general SMS4 permit, additions (but not subtracting or replacing) components to the SWMP will be made at any time with a written notification made to SCDHEC.

Any changes intended to replace an ineffective or unfeasible BMP with an alternate BMP will be requested and submitted in written form to SCDHEC at any time. Unless denied by SCDHEC, changes proposed in accordance with the criteria below will be deemed approved and may be implemented 60 days from submittal of the request. If request is denied, SCDHEC will send the City of Hanahan a written response giving a reason for the decision. The modification requests must include the following:

- An analysis of why the BMP is ineffective or infeasible (including cost prohibitive),
- Expectations on the effectiveness of the replacement BMP, and
- An analysis of why the replacement BMP is expected to achieve the goals of the BMP to be replaced.

Additionally, SCDHEC may request the City of Hanahan to make changes to the SWMP at any time to:

- Address documented impacts on receiving water quality caused, or contributed to, by discharges from the SMS4;

- Include more stringent requirements necessary to comply with new Federal statutory or regulatory requirements; or
- Include such other conditions deemed necessary by the Department to comply with the goals and requirements of the Clean Water Act.
- Changes requested by SCDHEC must be made in writing, set forth the time schedule for the City to develop the changes, and offer the City the opportunity to propose alternative program changes to meet the objective of the requested modification. All changes required by SCDHEC will be made in accordance with South Carolina Water Pollution Control Permits Regulation 61-9 124.5, 122.62, or as appropriate 122.63.

4.6 Reporting

Table 17: Reporting

REPORTING			
1st Report	Not Started: <input checked="" type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 5.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Complete and Submit 1 st Report (covering years 1 and 2).	Deadline: April 01, 2016	Once	Building and Codes Department
2nd Report	Not Started: <input checked="" type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 5.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Complete and Submit 2 nd Report (covering years 3 and 4).	Deadline: July 4, 2018	Once	Building and Codes Department
Reports During Expired Permits	Not Started: <input checked="" type="checkbox"/> In Progress: <input type="checkbox"/> Completed: <input type="checkbox"/>		
	Section: 5.3		
Milestone(s)	Schedule/Deadline	Frequency	Responsible Party
Complete and Submit Report if the expired permit is continued.	Every year on the anniversary date of the expired permit.	Annually	Building and Codes Department

*The above table will be the reporting schedule unless DHEC requires more frequent reports; otherwise, the reports will be submitted based on the stated schedule.

All reports shall be sent to the address below unless the Department instructs permittees to submit via alternate mechanisms (i.e. electronic mechanisms):

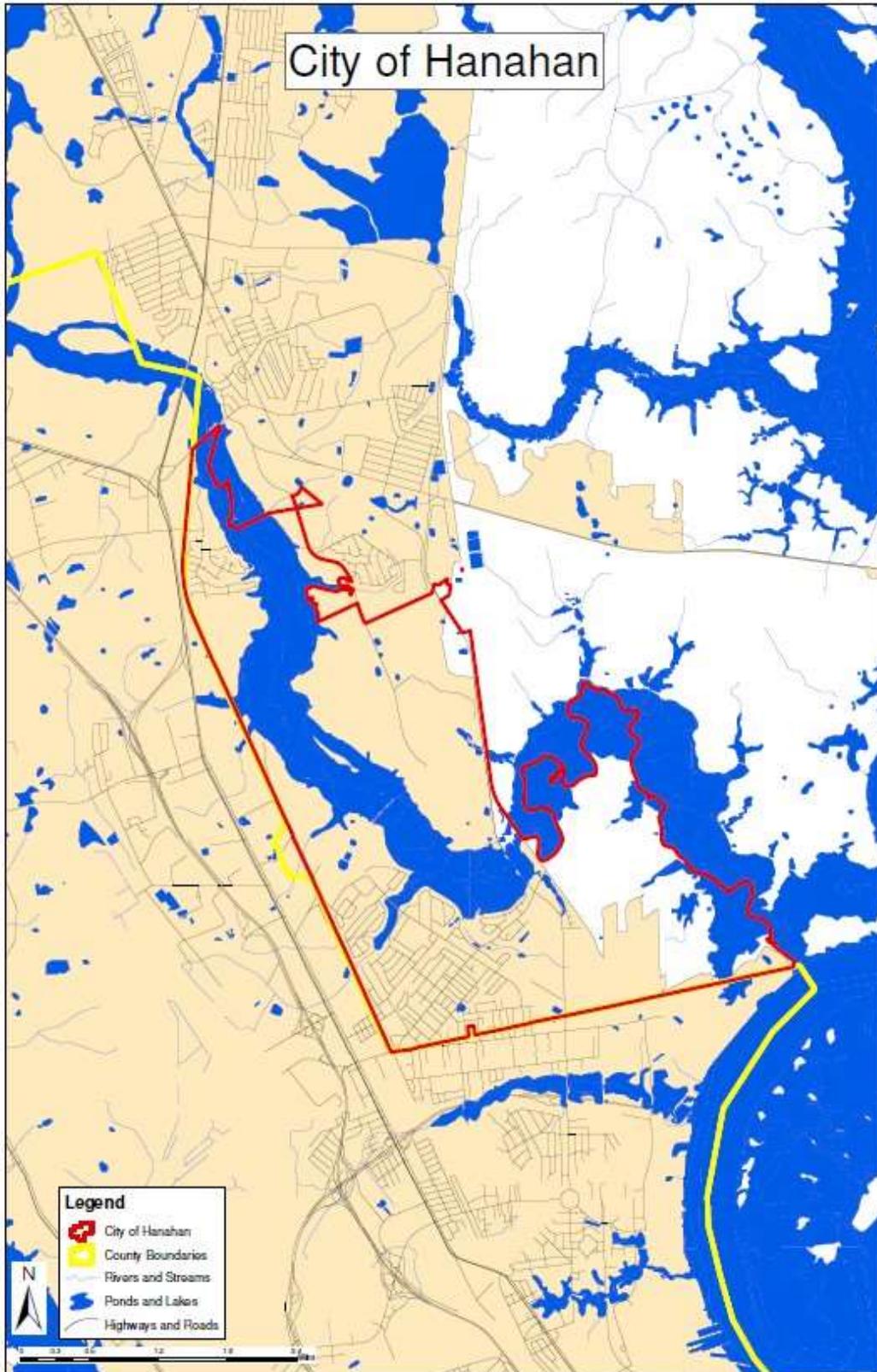
SCDHEC Bureau of Water
Water Pollution Compliance & Enforcement
2600 Bull Street
Columbia, SC 29201-1708

All reports will include:

- The status of the City of Hanahan compliance with permit conditions, an assessment of the appropriateness of the identified BMP under Part 4, progress towards achieving the statutory goal of reducing the discharge of pollutants to the MEP, and the measurable goals for each of the minimum control measures;
- Results of information collected and analyzed, if any, during the reporting period, including monitoring data used to assess the success of the program at reducing the discharge of pollutants to the MEP;
- A summary of the stormwater activities the City of Hanahan plans to undertake during the next reporting cycle (including an implementation schedule);
- Proposed changes to the City of Hanahan SWMP, including changes to any BMP or any identified measurable goals that apply to the plan's elements; and
- Notice that the City of Hanahan is relying on another entity to satisfy some of their permit obligations (if applicable).
- Information requested in the SMS4 general permit including, but not limited to: sections 1.4.7, 3.1.1.1, 3.2.1.1, 3.2.1.2.2, 3.3.6, 4.1.6 and in the additional conditions applicable to NPDES MS4 permits contained in Appendix B of the SMS4 general permit.

Appendix A

City of Hanahan Urbanized Area



Appendix B

TMDL Monitoring and Assessment Plan

City of Hanahan

TMDL Monitoring and Assessment Plan



December 2014

Introduction

The purpose of this Total Maximum Daily Load (TMDL) Monitoring and Assessment Plan is to establish the procedures and protocols that the City of Hanahan will utilize when, and if, a non-point source related TMDL is approved in a watershed into which the City's municipal separate storm sewer system (MS4) discharges. Currently the only existing approved TMDL in the Hanahan area is the Charleston Harbor, Cooper, Ashley and Wando Rivers Dissolved Oxygen (DO) TMDL, however the wasteload allocation (WLA) for that TMDL is for continuous non-stormwater discharges (i.e. industrial and wastewater treatment plant discharges) only. The Charleston Harbor TMDL states that "available data and modeling indicate that regulated and unregulated stormwater nonpoint sources do not contribute to the allowable DO depression" and the TMDL does not contain any wasteload allocations for non-point source/stormwater runoff. The City does understand that there could be other TMDLs developed in the future for which there will need to be a monitoring and assessment plan and will therefore implement the following procedures within twelve (12) months of the EPA-approval or effective date of a new TMDL.

TMDL Monitoring and Assessment Plan

The monitoring plan to measure the pollutant levels discharged from SMS4 outfalls to waters subject to any future TMDLs shall include:

- a. A schedule for monitoring activities to be initiated no more than eighteen (18) months from the effective date of the TMDL.
- b. Requirements to monitor the pollutants of concern (POC), on a frequency necessary to determine statistically significant seasonal pollutant loads baseline, with duration of not less than two (2) years. Minimum frequency and representativeness are stipulated as follows:
 - i. Samples and measurements taken for the purpose of the TMDL Monitoring Plan shall:
 - (1) Be representative of the SMS4 discharges,
 - (2) Be reasonably distributed in time, while maintaining representative sampling,
 - (3) Not be terminated for the purpose of preventing the analysis results from a permit or water quality violation,
 - (4) Describe and consider frequency, mass and/or rate of discharge, as appropriate, and,
 - (5) Be expressed in terms of units or measurements consistent with the requirements contained in the wasteload allocations (WLA).
 - ii. The information contained in the TMDL Monitoring Plan shall include:
 - (1) Monitoring locations, appropriate for representative data collection
 - (2) Explanation of why monitoring is being conducted for selected locations

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- (3) A description of whether the location(s) are representative and contribute to pollutant loads,
 - (4) An indication the seasons during which sampling is intended,
 - (5) The pollutant of concern, or its surrogate(s), as a sampling parameter,
 - (6) Description of the sampling equipment, and,
 - (7) A rationale supporting the proposed monitored location(s) as reflective of water quality concerns to the maximum extent practical (MEP).
- iii. The TMDL monitoring plan shall focus on the pollutant of concern, or its surrogates, to characterize the quality and quantity of the SMS4 permitted discharges to evaluate the progress toward the WLA and/or Water Quality Standards (WQS) attainment by implementing one, or a combination, of the following strategies to the MEP:
- (1) In-stream monitoring, and/or
 - (2) Outfall monitoring.
- Monitoring location(s) should be selected based on one, all, or a combination of the following basis:
- (1) Percent (%) of MS4 area draining to the WQMS, at least 25%,
 - (2) Collection of a representative contributing watershed,
 - (3) Inclusion of the entire TMDL watershed within the MS4.
- iv. Established field and sampling protocols shall be followed when characterizing MS4 discharges, such as:
- (1) Guidance for collecting samples under the stormwater permitting program while fulfilling NPDES stormwater sampling needs is provided in the NPDES Stormwater Sampling Guidance Document (EPA 833-8-92-001) and it is incorporated by reference herein. It can be found by visiting, <http://www.epa.gov/npdes/pubs/owm0093.pdf>
 - (2) Technical assistance and support for MS4 subject to NPDES program regulations for storm water point source discharges can be found in the Guidance Manual for the Preparation of NPDES Permit Applications for Discharges from Municipal Separate Storm Sewer Systems (EPA-833-B-92-002) and it is incorporated by reference herein. Visit, <http://www.epa.gov/npdes/pubs/owm0246.pdf>
- v. The City may collect composite samples using different protocols than those indicated above with respect to the time duration subject to the approval of SC DHEC.
- vi. Where field analysis does not involve analytical methods approved under 40 CFR 136, the City shall provide a description of the method used including the name of the manufacturer of the test method along with the range and accuracy of the test.

-
- vii. When no analytical method is approved, the City may use any suitable method but must provide a description of the method.
 - viii. For each monitoring location selected in above, samples of stormwater discharges shall be collected at a minimum of once per season per year.
 - ix. Samples collected for laboratory analysis for all wet weather flows discharged from the SMS4, shall be analyzed for the POC, or surrogates, in the TMDL.
 - x. For SMS4 discharges to tidal influenced waters, alternative accepted sampling protocols may be used to collect the samples. A description of the methodology used shall be provided as required by SC-R 61-9 122.26(d)(1)(iv)(D) & (d)(2)(iii). Adherence to the MEP is expected. Documentation of any deviation is required.
- c. Biological monitoring may be appropriate at some locations to demonstrate the recovery of biological communities after implementation of stormwater control measures. Monitoring locations in receiving waters must be at least both upstream and downstream of major MS4 discharges, with a frequency of at least annual basis for the permit term. Regardless of, the monitoring type, representativeness of the location, pollutant(s) of concern and/or parameters to be sampled, description of sampling equipment and sampling frequency of ambient waters should be strategically designed to demonstrate the level of progress made towards meeting the applicable WLA and addressing impairments in the receiving and/or in downstream waters;
 - d. For each pollutant of concern, the City shall report on the progress of the characterization of the relative pollutant levels from various SMS4 discharges to TMDL waters. Resulting data shall be included in every annual report following the commencement of monitoring for TMDL pollutant characterization.

Assessment of achieving the WLA/WQS will consist of the following:

- a. Process and schedule for assessing the monitoring data to prioritize areas of the SMS4 that will be targeted for implementation of BMPs,
- b. Process and schedule for selection of appropriate BMPs that will implement the WLA to the MEP, will protect water quality, and will satisfy the appropriate water quality requirements of the Clean Water Act, and,
- c. Updates to TMDL Monitoring and Assessment Plans to be submitted in each annual report.
- d. Progress on the TMDL Monitoring and Assessment Plan shall be documented in the Annual Report.

TMDL Implementation and Analysis

The City shall initiate the monitoring described above. Any monitoring data and information generated from the previous year of the monitoring program to satisfy the provisions of the MS4 Permit will be made available to SC DHEC upon request.

The City shall complete and submit TMDL Implementation Plans for approved TMDLs within 48 months from the new TMDL effective date.

TMDL Implementation Plans submitted to SC DHEC Bureau of Water shall describe the following:

- a. Assessment of the monitoring data. Where long-term data is available, this assessment should include an analysis of the data to show trends;
- b. Prioritization of areas targeted for BMP implementation and underlying rationale;
- c. Structural and nonstructural BMPs to address the WLA. The City will include a brief explanation of why the BMPs are selected (e.g., expected load reductions or percent of capture); and,
- d. Schedule for completing BMP implementation as soon as practicable. The schedule shall describe all of the BMP implementation activities that are expected to occur during the current and the next permit term. In addition to the BMP implementation activities that are expected to occur during the current permit cycle, the TMDL Implementation Plan shall include proposed monitoring to be used to evaluate the effectiveness of the BMP and facilitate the iterative revision of the BMP Implementation Plan to achieve progress towards addressing the TMDL's WLA as long as the intended uses are not supported.

The City shall implement those elements of the TMDL Implementation Plan that are scheduled to occur within the term of the MS4 permit. Progress on the TMDL Implementation and Analysis shall be documented in the Annual Report.

Should there be no water quality improvement of the discharges from permitted SMS4 resulting from BMP implementation, the City understands that they may be required to implement additional control measures or make changes to the TMDL implementation plan.

Appendix C

City of Hanahan Stormwater Management Ordinance

Ordinance No.9-2014

Stormwater Management Ordinance, City of Hanahan, SC

December 9, 2014

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Division 9	Charges and Fees	
Sec.	9.1	Funding
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DIVISION 1 GENERAL PROVISIONS

This ordinance shall be known as the "Stormwater Management Ordinance of the City of Hanahan, South Carolina".

Sec. 1.2 Authority.

This ordinance is adopted pursuant to the authority conferred upon the City of Hanahan by the South Carolina Constitution, Act No. 194 of the Acts and Joint Resolutions of 1971 enacted by the General Assembly of the State of South Carolina, approved April 23, 1971, in 1976 South Carolina Code of Laws Sections 4-9-30, 4-9-40, 5-7-30, and 5-7-60.

Sec. 1.3 Jurisdiction.

The boundaries and jurisdiction of this Ordinance shall extend to the corporate limits of the City, including all areas hereafter annexed thereto, and such additional areas lying outside the corporate limits of the City as shall be approved by City Council.

Sec. K4 Findings

The Hanahan City Council makes the following findings:

- (a) Uncontrolled stormwater runoff may have significant, adverse impact on the health, safety and general welfare of the City of Hanahan and the quality of life of its citizens. The potential impacts of uncontrolled stormwater can lead to the degradation of water quality and general *riverine* ecosystem through excessive or illegal pollutant discharges, erosion, and flooding thereby limiting or removing its designated and potential uses.
- (b) The City of Hanahan is required by federal law (33 U.S.C 1342(p) and 40 CFR 122.26) to obtain a NPDES permit from the South Carolina Department of Health and Environmental Control ("SCDHEC") for stormwater discharges from the City of Hanahan's stormwater systems. The NPDES permit requires that the City of Hanahan develop, implement, and enforce a stormwater management program (SWMP) designed to reduce the discharge of pollutants from their small municipal separate storm sewer systems (SMS4) to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act.

Sec. 1.5 Purpose.

- (a) It is the purpose of this ordinance to protect, maintain, and enhance water quality and the environment of the City of Hanahan and the short-term and long-term public health, safety, and general welfare of the citizens of the City of Hanahan. This ordinance is also designed to minimize property damage by establishing requirements and procedures to control the potential adverse effects of increased stormwater runoff and related pollutant loads associated with both future development and existing developed land. Proper management of stormwater runoff will further the purpose of this Ordinance to insure a functional drainage system, reduce the effects of development on

land and stream channel erosion, attain and maintain water quality standards, enhance the local environment associated with the drainage system, reduce local flooding, maintain to the maximum extent practical pre-developed runoff characteristics of the area in terms of flow rate, volume and pollutant concentration, and facilitate economic development while mitigating associated pollutant, flooding, erosion, and drainage impacts.

- (b) It is further the purpose of this ordinance to direct the development and implementation of a Stormwater Management Program (SWMP) and to establish legal authority which authorizes or enables the City of Hanahan at a minimum to:
- (1) Comply with State and Federal requirements related in stormwater management developed pursuant to the Clean Water Act;
 - (2) Prohibit illicit discharges to the City of Hanahan stormwater management systems and facilities;
 - (3) Control to the maximum extent practical the discharge to the City of Hanahan stormwater management systems and facilities and receiving waters of spills, dumping, or disposal of materials other than stormwater;
 - (4) Address specific categories of non-stormwater discharges and similar other incidental non-stormwater discharges listed in the SWMP;
 - (5) Require erosion and sediment controls to protect water quality on all applicable new and re-development projects both during and after construction;
 - (6) Where necessary, require stormwater discharge rate and volume control during and following development, redevelopment, or construction;
 - (7) Define and implement procedures of site plan review and site inspection of all applicable construction projects within regulated areas of the City of Hanahan;
 - (8) Control the discharge from the City of Hanahan's stormwater management systems and facilities of pollutants in such quantity that water quality standards are met or to otherwise address post-construction, long-term water quality. This includes the necessary means needed to comply with State and Federal regulations regarding stormwater management quantity and quality;
 - (9) Define procedures for addressing citizen complaints of stormwater-related issues within the City of Hanahan;
 - (10) Provide for adequate long term operation and maintenance of Best Management Practices (BMPs);
 - (11) The City of Hanahan shall require DHEC construction general permit coverage, the City must receive notification from DHEC's Office of Ocean and Coastal Resource Management that states the proposed project is consistent with the Coastal Zone Management Plan;

- (12) Have right of entry to carry out inspections, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the City of Hanahan storm sewer system and receiving waters;
 - (13) Encourage the use of innovative, non-traditional strategies (i.e. as low impact development practices) to control stormwater discharges;
 - (14) Encourage the creation of stream buffers and preservation of natural spaces to provide areas that could be used for flood storage, stormwater treatment and control, and recreation. Such areas may be required in special protection areas needed to protect, maintain, or enhance water quality and protect property from flooding problems;
 - (15) Develop, implement, and enforce action plans to address pollutant load reductions required in impaired waterbodies and to work towards compliance with Total Maximum Daily Loads (TMDLs) established by EPA or SCDHEC and to work towards meeting water quality standards.
 - (16) Enable enforcement of all said authorizations.
- (c) It is still further the purpose of this ordinance to establish review authority for the City of Hanahan's Building and Codes Department for establishing consistency of construction projects with the City of Hanahan SWMP.

Sec. 1.6 Construction and Scope.

- (a) The boundaries and jurisdiction of this Ordinance shall extend to the corporate limits of the City, including all areas hereafter annexed thereto, and such additional areas lying outside the corporate limits of the City as shall be approved by City Council.
- (b) The City of Hanahan's Building and Codes Director or their designee shall be primarily responsible for the coordination and enforcement of the provisions of this Ordinance and the SWMP.
- (c) The application of this Ordinance and the provisions and references expressed herein shall be the minimum stormwater management requirements and shall not be deemed a limitation or repeal of any other ordinances of the City of Hanahan or powers granted to the City of Hanahan by the State of South Carolina statutes, including, without limitation, the power to require additional or more stringent stormwater management requirements. If site characteristics on new development and for redevelopment indicate that complying with these minimum requirements will not provide adequate designs or protection for local property, residents, or the environment, the property owner, operator, or person responsible for land disturbing activities is required to provide additional and appropriate management practices, control techniques, system design, and engineering methods to attain an adequate level of protection.

Sec. 1.7 Severability.

Should any word, phrase, clause or provision of this ordinance be declared invalid or unconstitutional by a court of competent jurisdiction, such declaration shall not affect this ordinance as a whole or any part hereof except that specific provision declared by such court to be invalid or unconstitutional.

Sec. 1.8 Rules of **Language and Interpretation.**

- (a) The word "shall" is mandatory; the word "may" is permissive.
- (b) The particular shall control the general.
- (c) Words used in the present tense shall include the future, and words used in the singular include the plural, and the plural the singular, unless the context clearly indicates the contrary.
- (d) All public officials, bodies and agencies to which reference is made are those of the City of Hanahan, unless otherwise indicated.

Sec. 1.9 Relationship with other laws, regulations and ordinances

Whenever the provisions of this Ordinance impose more restrictive standards than are required in or under any other law, regulation or ordinance, the requirements contained in this article shall prevail. Wherever the provisions of any other law, regulation or ordinance require more restrictive standards than are required in this article, the requirements of such law, regulation or ordinance shall prevail.

Sec. 1.10 Amendments .

The Hanahan City Council, may, in its discretion and following procedures specified by State law, amend or change this Ordinance or adopt additional regulations or resolutions to implement this Ordinance, implement the SWMP, or to otherwise further the goal of protecting the quality of the waters into which the City of Hanahan storm sewer systems outfall.

Sec. 1.11 Conflicting Ordinances Repeated.

All ordinances or parts of ordinances related to stormwater management in conflict with the provisions of this Ordinance are hereby repealed. This Ordinance shall prevail in any and all conflicts with guidelines, manuals, or other publication's pertaining to stormwater management.

Sec. 1.12 Definitions.

"Applicant" is a person, firm, governmental agency, partnership, or any other entity who seeks to obtain approval under the requirements of this Ordinance and who will be responsible for the land disturbing activity and related maintenance thereof.

"As-built drawings" are revised construction drawings that show in the installed location of the new facilities on a project, including the stormwater system. This term and "record drawings" shall be synonymous.

"Best Management Practices (BMPs)" are any structural or non-structural measure or facility used for the control of stormwater runoff, be it for quantity or quality control. BMPs also includes schedules of activities, prohibitions of practices, maintenance procedures, treatment requirements, operating procedures, and other management practices to control site runoff, spillage or leach's, sludge or waste disposal, drainage from raw material storage, or otherwise prevent or reduce the pollution of waters of the State.

“Construction” or “Construction Activity” is activity involving clearing, grading, transporting, filling, or any other activity which results in a change in the natural cover or topography that may cause erosion and contribute to sediment and alter the quality and quantity of stormwater

“Construction Activity Application” means the set of drawings, specifications, design calculations, and other documents necessary to demonstrate compliance with this Ordinance.

“Department” means the City of Hanahan’s Department of Building and Codes, the Building and Codes Director or any of that department’s duly authorized representatives or designees.

“Developer” means any person, or others who acts in their own behalf, that is required to submit an application for approval of construction activities and is thereafter responsible for maintaining compliance with this Ordinance and conditions of the approved application.

“Director” means the Building and Codes Director of the City of Hanahan’s Department of Building and Codes.

“Erosion” means the general process by which soils or rock fragments are detached and moved by the action of wind, water, ice, and gravity.

“Easement” is an authorization by a property owner to the general public, a corporation, or a certain person or persons for the use of any designated part of their property for a specific purpose.

“Flood/flooding” is a temporary rise in the level of water which results in the inundation of areas not ordinarily covered by water.

“Hazardous material” is tiny item or agent (biological, chemical, physical) which has the potential to cause harm to humans, other living organisms, or the environment, either by itself or through interaction with other factors.

“Illicit connection” means a connection to the City of Hanahan stormwater management system or facility which results in a discharge that is not composed entirely of stormwater runoff except discharges pursuant to an NPDES permit (other than the NPDES MS4 permit for the City of Hanahan).

“Improper disposal” means any disposal other than through an illicit connection that results in an illicit discharge, including, but not limited to the disposal of used oil and toxic materials resulting from the improper management of such substances.

“Illicit discharge” or “Illegal discharge” means any activity which results in a discharge to the City of Hanahan stormwater management system or facility or receiving waters that is not composed entirely of stormwater except (a) discharge pursuant to an NPDES permit (other than the NPDES for the City of Hanahan) and (b) discharges resulting from the fire-fighting activities.

“Low Impact Development (LID)” is a set of principles and design components used to manage stormwater runoff by mimicking natural conditions and limiting pollutant transport through source control.

"Maintenance" means any action necessary to preserve stormwater system component, including conveyances, facilities and BMPs in proper working condition, in order to serve the intended purposes set forth in this ordinance and to prevent structural failure of such components.

"MS4" means municipal separate storm sewer system and includes all conveyances or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) which is (a) owned or operated by the City of Hanahan; (b) designed or used for collecting or conveying stormwater; (c) not a combined sewer system; and (d) not part of a Publicly Owned Treatment Works (POTW).

"New Development" or "Re-Development" means any of the following actions undertaken by any person, including, without limitation, any public or private individual or entity:

- (a) The construction, installation, or alteration of land, a structure, impervious surface or drainage facility;
- (b) Clearing, scraping, grubbing or otherwise significantly disturbing the soil, vegetation, mud, sand or rock of a site; or
- (c) Adding, removing, exposing, excavating, leveling, grading, digging, burrowing, dumping, piling, dredging, or otherwise disturbing the soil, vegetation, mud, sand or rock of a site.

"NPDES" means National Pollutant Discharge Elimination System.

"NPDES MS4 permit" means the NPDES permit for stormwater discharges issued by SCDHEC pursuant to the Clean Water Act and the federal stormwater discharge regulations (40 CFR 122.26) that allows for restricting pollutant loads as necessary to meet water quality standards.

"Operator" means the person who is operating the property, including an operator or person who is in charge of any activity related to land disturbance, construction or post construction stormwater quality or quantity

"Outfall" or "Discharge point" means the point where a City of Hanahan stormwater management system or facility or other municipal and private systems discharges to waters of the United States.

"Owner" means the property owner, or any person who acts in their own behalf, that submits an application for approval to disturb land or vegetation or encroachment and the person, if so designated by default or on legal documents, as the responsible party for maintenance of a stormwater system(s) and facility(s).

"Person" means any and all persons, natural or artificial and includes any individual, association, firm, corporation, business trust, estate, trust, partnership, two or more persons having a joint or common interest, state or federal or an agent or employee thereof, or any other legal entity,

“Pollutant” means anything which may cause **or contribute** to exceedances of water quality standards, including but not limited to sediment, bacteria, nutrients, dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, **municipal**, and agricultural waste discharged into water.

“Property Owner” means the legal owner of the property.

“Receiving waters” refers to any lakes, bays, sounds, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the State of South Carolina, and all other bodies of surface or underground water, natural or artificial, public or private, inland or coastal, fresh or salt.

“Regulation” means any regulation, rule or requirement prepared by and/or adopted by The Hanahan City Council pursuant to this Ordinance.

“Spill” means any accidental or purposeful discharge of any pollutants, hazardous materials, or other substance which is otherwise potentially detrimental to the designated use of a receiving water.

“SWMP” means the City of Hanahan Stormwater Management Program, which may describe the components to be used by the City of Hanahan to control stormwater discharges, address flooding, and meet water quality standards.

“Stormwater” means stormwater runoff, snowmelt runoff, and surface runoff and drainage.

“Stormwater management” means the collection, conveyance, storage, treatment and disposal of stormwater runoff in a manner to meet the objectives of this ordinance and its terms, including, but not limited to, measures that control the increased volume and rate of stormwater runoff and water quality impacts caused by manmade changes to the land.

“Stormwater management systems and facilities” means those natural and man-made channels, swales, ditches, swamps, rivers, streams, creeks, branches, reservoirs, ponds, drainage ways, inlets, catch basins, pipes, head walls, storm sewers, lakes and other physical works, properties, and improvements which transfer, control, convey, or otherwise influence the *movement* of stormwater runoff, be it for quantity or quality control.

“TMDL” is a Total Maximum Daily Load wasteload allocation designation. It is a regulatory value developed to represent the amount of a pollutant that a waterbody can incorporate while meeting water quality standards, TMDL is further defined as the legal document developed by EPA and SCDHEC designating the pollutant load a permitted discharge is allowed to input into a waterbody.

“Variance” means the modification of the minimum stormwater management requirements contained in this Ordinance and the SWMP for specific circumstances where strict adherence to the requirements would result in unnecessary hardship and not fulfill the intent of this Ordinance.

“Watercourse” is any natural or man-made conveyance used to transport runoff from one location to the next.

"Watershed" is a drainage area or drainage basin contributing to the flow of stormwater into a receiving watercourse or water body."

"Water Quality" means those characteristics of stormwater runoff that relate to the physical, chemical, biological, or radiological integrity of water.

"Water Quantity" means those characteristics of stormwater runoff that relate to the rate and volume of the stormwater runoff.

Sec. 1.13 Reserved.

DIVISION 2 ORGANIZATION AND ADMINISTRATION

Sec. 2.1 The City of Hanahan Stormwater Management Program.

The SWMP being developed by the City of Hanahan to implement the purposes of this Ordinance, shall serve as the basis for directing the City of Hanahan's efforts to control stormwater. The SWMP is incorporated by reference and is hereby a part of this Ordinance. The SWMP requirements are to be complied with and shall be enforced in accordance with the provisions of this Ordinance.

Sec. 2.2 Coordination with Other Agencies.

The Building and Codes Department may coordinate the City of Hanahan's activities with other federal, state, and local agencies, which manage and perform functions relating to the protection of receiving waters through written agreement. The Building and Codes Department should coordinate with State and Federal Agencies having jurisdiction.

Sec. 2.3 Right-Of-Entry.

(u) The Building and Codes Director or their designee shall have right-of-entry on or upon the property of any person subject to this Ordinance issued hereunder. The Building and Codes Director or their designee shall, upon showing satisfactory credentials, be provided ready access to the necessary parts of the premises for the purposes of inspecting, monitoring, sampling, inventorying, examining and copying of records, and performing any other duties necessary to determine compliance with this Ordinance.

(b) Where the property owner or operator has security measures in force requiring proper identification and clearance before entry onto the premises, the person shall make necessary arrangements with the necessary parties so that, upon presentation of suitable identification, the Building and Codes Director or their designee will be permitted to enter without delay for the purposes of performing such responsibilities identified in

Sec. 2.4 Reserved.

DIVISION 3 STORMWATER QUANTITY AND QUALITY MANAGEMENT REQUIREMENTS

Sec. 3.1 Regulations.

(a) The Building and Codes Department shall be responsible for day to day coordination, implementation, and enforcement of this Ordinance and the SWMP as well as the long-term management of the City's drainage. Without limitation, the Building and Codes Department shall have the following authority:

- (1) To issue any approval, certification, or license that may be required to comply with this Ordinance,
- (2) To deny a connection to a the City of Hanahan stormwater management system or facility, if State or Federal requirements and this Ordinance are not met.
- (3) To create and enact a the City of Hanahan's Stormwater Design Standards Manual. The Design Manual may be used to convey design and engineering standards, construction management processes and procedures, and other aspects necessary for compliance with this Ordinance.
- (4) The Hanahan City Council shall approve the original adoption and substantive amendment's of the Design manual.
- (5) Technical revisions of the Design manual shall be approved through the Building and Codes Department,
- (6) To require the submittal of an application for all applicable construction activities that result in land disturbance of an area of greater than or equal to one (1) acre or disturbing less than one acre if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more, or is located within 1/2 mile of a receiving waterbody and disturbs more than 0.5 acre.

These applications must include a plan to control stormwater pollutants and other components detailed in the City of Hanahan's Stormwater Design Standards Manual.

- (7) To require the development of stormwater management and sediment/erosion control plans for all applicable new and re-development projects and enforcement of these plans.
- (8) To approve applicable construction activities and to require as a condition of such approvals, structural or non-structural controls, practices, devices, operating procedures, or other mechanisms to protect public and private property from flooding and erosion and attain TMDL-mandated pollutant load reductions and water quality standards.
- (9) To conduct all activities necessary to carry out the SWMP and other requirements included in this Ordinance and to pursue the necessary means and resources required to properly fulfill this responsibility.

(10) To require appropriate post construction best management practices and appropriate continued maintenance of those best management practices through a properly executed City of Hanahan Stormwater Practices Permanent Maintenance Covenants that shall be submitted with the permit application and recorded with the deed.

(11) To determine appropriate fees, to impose penalties, and to take necessary and appropriate actions to enforce this Ordinance.

(12) To require encroachment permits as necessary.

Sec. 3.2 Prohibitions and Exemptions.

No person shall (1) develop any land, (2) engage in any industry or enterprise, (3) construct, operate or maintain any landfill, hazardous waste treatment, disposal or recovery facility, or any other industrial or related facility, (4) dispose of any hazardous material or toxic substance or other pollutant or (5) otherwise prevent the transport of sediment and other pollutants associated with stormwater runoff beyond their property boundaries without having provided for compliance with this Ordinance.

In cases where an imminent threat to the health or safety of the general public or the environment is suspected, the Building and Codes Director or their designee shall perform said responsibilities to determine if immediate action is necessary. Such responsibilities may be made with or without the consent of the owner or operator. If such consent is refused, the Building and Codes Director or their designee may utilize the enforcement measures authorized in this Ordinance to remove such threat. In such cases, the owner or operator, as the case may be, shall reimburse the City for its direct and related expenses. If the owner or operator, as the case may be, fails to reimburse the City, the City is authorized to file a lien for said costs against the property, file an action in magistrate or civil court for recovery of incurred expenses, and enforce such actions in magistrate or civil court.

The following development activities are exempt from the provisions of this Ordinance.

- (a) Individual single family home construction that is not part of a subdivision development and does not disturb one (1) acre or more.
- (b) Land disturbing activities undertaken on forestland for the production and harvesting of timber and timber products and conducted in accordance with best management practices and minimum erosion protection measures established by the South Carolina Forestry Commission pursuant to Section 48-18-70 of the 1976 Code of Laws of South Carolina, as amended. Timber harvesting practices that are conducted in preparation for future development shall require a land disturbance permit.
- (c) Land disturbing activities on agricultural land for production of plants and animals, including but not limited to: forages and sod crops, grains and feed crops, tobacco, cotton, and peanuts; dairy animals and dairy products; poultry and poultry products; livestock, including beef cattle, sheep, swine, horses, ponies, mules, or goats, including the breeding and grazing of these animals; bees, fur animals, and aquaculture, The construction of an agricultural structure that requires the disturbance of one or more acres, such as, but not limited to, broiler houses, machine sheds, repair shops, coops,

barns, and other major buildings shall require the submittal and approval of a Land Disturbance Application prior to the start of the land disturbing activity.

Sec. 3.3 Design and Engineering Standards.

Design and engineering standards must define the desired level of quality and performance for stormwater management systems on all applicable construction activities in order to meet the purpose of this Ordinance. The standards establish the minimum technical requirements needed to express compliance through calculations, maps and drawings, or others as necessary.

The Building and Codes Department is authorized to develop and adopt policies, criteria, specifications, and standards for the proper implementation of the requirements of this Ordinance, Federal and State laws and the SWMP and to provide a sound technical basis for the achievement of stormwater management, including water quality and quantity objectives. These standards are presented in the City of Hanahan Stormwater Design Standards Manual.

It shall be the responsibility of the property owner, operator, or person responsible for land disturbing activities to provide adequate controls to meet the design and engineering standards.

Sec. 3.4 Construction Activity Approval Process.

A submittal shall be made for all applicable construction activities for review by the Building and Codes Department. The entire application process and requirements are described in Stormwater Design Standards Manual.

It shall be the responsibility of the applicant (property owner, operator, or person responsible for construction activities) to provide a complete application package that meets the requirements of this Ordinance, the SWMP, and other State and Federal regulations.

Sec. 3.5 Stormwater Design Standards Manual.

The Building and Codes Department has developed and adopted a Stormwater Design Standards Manual. The Manual includes design standards, procedures and criteria for conducting hydrologic, hydraulic, pollutant load evaluations, and downstream impact for all components of the stormwater management system. Although the intention of the manual is to establish uniform design practices, it neither replaces the need for engineering judgment nor precludes the use of information not presented. Other accepted engineering procedures may be used to conduct hydrologic, hydraulic and pollutant load studies if approved by the Building and Codes Department. The most current version of the SCDHEC BMP Handbook: and/or the SC Coastal Low Impact Development (LID) Manual can also be utilized for certain design practices.

The Stormwater Design Standards Manual shall contain at a minimum the following components:

- (a) Construction Activity Application contents and approval procedures;
- (b) Construction Completion and Closeout processes;

- (c) Hydrologic, hydraulic, and water quality design criteria (i.e., design standards) for the purposes of controlling the runoff rate, volume, and pollutant load. Suggested reference material shall be included for guidance in computations needed to meet the design standards;
- (d) Information and requirements for new and re-development projects in special protection areas necessary to address TMDLs, known problem areas and other areas necessary to protect, maintain, and enhance water quality and the environment of the City of Hanahan and the public health, safety, and general welfare of the citizens of the City of Hanahan.
- (e) Construction document requirements;
- (f) Minimum easement requirements;
- (g) Required and recommended inspection schedules and activities for all components of the stormwater management system, including construction-related BMPs.

The Manual shall be updated periodically to reflect the advances in technology and experience gathered with time.

Sec. 3.6 Ownership and City of Hanahan Participation.

- (a) Property owners are responsible for maintaining stormwater quantity and quality facilities and all conveyance structures located on their property. Prior to the issuance of a permit approval for a construction activity, the property owner shall execute a legal document entitled "City of Hanahan Covenants for Permanent Maintenance of Stormwater Systems". The property owner shall record the Covenants in the Office of The Register of Deeds in Berkeley County. The location of the Facility, the recorded location of the Covenants document, and a statement of the property owner's responsibility for maintenance shall be included and also shown on a plat. In the case of an operator other than the property owner, a copy of a maintenance agreement between the operator and the property owner shall be included with the Covenants, defining the operators' duties and responsibilities and that the property owner shall be responsible for maintenance activities upon the termination of the agreement.
- (b) The property owner shall grant to the City of Hanahan right of entry beginning or ending at a public street or other access point that allows for public inspection and emergency repair of all components of the drainage system, including all conveyances and all water quantity and quality control facilities. This right of entry will allow the City to inspect and repair drainage systems but the City is not responsible for routine and for long-term maintenance of privately owned detention facilities or swales. At the request of the Building and Codes Director or their designee, the property owner shall grant to the City of Hanahan right-of-ways.
- (c) Stormwater quantity and quality control facilities shall be located so that required easements can be effectively used and ownership and maintenance responsibility can be clearly defined in deeds and plats.
- (d) The City of Hanahan may in its sole discretion either accept or decline ownership and maintenance of all or part of a stormwater system.

- (e) The minimum maintenance requirements will be performed at necessary intervals by the property owner or operator during construction and for as long as a stormwater management system or component is in use. Failure to perform such activities will constitute a violation of this Ordinance.
- (f) If a facility or any portion of the stormwater system is not being maintained as required, the Building and Codes Director or their designee will notify the property owner or operator in writing. If property owner or operator fails to repair or maintain the facility within the allotted time, the Building and Codes Department may authorize the work to be performed by the City or others. In such cases, the property owner or operator shall reimburse the City for its direct and related expenses. If the property owner or operator fails to reimburse the City, the City is authorized to file a lien for said costs against the property, file an action in magistrate or civil court for recovery of incurred expenses, and enforce such actions in magistrate or civil court.
- (g) A property owner or operator may hire or contract others to perform necessary maintenance actions, but the City of Hanahan will hold the person named in the Covenants as the responsible party should legal actions described in (g) be necessary.
- (h) When the Building and Codes Director or their designee determines that additional storage capacity or pollution reduction beyond that required by the applicant for on-site stormwater management is necessary in order to enhance or provide for the public health, safety and general welfare, to correct unacceptable or undesirable existing conditions or to provide protection in a more desirable fashion for future development, the City of Hanahan may:
 - (1) require that the applicant grant any necessary easements over, through or under the applicant's property to provide access to or drainage for such a facility;
 - (2) require that the applicant obtain from the owners of property over, through or under where the stormwater management facility is to be located, any easements necessary for the construction and maintenance of same;

Sec. 3.7 Maintenance, Construction, Inspection, and Notice of Termination (NOT).

Maintenance of the stormwater management system is critical for the achievement of its purpose of controlling stormwater runoff quantity and quality and the short-term and long-term public health, safety, and general welfare of the citizens of the City of Hanahan.

- (a) A maintenance plan for the stormwater management system shall be included in an application to perform a construction activity to cover activities to be conducted during and after construction. As part of the maintenance plan, the property owner or operator of such facility shall specifically agree through signature or Covenants to be responsible for keeping the system and facilities in working order. The Building and Codes Department shall develop procedures to provide reasonable assurance that maintenance activities are performed for both the City of Hanahan and privately maintained systems. The Building and Codes Department shall also define procedures for transferring maintenance responsibilities to another entity in the Stormwater Design Standards Manual.

- (b) The Building and Codes Department shall define procedures in the Design Standards Manual for conducting site inspections during construction and until a stormwater management system or facility is no longer in use. Such inspections may be performed by the City staff or another operator. By means of this Ordinance, The City of Hanahan has the authority to levy fees for inspections and re-inspections as described in the Stormwater Design Standards Manual.
- (c) As part of any application to perform a construction activity, the applicant shall submit their own maintenance and inspection schedules to be implemented during construction and for as long as a stormwater management system or facility is in use. Required and recommended schedules for BMP maintenance and inspection are to be provided in the Stormwater Design Standards Manual.
- (d) Annual inspection reports will be required for each individual construction project for utilization in producing the City's NPDES Phase II MS4 Annual Report.
- (e) If the construction is to be phased, no stage work related to the construction of stormwater management facilities shall commence until the preceding stage of work is completed in accordance with an approved application to perform a construction activity. The procedure for construction phases beginning and ending and what constitutes such conditions shall be developed.
- (f) The applicant shall notify the Building and Codes Director or their designee before commencing any work: to implement the approved Construction Activity Application and upon completion of any phase or designated component of the site. Notification schedules shall be provided in the Stormwater Design Standards Manual. All self-inspections, maintenance actions, BMP replacements, and changes to the approved application shall be documented and presented upon request to the Building and Codes Director or their designee.
- (g) The Notice of Termination (NOT) process must be completed by the Building and Codes Department prior to any of the following actions, as applicable:
 - (1) The use or occupancy of any newly constructed components of the site.
 - (2) Final acceptance of any road into the Official City of Hanahan Road Inventory or designation of road owner and associated stormwater management system.
 - (3) Release of any bond held by the City of Hanahan.
 - (4) Approval and for acceptance for recording of maps, plats, or drawings, the intent of which is to cause a division of a single parcel of land into two or more parcels, and/or acceptable bonding is provided.

Sec. 3.8 Watercourse Protection.

Every person owning or operating property through which a watercourse passes shall keep and maintain that part of the watercourse within the property free of trash, debris, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or operator shall maintain existing privately owned

structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

To assist in the compliance with State and Federal laws and regulations, the Building and Codes Department may develop special protection areas which require additional control of stormwater quality and quantity than provided by minimum design standards. Such areas may consist of watersheds corresponding to established TMDLs, known flooding problems and pollution impairments, or other areas necessary to protect, maintain, and enhance water quality and the environment of the City of Hanahan and the public health, safety, and general welfare of the citizens of the City of Hanahan. These areas can be expected to change with time as development continues and as federal and state law demands.

New stormwater systems created as the result of any new and/or re-development project shall be connected to the existing drainage system in a manner so as not to degrade the integrity of the existing system, whether natural or manmade, and shall have demonstrated this to the Building and Codes Department prior to issuance of the NOT. Discharge points shall be confined to connections with an existing natural or man-made drainage system. When there is a direct stormwater discharge into collection systems not owned and maintained by the City of Hanahan, the owners of these systems shall maintain the right to disapprove new connections to their system.

Sec 3.9 Notification of Spills.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation and maintenance, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into stormwater, the storm drain system, or waters of the State, said person shall take all necessary steps to discover, contain, and cleanup any such releases. The person shall also take immediate steps to protect against future recurrences of the discharge. In the event of such a release of hazardous materials, including but not limited to oils, greases, engine fluids and fuels, chemicals, herbicides and pesticides, and fertilizers, said person shall immediately notify all necessary agencies of the occurrence via emergency dispatch services. This shall include the City of Hanahan's Building and Codes Department. Such notifications of hazardous spills shall be confirmed by written notice addressed and mailed to the Building and Codes Department within five (5) business days of the spill event. In the event of a release of non-hazardous materials, said person shall record an on-site written record of the spill. The owner or operator of such establishment shall retain an onsite written record of any and all spills that will include information on cleanup measures taken and the actions to prevent its recurrence. Such records shall be retained for at least five (5) years. Failure to provide notification of a release as provided above is a violation of this ordinance.

Sec. 3.10 Cleanup Procedures.

The City of Hanahan may develop spill procedures on how spills are cleaned up, and who is responsible for the cleanup in terms of the activities to be performed and cost of such actions.

Sec 3.11 Reserved.

DIVISION 4 DETECTION AND **REMOVAL OF ILLICIT CONNECTIONS AND DISCHARGES AND IMPROPER DISPOSAL**

Sec. 4.1 Illicit Connections, Illicit Discharges, and Improper Disposal.

- (a) It is unlawful for any person to connect any pipe, open channel, or any other conveyance system that discharges anything, except stormwater or other approved discharges into the City of Hanahan stormwater management system or facility or a Water of the State.
- (b) It is unlawful for any person to continue the operation of any such illicit connection regardless of whether the connection was permissible when constructed. Improper connections in violation of this Ordinance must be disconnected and redirected, if necessary, to the satisfaction of the Building and Codes Director or their designee and any other federal, state, or local agencies or departments regulating the discharge.
- (c) It is unlawful for any person to throw, drain, or otherwise discharge to a City of Hanahan stormwater management system or facility or to cause, permit, or allow a discharge that is composed of anything except stormwater or unpolluted water which is approved by the Building and Codes Department,
- (d) The Building and Codes Department shall develop procedures for detecting, tracking, and eliminating illicit discharges and improper disposals to the stormwater system.
- (e) The Building and Codes Director or their designee may require controls for or exempt from the prohibition provision in (a), (b), and (c) above the following, provided that a reasonable determination is made that they are not a significant source of pollution:
 - (1) Unpolluted industrial cooling water, but only under the authorization and direction of the Building and Codes Director or their designee and if an appropriate Industrial NPDES permit is in place.
 - (2) Water line flushing, diverted stream flows, rising ground waters, and uncontaminated pumped ground waters, and uncontaminated ground water infiltration.
 - (3) Discharges from potable water sources, foundation drains, air conditioning condensation, landscape irrigation, springs, water From crawl space pumps, footing drains, lawn watering, individual car washing, dechlorinated swimming pool discharges, flows from riparian habitats and wetlands, and street wash water.
 - (4) Discharges or flows from fire fighting.
- (f) The Building and Codes Department may develop procedures for allowing other non-stormwater discharges.

Sec. 4.2 Detection of illicit Connections and Improper Disposal.

- (a) The Building and Codes Department shall take appropriate steps to detect and eliminate illicit connections to the City of Hanahan stormwater systems, including the adoption

of a program to screen illicit discharges and identify their source or sources, perform inspections, and levy fines if not removed.

- (b) The Building and Codes Department shall take appropriate steps to detect and eliminate improper discharges. These steps may include programs to screen for disposal, programs to provide for public education and public information, inspection, levying fines, and other appropriate activities to facilitate the proper management and elimination of illicit discharges.

Sec 4.3 Waste Disposal Prohibitions.

No person shall throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, left, or maintained, in or upon any public or private property, driveway, parking area, street, alley, sidewalk, component of the storm drain system, any refuse, rubbish, garbage, litter, pet fecal matter, or other discarded or abandoned objects, articles, and accumulations, so that the same may cause or contribute to pollution. Yard debris, including natural foliage, may be deposited in the public right of way but not in or on any stormwater conveyance structures, including inlets and gutters, but only if a collection service is available. Wastes in proper waste receptacles may be placed in the street for collection, but again only if collection by or through the City of Hanahan is in place. No waste or yard debris shall be placed in the street without such a collection service.

Sec. 4.4 Reserved.

DIVISION 5 MONITORING AND INSPECTIONS

Sec. 5.1 Monitoring.

The Building and Codes Department may monitor the quantity and concentration of pollutants in stormwater discharges from the areas and/or locations designated in the City of Hanahan's SWMP.

Sec. 5.2 Inspections.

- (a) The Building and Codes Director or their designee, bearing proper credentials and identification, may enter and inspect all properties for regular inspections, periodic investigations, monitoring, observation measurement, enforcement, sampling and testing, to effectuate the provisions of this ordinance and the SWMP programs. Such inspections may be made at active construction sites or at any stormwater management system or facility in perpetuity. The Building and Codes Director or their designee shall duly notify the owner of said property or the representative on site and the inspection shall be conducted at reasonable times.
- (b) Upon refusal by any property owner to permit an inspector to enter or continue an inspection, the inspector shall terminate the inspection or confine the inspection to areas concerning which no objection is raised. The Building and Codes Director or their designee shall document the refusal and the grounds for such and promptly seal: appropriate compulsory process.

- (c) In the event that the Building and Codes Director or their designee reasonably believes that discharges from the property into a the City of Hanahan stormwater management system or facility may cause an imminent and substantial threat to human health or the environment, the inspection may take place at any and without notice to the owner of the property or a representative on site. The inspector shall present proper credentials upon reasonable request by the owner or representative.
- (d) Inspection reports shall be maintained in a permanent file located in the Building and Codes Department's office.
- (e) At any time during an inspection or at such other times as the Building and Codes Department or their designee may request information from an owner or representative, the owner or representative may identify areas of their facility or establishment, material, or processes that contain or might reveal a trade secret. If the Building and Codes Director or their designee has no clear and convincing reason to question such identification, all material, processes and information obtained within such areas shall be conspicuously labeled "CONFIDENTIAL — TRADE SECRET." The trade secret designation shall be freely granted to any material claimed to be such by the owner or representative unless there is clear and convincing evidence for denying such designation. In the event the Building and Codes Director or their designee doer not agree with the trade secret designation, the material shall be temporarily designated a trade secret and the owner or representative may request an appeal of the Building and Codes Department's decision in the manner in which all such appeals are handled in this ordinance.

Sec. 5.3 Reserved.

DIVISION 6 ENFORCENIENT, PENALTIES, AND ABATEJYIENT

Sec. 6.1 Enforcement.

- (a) When the City of Hanahan Building and Codes Director or their designee finds that work done for new development and re-development fails to conform to the approved Construction Activity Application, or that the work: has not been done, the City of Hanahan Building and Codes Director or their designee may, as deemed necessary and after due process, by written Notice of Violation (NOV), direct conformity to said approval(s). Actions include:
 - (1) issuing a written order to comply, to suspend work, or to revoke the approval issued;
 - (2) seeking redress through legal action;
 - (3) withholding the release of permanent electric power to the site or certificate of occupancy; and/or
 - (4) withholding or revoking other permits related to the site.

The NOV shrill serve as a legal requirement to remove the violation(s). The written NOV shall be provided to the owner or the person responsible for land disturbing activities stating the nature of the violation, the amount of time in which to correct deficiencies, the date on which an inspection will be made to make sure that corrective action has been performed, and the proposed penalty structure if corrective action is not

taken by the inspection date. After the issuance of the NOV and following due process, the City of Hanahan Building and Codes Director or their designee is hereby given the authority to levy fines as described in this section.

- (b) When the Building and Codes Director or their designee determines that an owner has failed to maintain a stormwater management facility, written NOV shall be provided to the owner or the person in possession, charge or control of such property stating the nature of the violation, the amount of time in which to correct deficiencies, the date on which an inspection will be made to make sure that corrective action has been performed, and the proposed penalty structure if corrective action is not taken. It shall be sufficient notification to deliver the notice to the person to whom it is addressed, or to deposit a copy of such in the United States Mail, properly stamped, certified and addressed to the address used for tax purposes. The NOV may address the entire site or a specific portion of the site so as not to unduly impede the development of areas being managed for the control of stormwater runoff and associated pollutants.
- (c) When the Building and Codes Director or their designee determines that an owner of any property is causing or partially causing flooding, erosion, or non-compliance with water quality standards of this Ordinance, upon providing valid proof of such impacts, the Building and Codes Director or their designee can require owners to remove the proven impact in a concerted, prudent manner and restore the impacted property. A written NOV shall be issued to the owner containing the information stated above. Following the issuance of the NOV and due process, the Building and Codes Director or their designee is hereby given the authority to levy fines as described in this section.
- (d) The City attorney is hereby directed to table all legal actions necessary to correct situations described in (a), (b) and (c), including actions that are necessary to remove from the property such objectionable conditions constituting non-compliance with this Ordinance.
- (e) Nothing contained in this Ordinance shall impair the right or ability of the City attorney to exercise any and all other remedies available, of-law or in equity, including without limitation, the pursuit of injunctive relief, under emergency circumstances where there exists the danger of bodily injury or death.
- (f) The authorized enforcement agency or its appointed agent may obtain injunctive relief to enjoin violations of the provisions of this Ordinance, and any person damaged as a result of such violations may, upon a proper showing of such damages, obtain payment therefore by a civil action.
- (g) The Ordinance may be enforced by any other remedy of law or equity that the Building and Codes Department is authorized to pursue, to include the authorities and powers conferred to local governments by the General Assembly of South Carolina. The penalties and other remedies provided in this Ordinance are cumulative and not exclusive, and may be independently and separately pursued against the same person for the activity constituting a violation of this Ordinance. The enforcement of any remedy provided herein shall not prevent the enforcement of any other remedy or remedies in other provisions of this Code or other laws and regulations.
- (h) The Building and Codes Department shall provide due process into the enforcement of violations so as to provide owners, operators, and other responsible parties the abilities

to resolve said violations in a timely matter before facing fines and civil and criminal penalties. It is the intent of this Ordinance that violators be given appropriate due process.

Sec. 6.2 Civil Penalties.

Any person violating any provision of this ordinance shall be subject to a civil penalty of not more than one thousand dollars (\$ 1,000) for each violation. Each separate day of a violation, constitutes a new and separate violation.

Sec. 6.3 Additional Legal Measures.

- (a) Where the City of Hanahan is fined and for placed under a compliance schedule by the state or federal government for a violation(s) of its NPDES permit, and the City of Hanahan can identify the person(s) who caused such violation(s) to occur, the City of Hanahan may pass through the penalty and cost of compliance to that person(s).
- (b) The City of Hanahan's attorney may institute injunctive, mandamus or other appropriate action or proceedings at law or equity, including criminal conviction, for the enforcement of this Ordinance or to correct violations of this Ordinance, and any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

Sec. 6.4 Criminal Penalties.

In addition to any applicable civil penalties, any person who willfully, with wanton disregard, or intentionally violates any provision of this Ordinance shall be guilty of a misdemeanor and shall be punished within the jurisdictional limits of magistrate court. Each day of a violation shall constitute a new and separate offense.

Sect. 6.5 Corrective Action

In the event a violation of this Ordinance has not been corrected within the applicable time period for correction, the City of Hanahan, or its contractor, may enter upon the lot or parcel of land and correct the violation, and the costs incurred as a result of such action (including inspection, administration, labor and equipment costs) shall be reimbursed to the City by the owner or operator. If the owner or operator, as the case may be, fails to reimburse the City, the City is authorized to file a lien for said costs against the property, file an action in magistrate or civil court for recovery of incurred expenses, and enforce such actions in magistrate or civil court.

Sec. 6.6 Stop Work Order.

The Building and Codes Director, their designee, or other authorized personnel may issue a stop work order if it is found that a construction activity is being conducted in violation of this Ordinance.

The stop work order may allow or require correction of Notice of Violation (NOV) issues, but shall otherwise stop all other construction related activities. A stop work order may carry

with it civil penalties as well. Any person in violation of a stop work order is subject to payment of all fines and penalties prior to the lifting of the stop work order.

Sec. 6.7 Approval Suspension and Revocation.

An approved Construction Activity Application may be suspended or revoked if one or more of the following violations have been committed:

- (a) violations of the conditions of the Construction Activity Application approval,
- (a) construction is not in accordance with the letter or intent of the approved plans,
- (b) non-compliance with correction notice(s) or stop work order(s), or
- (c) the existence of an immediate danger to a downstream area in the judgment of the Building and Codes Director or their designee.

Sec. 6.8 Reserved.

DIVISION 7 VARIANCES

Sec. 7.1 Design Criteria.

The Building and Codes Department may grant a variance only upon a determination that:

- (a) The variance will not be detrimental to the public health, safety, and general welfare of the City, and
- (b) The variance will not adversely affect the reasonable development of adjacent property, and
- (c) The variance is justified because of topography or other special conditions unique to the property involved, and the variance is not requested due to mere inconvenience or financial disadvantage, and
- (d) The variance is consistent with the objectives of this Ordinance and will not have the effect of nullifying the intent or purpose of this Ordinance, or any other pertinent City or State regulations.

A written request for a variance shall be required and shall state the specific variance sought and the reasons, with supporting data, a variance should be granted. The request shall include all information necessary to evaluate the proposed variance.

Sec. 7.2 Reserved.

DIVISION 8 APPEALS

Sec. 8.1 Appeals Process.

Any person aggrieved by a decision, Notice of Violation, or denial of a variance by the Building and Codes Department or their designee may appeal the same by filing a written

notice of appeal with the City of Hanahan Planning Commission within fifteen (15) days of the issuance of said decision, Notice of Violation, or denial of a variance. The City of Hanahan Planning Commission will review the appeal and will either reverse or preserve the previous decision. In either case, a notice of appeal from the City of Hanahan Planning Commission will state the reason for their appeal decision.

The City of Hanahan Planning Commission shall hear and determine such appeals in a quasi-judicial capacity within thirty (30) days or at the next regularly scheduled meeting or such other times as may be mutually agreed upon and will render a decision within ten (10) working days after the appeal has been heard.

If the City of Hanahan Planning Commission fails or neglects to repeal the said decision, Notice of Violation, or denial of a variance within forty-five (45) days of the appeal request, the appeal of the said decision, Notice of Violation, or denial of a variance is automatically granted.

Any person aggrieved by the decision of the City of Hanahan Planning Commission may appeal the decision to the City of Hanahan's Municipal Court in accordance with its rules and procedures.

Sec. 8.2 Reserved.

DIVISION 9 CHARGES AND FEES

Sec. 9.1 Funding.

In addition to all other charges, fees, and penalties, the City of Hanahan shall have the right to develop and adjust a stormwater utility fee to fund implementation of this Stormwater Management Ordinance and its associated programs and plans. Adoption and/or revision of such fees shall be approved by The Hanahan City Council.

Sec 9.2 Connection to Conveyances .

The Building and Codes Department shall have the right to establish a schedule of appropriate fees for any person or property owner establishing a new discharge to the City of Hanahan stormwater management systems or to a wet weather conveyance. Such fee shall be payable as part of any application regulating the discharge of stormwater runoff (i.e. plan review and inspection fees). Application fees shall be established on the basis of facility classes relating to the **quantity** and quality of approved discharge. Establishment and revision of such fees shall be approved by the Hanahan City Council.

Sec. 9.3 Plan review.

Costs associated with plan review of land development construction documents performed by the Building and Codes Department may be assessed a fee representing the cost in labor, equipment, and materials expended in the conduct of the review. Establishment and revision of such fees shall be approved by The Hanahan City Council.

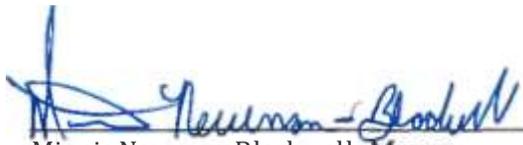
Sec. f/.4 Field inspection.

Costs associated with field inspection and re-inspections of land development or construction activities performed by the Building and Codes Department as part of compliance

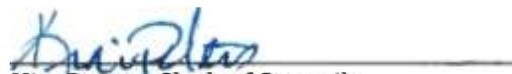
monitoring may be assessed a fee representing the cost in labor, equipment, and materials expended in the conduct of the inspection. In addition, post-construction maintenance inspection fees may be assessed by the Building and Codes Department. Establishment and revision of such fees shall be approved by The Hanahan City Council.

Sec. 9.5 Reserved.

Adopted and approved this the 9 day of DECEMBER, 2014.


Minnie Newman-Blackwell, Mayor

ATTEST:


Kim Peters, Clerk of Council

Introduced by: _____

First Reading: 12 NOVEMBER 2014

Second Reading: 9 DECEMBER 2014

City of Hanahan Covenants for Permanent Maintenance of Stormwater Systems

THE TERM STORMWATER SYSTEMS MAY REFER TO WATER QUANTITY AND/OR WATER QUALITY FACILITIES, AND BEST MANAGEMENT PRACTICES, BMPS (i.e., detention basins, retention basins, stormwater ponds, stormwater wetlands, water quality buffers, swales, ditches, pipes, inlets, separators, filtering devices, water quality structures, etc.)

THIS Covenant made and entered into this _____ day of _____, 20____, by and between (Insert Full Name of property owner) _____ hereinafter called the “Owner”, and the City of Hanahan, South Carolina hereinafter called the “City”.

WHEREAS, the Property Owner is the owner of certain real property described as Berkeley County Tax Map Number, (TMS#) _____ as recorded by deed in the Berkeley County Register of Deeds (ROD), Deed Book _____ Page _____, hereinafter called the “Property;” and

WHEREAS, the Owner is proceeding to, or has, made improvements on the Property; and

WHEREAS, the Site Plan/Subdivision Plan known as (Name of Plan/Development) _____

hereinafter called the “Plan,” which is expressly incorporated herein by reference, as approved, or to be approved, by the City, provides for the construction and maintenance of stormwater facilities, BMPs, and improvements within the confines of the Property; and

WHEREAS, the City requires that on-site stormwater facilities, BMPs, and improvements as shown on the Plan be constructed and adequately maintained by the Owner, its successors and assigns, including any homeowners association;

WHEREAS, the Owner, its successors and assigns, understands that the execution and adherence to the provisions of this Covenant is a condition precedent to the City’s permitting, and/or approving the Site Plan, Storm Water Management Plan, and/or Subdivision Plan for the Property and the development located thereon;

NOW, THEREFORE, in consideration of the foregoing premises and mutual covenants the parties hereby agree as follows:

1. The on-site stormwater facilities, BMPs, and, improvements shall be constructed, operated, and maintained by the Owner, its successors and assigns, in accordance with the approved Plan and specifications identified in the Plan, as well as in accordance with State and federal requirements, the City of Hanahan Stormwater Management Ordinance and Stormwater Design Standards Manual, and any and all other applicable City ordinances.
2. The Owner, its successors and assigns, including any homeowners association, shall adequately maintain the stormwater facilities, BMPs, and improvements on the Property. Adequate maintenance required by this Covenant shall include, but is not limited to, scheduled and corrective maintenance as described on/in the approved Plan and/or as described in the City of Hanahan Stormwater Design Standards Manual for all stormwater facilities, BMPs, and improvements intended to manage and/or control stormwater on the Property, with such facilities, BMPs, and improvements to expressly include, but not be limited to pipes, drainage structures, ditches, swales, vegetation, berms, pond areas, outlet structures, maintenance shelf(s) and access roads,

or any other improvement associated with stormwater on the Property but excluding any such improvements located on, under, or within any publicly owned or dedicated rights-of-way in which State or County has accepted maintenance of the roadways and/or drainage facilities. Adequate maintenance is herein defined as keeping such stormwater facilities, BMPs, and improvements in good working condition such that they satisfactorily perform their intended design functions.

3. The Owner, its successors and assigns, shall inspect the stormwater facilities, BMPs, and improvements as described on/in the approved Plan and/or as described in the City of Hanahan Stormwater Design Standards Manual to assure safe and proper functioning of the stormwater facilities, BMPs, and improvements located on the Property. Any and all deficiencies identified during such inspections shall be repaired as necessary at the Owner's expense. A detailed repair plan may be required to be prepared by a professional engineer, licensed in the State of South Carolina.
4. The Owner, its successors and assigns, hereby grants permission to the City, its authorized agents and employees, to enter upon the Property and to inspect the stormwater facilities, BMPs, and improvements as deemed necessary by the City for purposes of protecting the public health, safety or welfare, for purposes of investigating or inspecting any reported or suspected deficiencies in the stormwater facilities, BMPs, and improvements on the Property, for purposes of responding to or investigating citizens' complaints relating to the management or control of stormwater on the Property, or for any other purpose deemed necessary by the City. The City shall provide the Owner, its successors and assigns, with a copy of any inspection findings, as well as a directive to commence with any required repairs. To the extent that the City does not agree with or to the contemplated repairs proposed by the Owner, the City may submit an alternate repair plan to the Owner or require the Owner to submit a detailed repair plan prepared by a professional engineer, licensed in the State of South Carolina.
5. In the event the Owner, its successors and assigns, fails to maintain the stormwater facilities, BMPs, and improvements on the Property in good working condition acceptable to the City, or fails to make repairs as specified in the inspection report within a reasonable time frame as established by the City, with such time frame not to be shorter than thirty (30) days, the City may enter upon the Property and take any and all action necessary to correct deficiencies identified in the inspection report. The Owner, its successors and assigns, shall be responsible for any and all expenses incurred by the City in taking such corrective action. This provision shall not be construed to allow the City to erect any structure of a permanent nature on the land of the Owner outside the easement for the stormwater management/BMP facilities. It is expressly understood and agreed that this Covenant imposes no obligation or responsibility on the City to routinely maintain or repair any stormwater facilities, BMPs, and improvements located on the property.
6. In the event that the City performs or undertakes work of any kind pursuant to this Covenant or expends any funds or resources in performance of said work for labor, use of equipment, supplies, material, and the like, the Owner, its successors and assigns, shall reimburse the City upon demand, within thirty (30) days of receipt of same.
7. This Covenant shall impose no liability on the City with respect to the maintenance or repair of any stormwater facilities, BMPs, and improvements on the Property, nor does the City assume any obligation or duty to undertake or perform any action allowed for, or permitted by, this Covenant. The Owner, its successors and assigns, further agrees to indemnify and hold the City harmless from any liability arising out of the management, operation, maintenance, or failure of any stormwater facilities, BMPs, and improvement subject to this Covenant.
8. Notwithstanding any right extended to the City pursuant to this Covenant, it is expressly recognized and acknowledged that the City retains all prosecutorial rights and remedies available to it, including the enforcement of any and all applicable City ordinances, against the Owner, its successors and assigns, relating to the operation, maintenance, and/or repair of stormwater facilities, BMPs, and improvements located on the Property.

Appendix D

Enforcement Response Plan

ENFORCEMENT RESPONSE PLAN



***CITY OF HANAHAN
SOUTH CAROLINA***

December 2014

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Introduction

The purpose of this Enforcement Response Plan (ERP) is to provide guidance for identifying types of violations and enforcement responses available to the City of Hanahan which can be used to achieve compliance for practices as stated in the Stormwater Management Ordinance (No. 9-2014) and meet the requirements of the SCDHEC Small Municipal Separate Storm Sewer System (SMS4) Permit. The ERP also specifies criteria by which City personnel can determine the enforcement response most appropriate for violations and noncompliance in regards to construction, illicit discharge detection and elimination (IDDE), post construction and good housekeeping. The ERP is designed to achieve the following objectives:

- Prevent pollutants from entering the Municipal Separate Storm Sewer System (MS4) and causing environmental harm.
- Establish definitions for noncompliance.
- Provide equitable and consistent enforcement actions to the extent possible.
- Recover costs incurred by the City due to site operator noncompliance.
- Penalize non-compliant site operators for violations.

Violations can be categorized as either minor or major. The severity of the violation can be based on the duration of the violation, the effect the violation caused on the environment, and whether or not the violator is a repeat offender. These key factors can be used in determining the severity of the violation but the classification is not limited to these only. Minor violations typically have not caused an immediate threat to the environment or SMS4 and most often only require a verbal or written warning. Major violations are assessed when the operator has failed to comply with the stormwater ordinance or has not complied with violation notices, and such negligence has caused an immediate or significant impact on the environment or SMS4. The City may determine the severity of a violation at its discretion.

This plan is intended as a guide to be used by the City of Hanahan employees or their designee. Any of the enforcement responses may be used at the City's discretion. The City may alter this document at any time, without prior notice, or pursue an enforcement case by skipping any intermediate steps.

Enforcement Response Actions

The following are the types of enforcement response actions which may be taken by the City of Hanahan. The City reserves the right to apply any enforcement response at their discretion.

- I. **Verbal Warnings:** given at the discretion of the inspector when the violation can be corrected within a reasonable amount of time as determined by the inspector and the violator is contacted and agrees to correct the problem. Verbal warnings should be noted on the inspection report, however, no formal Notice of Violation (NOV) is required. Verbal warnings are to be issued within 24 hours of inspection.

II. Written Warnings:

- a. Notice of Violation (NOV) – must specify the nature of the violation, required corrective action and date of a follow up inspection. Upon receipt of a NOV, the violator should submit a response and a plan for the correction and prevention of the violation conditions in writing within three (3) business days to the City of Hanahan Public Works Department.
- b. Stop Work Order – applies to active construction sites. Can be issued when a site is determined to be active without proper permits or for failure to respond to a previously issued NOV. May also be issued by the City/inspector if a major violation of the stormwater ordinance or illicit discharge is present that requires immediate action.

Written warnings are to be issued within three (3) business days of inspection.

III. Denial of Certificate of Occupancy (CO):

Upon final inspection of a construction site, if the site is not properly stabilized or the operator has failed to comply with an outstanding notice of violation, then the City inspector may deny the issuance of a Certificate of Occupancy (CO) until final stabilization or compliance has been achieved.

IV. Citations (Civil/Criminal Penalties): The City may impose a monetary penalty of no more than one thousand dollars (\$1,000.00). Each day of a violation constitutes a separate violation. Penalties can be assessed based on the following criteria:

1. Severity of impact to public health and/or the environment.
2. Economic benefit gained by the violator.
3. Amount of effort put forth by the violator to correct the violation.
4. Enforcement costs incurred by the City.
5. Recurring violations or repeat violators.

Civil litigation may be used as a response in the following situations:

- Previous efforts have failed to restore compliance.
- The violator fails to pay assessed fines.
- The City determines it needs to recover losses due to the violator's noncompliance.
- It is necessary to stop or prevent activities that threaten human health and/or the environment.

Enforcement Response Levels

Violations can vary and the corrective action taken will be on a case by case basis. The following levels can be used as guidance on determining the best course of action to take for the different types of violations.

Level 1 – Administrative issues with relatively low environmental risk and an infrequent record of violation by the operator should cause the following enforcement sequence: **Verbal Warning -> Notice of Violation -> Stop Work Order -> Citation -> Civil Litigation.**

Level 2 – Record keeping and site conditions that pose a relatively moderate/significant environmental risk to discharge pollutants into the SMS4 or adjacent receiving waterbody should cause the following enforcement sequence: **Verbal or Written Warning -> Notice of Violation -> Denial of Certificate of Occupancy -> Stop Work Order -> Citation -> Civil Litigation.**

Level 3 – Any immediate threat to human health and/or the environment or demonstrated willful noncompliance by an operator should cause the following enforcement sequence: **Stop Work Order -> Citation -> Civil Litigation.**

Construction Site Violations

Table 1 identifies the resulting environmental impact of the violation, whether or not it is a reoccurring offense or offender, whether it has a minor or major environmental impact, and the recommended level of enforcement responses. The recommended enforcement response, as indicated by the levels described above, can be utilized at the discretion of the City or its designee.

Table 2. Construction Violation Responses

Result of Violation	Repeat Offense/Offender	Category	Recommended Enforcement Response
Potential for or minimal sediment deposition	No	Minor	Level 1
	Yes	Minor	Level 2
Sediment deposition occurs without impacting sensitive areas	No	Minor	Level 1
	Yes	Major	Level 2
Major sediment deposition or pollutant discharge	No	Major	Level 2
	Yes	Major	Level 3
Construction occurring without a land disturbance permit	No	Major	Level 3
	Yes	Major	Level 3

Illicit Discharge Detection and Elimination (IDDE)/Improper Disposal

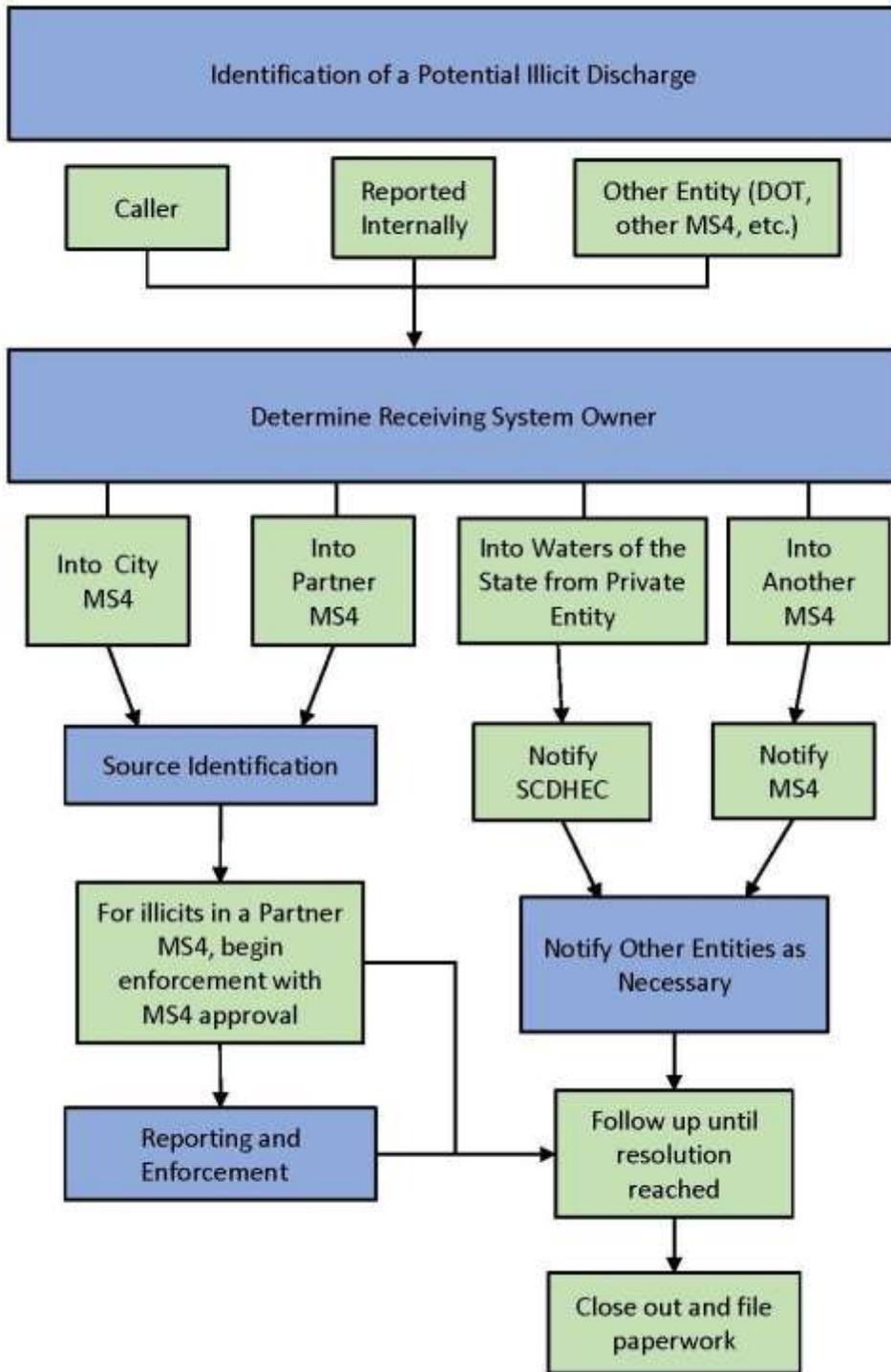
Evidence of an illicit discharge or improper disposal must be reported immediately to the City of Hanahan’s Public Works Department. If the illicit discharge is suspected to be an immediate danger to the health of humans and animals and/or the environment, the City is to immediately contact SCDHEC Emergency Response Section (ERS) at 1-888-481-0125.

The following procedures shall be used when an illicit discharge is discovered:

- If the source of the illicit discharge is evident at the time of inspection, a verbal notice may be issued to the responsible party.
- A NOV or stop work order depending on the severity and nature of the illicit, must be issued within twenty-four (24) hours after the source of the discharge is located. The operator or party responsible for the source of the illicit discharge will be required to eliminate the discharge within five (5) business days of written notification. The City has the option of changing the required elimination time based on the severity of the illicit discharge.
- The City will perform a follow up inspection within ten (10) business days of the initial notification. If the illicit discharge has not been corrected at the time of the follow-up inspection, a second NOV will be issued within twenty-four (24) hours. The operator or responsible party will have three (3) business days from the second NOV to eliminate the illicit discharge.
- A second follow-up inspection will be performed within five (5) days after issuance of the second NOV. If the illicit discharge has not been corrected, the City may proceed with civil action against the operator or responsible party.

Figure 1 represents the steps to be taken for illicit detection or improper disposal.

Figure 1. Illicit Discharge/Improper Disposal Responses



Post Construction Violations

The City of Hanahan requires all developers of new and re-development projects to sign a Maintenance Covenant which designates the developer or designee/owner as the responsible party for maintaining and ensuring the proper function of all post construction BMPs. As per the SCDHEC SMS4 Permit (effective January 1, 2014) the City will be responsible for inspecting all post construction BMPs, permitted by the City after the effective date, at least once during the permit cycle. Following the City's inspection, an inspection report will be generated and sent to the BMP owner.

If no problems are noted during the inspection, then the inspection report will indicate that no "recommended items" or "required items" exist at that time. If minor maintenance issues are discovered during the inspection, then the inspection report will identify "recommended items" and indicate that the owner should take action to address those issues and that the owner is responsible if those issues lead to BMP failure. If major maintenance issues are found during the inspection, then the inspection report will identify "required items" and indicate that the owner must take action to address those issues. Required items are those that directly relate to the safety and primary design function of the BMP, such as but not limited to: excessive woody vegetation on slope of dam/spillway; evidence of burrowing animals; leaks; seepage; or cracks in or major erosion of the dam of a detention pond.

The following levels of enforcement response will apply to post-construction inspections:

Level 1 – Inspection indicates that no recommended or required items exist at this time:

Inspection Report

Level 2 – Inspection indicates that recommended items exist: **Inspection Report -> Verbal Consultation-> Verbal or Written Follow-up**

Level 3 – Inspection indicates that required items exist: **Inspection Report (requests corrective action plan) -> Notice of Violation -> City Corrective Action (costs assessed to owner) -> Civil Litigation**

Table 2 outlines the actions to be taken if a post construction BMP is determined, upon inspection, to have failed or have the potential to fail or cause sediment or pollutants to enter a receiving waterbody, sensitive areas, or the SMS4. The City reserves the right to skip any intermediary steps dependent upon the severity of the environmental impact and/or the duration of the violation.

Table 3. Post Construction Inspection Responses

Result of Violation	Category	Recommended Response
Inspection report indicates no recommended or required items	Initial Contact	Level 1
Inspection report indicates recommended items only	Initial Contact	Level 2: Verbal Consultation
	Follow-up Contact	Level 2: Verbal or Written Follow-up
Inspection report indicates required items (may also include recommended items)	Initial Contact	Level 3: Notice of Violation (Corrective action plan requested)
Corrective action to repair required items not taken	Compliance Inspection	Level 3: City Corrective Action; Civil Litigation, if warranted

Appendix E

Illicit Discharge Detection and Elimination (IDDE) Priority Areas

City of Hanahan
Illicit Discharge Detection Elimination
(IDDE) Priority Areas



January 2015

Introduction

The City of Hanahan must develop a list of priority areas for the Illicit Discharge Detection and Elimination (IDDE) program in order to meet the terms and conditions of the NPDES Phase II Municipal Separate Storm Sewer System (MS4) permit. According to Section 4.2.3.2.2 of the MS4 permit, the City must identify priority areas (i.e. problem areas) for more detailed screening of their system based on higher likelihoods of illicit connections (e.g. areas with older sanitary sewer lines), or by conducting ambient sampling to locate impacted reaches. This section of the permit also states that permittees must document the basis for its selection of each priority area and create a list of all priority areas identified in the system. This priority area list must be updated annually to reflect changing priorities and be available for review by SC DHEC.

IDDE Priority Areas

The City of Hanahan based the IDDE priority area selection criteria on the following:

- 1) City owned and/or operated facilities with “hot spot” activities such as vehicle maintenance, storage areas, etc.
- 2) Areas with a history of past illicit discharges.
- 3) Areas with a history of illegal dumping.
- 4) Areas with older sewer lines or with a history of sewer overflows or cross-connections.
- 5) Areas upstream of sensitive waterbodies.

In regards to City owned and/or operated facilities with “hot spot” activities, the City of Hanahan Public Works Complex was previously located on Stewart Street directly adjacent to the marshes of Goose Creek and is where vehicle maintenance and chemical storage activities were conducted. Recommendations for improved good housekeeping/pollution prevention techniques at the Public Works facility were made in a 2010 Facility Inspection Audit Report. A new City of Hanahan Public Works facility is nearing completion on Williams Lane and will not be located within close proximity to any receiving waterbodies. The new Public Works facility will have state-of-the-art chemical storage and vehicle maintenance capabilities but this facility will still need to be inspected periodically to minimize the potential for any illicit discharges. The City will also prioritize the evaluation of activities related to the potential demolition, removal of abandoned vehicles and final closure of the old Stewart Street Public Works facility to minimize any potential illicit discharges at that location.

The only other City owned facility identified in the 2010 Facility Inspection Audit Report that warranted specific recommendations for improved pollution prevention practices was a maintenance shed at the Bettis Ball Fields. There were batteries and oil pans with oil in them adjacent to the shed left out in the open along with some abandoned vehicles in the vicinity. Actions have been taken to address the recommended proper disposal of batteries, used oil and

abandoned vehicles, but this maintenance shed area will remain a priority in regards to screening for illicit discharges.

There are currently no areas that the City is aware of that have a history of past illicit discharges or illegal dumping. There are also no areas that the City is aware of that have a history of sanitary sewer overflows or failing septic system issues.

To identify any areas upstream of sensitive waterbodies, the City utilized SC DHEC water quality information. For the purpose of the MS4 permit, sensitive waters are waters:

- With a TMDL developed and approved, or established by EPA,
- Included in the most recent SC DHEC Bureau of Water Clean Water Act (CWA) Section 303(d) list approved by EPA,
- That pursuant to SC DHEC Bureau of Water Classifications & Standards (R.61-68) & Classified Waters (R.61-69) regulations are classified as either;
 - Outstanding National Resource Waters (ONRW)
 - Outstanding Resource Waters (ORW)
 - Trout Waters (Natural (TN), Put, Grow, and Take (TPGT) & Put and Take (TPT), or
 - Shellfish Harvesting Waters (SFH), and
 - In Source Water Protection Areas (SWPA).

The only sensitive waters classification criteria that currently exists within the City’s urbanized area consists of monitoring stations on the current 2012 303(d) impaired waters list. This list is presented in Table 1. The City will determine areas that may have the potential to have illicit discharges upstream of these stations and inspect in accordance with the City’s dry weather field screening and analytical monitoring procedures to detect and eliminate illicit discharges.

Table 1: 2012 303(d) List of Impaired Stations within City of Hanahan’s MS4 Area and/or that the MS4 Area Drains Into

Basin	Station Description	Station	Pollutant of Concern	Projected TMDL Date
SANTEE	LAKE, GOOSE CK RESERVOIR 1.95MI WEST OF POPPENHEIM CROSSING	RL-10104	DO	2021
			FC	2021
SANTEE	GOOSE CREEK RESERVOIR 2.8MI NW OF SPILLWAY NEAR OTRANTO	RL-04390	DO	2021
SANTEE	GOOSE CK RES 2.3 M S OF GOOSE CREEK TOWN CENTER	RL-01008	DO	2021
SANTEE	GOOSE CREEK RESERVOIR 2 MI N OF SPILLWAY	RL-06434	DO	2021
SANTEE	GOOSE CK RESERVOIR MIDLAKE IN LINE WITH NORTHBROOK BLVD	RL-08065	DO	2021

Basin	Station Description	Station	Pollutant of Concern	Projected TMDL Date
SANTEE	GOOSE CK RESERVOIR 0.6 MI NW OF 2ND POWERLINES US OF BOAT RAMP, NEAR W SHORE BEETWEEN 2 WESTERN EMBAYMENTS	RL-07017	DO	2021
SANTEE	GOOSE CREEK RESERVOIR 1.0 MI NW OF SPILLWAY NEAR W SHORELINE	RL-03340	CHLA	2021
			DO	2021
			TP	2021
SANTEE	LAKE, GOOSE CK RESERVOIR 2.5MI SW OF POPPENHEIM CROSSING	RL-10108	DO	2021
SANTEE	GOOSE CREEK RESERVOIR 0.55 MI W OF DAM	RL-05412	TP	2021
SANTEE	GOOSE CK RESERVOIR AT 2 ND POWERLINES US OF BOAT RAMP	ST-033	TP	2021
SANTEE	GOOSE CREEK RESERVOIR 100 M US OF DAM	ST-032	CHLA	2021
			TP	2021
SANTEE	GOOSE CK AT S-08-136 BRIDGE	MD-039	FC	2013

The City of Hanahan’s list of priority areas for the Illicit Discharge Detection and Elimination (IDDE) program is as follows:

1. New Public Works facility on Williams Lane.
2. Old Public Works facility on Stewart Street (until all potential discharges are removed by way of facility demolition/closure).
3. Maintenance shed and surrounding area at the Bettis Ball Fields.
4. The City will determine areas that may have the potential to have illicit discharges upstream of 303(d) impaired stations (Table 1) and inspect in accordance with the City’s dry weather field screening and analytical monitoring procedures to detect and eliminate illicit discharges.

Appendix B
Sample Compliance Actions

Hanahan Building Inspection Report

Project Name: 6907 Lone Pine Ct

Date: 2/11/2016

Agency:

Project #: 2015-01161

Inspector: L. Sturdivant

Re-Inspection of Above Project

Items Inspected:

Plumbing slab

Violations:

Not approved. Do not have a Plumbing Permit. Plumbing is installed at detached garage. Cannot approve plumbing slab yet.

Note: need a 10ft stack and the space between the cleanout pipe and sleeve is to be sealed.

Note: Silt Fencing must be repaired and installed correctly around entire-site immediately.

Note: Need the information for the framing contractors in order to verify contractor license and business license.

Comments:

Inspection Status: Re-Inspection mandatory before proceeding



Hanahan Building Inspection Report

Project Name: 7414 Purser Lane

Date: 4/22/2015

Agency: Charleston Landmark Builders

Project #: 2015-00251

Inspector: L. Sturdivant

O Re-Inspection of Above Project

Items Inspected:

Building slab

Violations:

1) several areas where the poly does not cover the slab and is exposing the soil 2) plumbing pipes are not wrapped and need the tub boxes in place 3) need compaction test results

Note: Silt fencing must be in place along with rock on the job site entrance

Comments:

Inspection Status: Re-Inspection mandatory before proceeding

City Of Hanahan



Hanahan Building Inspection Report

Project Name: 7417 Purser Lane

Date: 4/22/2015

Agency: Charleston Landmark Builders

Project #: 2015-00254

Inspector: L. Sturdivant

O Re-Inspection of Above Project

Items Inspected:

Building slab

Violations:

1)missing rebar at garage, see Sect. 4 on plans. 2)need compaction tests results.

Silt fence and tree protection must be installed:

Comments:

Inspection Status: Re-Inspection mandatory before proceeding

City Of Hanahan



Larry Sturdivant

From: Larry Sturdivant
Sent: Tuesday, October 20, 2015 12:39 PM
To: charlie 6charlestonlandmarkbuilders.com; John Behringer; Rusty Howe
Subject: Timbercrest
Attachments: FullSizeRender.jpg; ATT00001.txt; FullSizeRender.jpg; ATT00002.txt; FullSizeRender.jpg; ATT00003.txt

Gentlemen,

Please see the pictures below from Timbercrest today. As a jurisdiction that is a MS4, proper BMP's (silt fencing, socks at curbing inlets, streets swept, etc.) must be in place and maintained. You will see that there are drainage inlets that are not protected and are covered up by dirt. I could not even located the second one. Also the silt fencing must be repaired and kept in working order. I need for these issues to be corrected by Friday.

Also, I have notified the other builder of issues that need to be addressed.

Sincerely,
Larry Sturdivant







Appendix C
Hanahan/Berkeley County Inter-governmental Agreement



BERKELEY COUNTY
SUPERVISOR'S OFFICE

William W. Peagler, III
SUPERVISOR

November 3, 2015

Johnny Cribb, City Administrator
City of Hanahan
1255 Yeamans Hall Road
Hanahan, South Carolina 29410

For your files

Dear Johnny,

Enclosed please find the Intergovernmental Agreement regarding the NPDES stormwater discharge and other stormwater related services.

We look forward to partnering with the City of Hanahan in this program.

Sincerely,

William W. Peagler, III
County Supervisor

WWP, III/bwm
Encl: as attached

cc: John O Williams
Tom Lewis

LEGAL
SEP
BERKELEY COUNTY

) AGREEMENT - NPDES STORMWATER
) DISCHARGE PERMIT COMPLIANCE
) CB OTWER STO ACER L TEB

THIS AGREEMENT (Agreement) is made and entered into as of this 9th day of October, 2015, by and between the County of Berkeley, S.C. (the County) and the City of Hanahan (the City).

WHEREAS, the County and the City are required by law to establish a stormwater management program pursuant to a National Pollutant Discharge Elimination System (NPDES) Permit (SCR030000) (the Permit) issued by the South Carolina Department of Health and Environmental Control (DHEC), the purpose of which is to protect, maintain and enhance the environment of the County and City and the short-term and long-term public health, safety and general welfare of the citizens of the County and City by addressing discharges of pollutants to the stormwater drainage system; and

WHEREAS, the County has developed a Stormwater Management Program (the SWMP) for the unincorporated areas of the County; and

WHEREAS, the County has developed a Stormwater Management Utility for the purpose of implementing the Berkeley County SWMP and satisfying the regulatory requirements of the Permit; planning, designing, constructing, funding, and maintaining stormwater management, sediment control, and flood control programs, projects and facilities; and reviewing and approving stormwater management and sediment control plan for land disturbing activities; and providing for the administration and enforcement thereof; and

WHEREAS, the County and City believe it is in the best interest of their citizens to avoid duplication of services with respect to stormwater management by entering into an agreement for the County to administer and enforce a SWMP for the City in order to provide for the effective and efficient handling of stormwater in the City and within as much of the County as possible;

NOW THEREFORE, in consideration of the foregoing premises and other good and valuable consideration, the sufficiency and receipt of which are hereby acknowledged, the County and the City hereby agree as follows:

A. Mutual Protections for the City and County

The City and County hereby mutually covenant and agree to take, use, provide and make, all proper necessary and sufficient precautions, safeguards and protections against the occurrence of any accidents, injuries, or damages to any person or property in performing or failing to perform any actions under this Agreement, and to be responsible for and save harmless the other party from the payment of all sums of money by reason of all or any accidents, injuries, or damages that may occur in the progress of any work (or arising out of the alleged failure to perform work) performed under this Agreement and arising out of or in connection with intentional, willful, wanton, reckless, or negligent conduct of the responsible party. This payment obligation shall include, but not be limited to, losses

incurred under this Agreement for or by reason of the violation of any ordinance or regulation, or the laws of the State of South Carolina or of the United States. The City and County agree that the responsible path shall have the authority to control any litigation that arises from the responsible path's related activities under this section, provided that the parties are not adverse in such litigation.

B. Obligations of the City

1. The City authorizes the County to administer the SWMP within the municipal limits of the City. This agreement and the SWMP shall authorize enforcement by City and County representatives. The City agrees that Berkeley County shall utilize the Berkeley County Stormwater Design Standards Manual in the administration of the SWMP. All costs of defending the ordinances adopted by the City shall be borne by the City.
2. The City agrees to cooperate with the County to enable the County to implement the SWMP, the Manual, Permit, and stormwater utility fees within the City. The City agrees to educate its staff regarding the provisions of each, and will implement the operational measures necessary for compliance for City property and operations.
3. The City hereby delegates to the County the duties of development, implementation and enforcement of the SWMP, and the efforts of monitoring, recordkeeping and reporting which may be imposed by the Permit, subject to Section 4.4 thereof (as may be amended from time to time). The City shall make available to the County necessary documentation related to annual reporting associated with the Permit.
4. The City shall provide the County with documentation of easements and rights-of-way as needed to operate and maintain the drainage system. In those cases, where easements or rights-of-way have not been obtained, but are needed, the City agrees to assist the County in obtaining an appropriate easement or right-of-way.

C. Obligations of the County

1. The County agrees to fulfill the responsibilities granted it by the City pursuant to this Agreement.
2. The County shall be responsible for the day to day operation and maintenance activities as well as the long-term management of the City's storm drainage system.
3. The methodology for determining fees or charges for this program shall be determined by the County. The County shall bill and collect stormwater management utility user fees from property owners, tenants, and other appropriate parties within the City using the same methods contained in the County's Stormwater Management Utility Ordinance.
4. The County shall implement and operate all six (6) of the minimum control measures as identified in the Permit, to include the Program Description of Elements, Measures and Services attached to this Agreement as Exhibit A and made part hereof by reference, within the City. While the County will be responsible for conducting and ensuring compliance with the Permit, this does not exclude the City from assisting

in these activities when deemed necessary or appropriate by the City and County.

5. The County hereby assumes the duties of development, implementation and enforcement of the SWMP, and the efforts of monitoring, recordkeeping and reporting which may be imposed by the Permit, subject to Section 4.4 thereof (as may be amended from time to time).
6. The City agrees to assist with information and non-legal advice regarding defense of any challenges to the County's Ordinances and program compliance.

D. Miscellaneous

1. This Agreement will become effective upon execution by authorized representatives of both parties.
2. This Agreement may not be revised or modified except by written mutual agreement of the City and the County.
3. The City and County reserve the right to challenge any of the terms, conditions, or provisions of the Permit, its enabling laws, rules and regulations and/or interpretations thereof by authorities assisting jurisdiction.
4. If any section, subsection, sentence, clause, phrase, or portion of this Agreement is for any reason held invalid or unconstitutional by any court or competent jurisdiction, such provision and such holding shall not affect the validity of the remaining portion of this Agreement.

Those rights and obligations under this Contract, which, by their nature should survive, shall remain in effect after termination, suspension or expiration hereof.

6. The failure of either Party to enforce at any time any of the provisions of this Contract shall in no way be construed as a waiver of such provision nor in any way affect the right of either Party thereafter to enforce each and every provision of this Contract. There can be no assignment by either party of any rights or responsibilities hereunder without the consent of the other party.
7. All parties acknowledge that nothing under this agreement creates a right of action for any person or entity, and that this contract does not create or otherwise permit third party beneficiary rights or related causes of action. It is further acknowledged that the parties hereto are governmental entities providing these services in a governmental capacity. Accordingly, it is agreed that the parties are sovereigns that are, to the extent permitted by the South Carolina Tort Claims Act, and other applicable law, protected by sovereign immunity with respect to all acts and omissions related hereto.

The City and County agree to enact, follow and enforce such ordinances, rules, policies, and regulations as may be necessary to carry out the terms of this Agreement.

9. Any notices which may be permitted or required hereunder shall be in writing and shall be deemed to have been duly given as of the date and time the same are

personally delivered or are deposited with the United States Postal Service, postage prepaid, and addressed as follows:

If to the County:

Attn: Stormwater Management Program, Berkeley County Engineering, PO Box 6122
Moncks Corner, SC 29461

If to the City:

Attn: City Administrator, City of Hanahan, 1255 Yeamans Hall Road, Hanahan, SC
29410

10. This agreement shall be effective as of the date listed above, and shall continue from year to year unless terminated. Either party may terminate this agreement by delivering 12 months' advance written notice of termination to the other Party's address listed above.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals, by and through the undersigned agents, this _____ day of October, 2015.

SIGNED, SEALED & DELIVERED
IN THE PRESENCE OF:

Nyark K. Dip
[Signature]

BERIKLEY COUNTY

By: [Signature]

Its: COUNTY SUPERVISOR

Kimberly C. Peters

THE CITY OF HANAHAN

By: [Signature]

Its: City Administrator

Clark of Council

Program Description of Elements, Measures and Services Berkeley County will provide to the City in association with the Intergovernmental Agreement (IGA) for NPDES Stormwater Discharge Permit Compliance and Other Stormwater Related Services.

Notice of Intent (NOI):

- The County will review and update the City's NOI for consistency with the County's NOI and update the NOI as necessary for compliance with SCDHEC NPDES MS4 Permit NOI submittal requirements.

Stormwater Management Program (SWMP):

- The County will review, update and manage the City's SWMP and all associated documents for consistency with the County's SWMP and for compliance with the NPDES MS4 Permit requirements.
- The County will provide necessary updates to the SWMP and all associated documents as required by the NPDES MS4 Permit requirements.
- The County will implement the City's SWMP.
- The County will review and update the City's Stormwater Management Ordinance for consistency with the County Stormwater Management Ordinance.

Enforcement Response Plan(ERP):

- The County will review and update the City's ERP for consistency with the County's ERP.
- The County will implement the ERP within the City.
- The County will perform all necessary stormwater inspections, generate inspection reports and initiate enforcement actions for all stormwater violations within the City.
- The County will notify and coordinate any and all enforcement actions taken within the City with appropriate City personnel.
- The County will maintain records of all inspections and enforcement actions performed within the City.

Discharges to Sensitive Waters:

- The County will assess the City's receiving water conditions and impacts.

- e The County will determine whether the City's MS4 discharges to receiving waters within a TMDL watershed, to impaired waters from the most current 303d list of impaired waters or to other Source Water Protection Areas (SWPA).
- e The County will develop and implement TMDL assessment and monitoring plans as required by the NPDES MS4 Permit for all discharges where a Wasteload Allocation (WLA) is assigned.
- e The County will assess all City MS4 discharges to 303d waters for cause/contribution of Pollutants of Concern (POCs).
- The County will program and implement Best Management Practices (BMPs) as necessary to address TIV!DLs and discharges to impaired waters as required by the NPDES MS4 Permit.

Public Education and Outreach on Stormwater Impacts:

- e The County will implement, manage and maintain the partnership and contract with Clemson's Carolina Clear program for the City as necessary to satisfy the NPDES MS4 Permit Public Education and Outreach requirements.
- « The County will maintain the partnership with the Ashley Cooper Stormwater Education Consortium.
- The County will maintain the partnership with the South Carolina Stormwater Managers Association.

Public Involvement/Participation:

- The County will implement, manage and maintain the partnership and contract with Clemson's Carolina Clear program for the City as necessary to satisfy the NPDES MS4 Permit Public Involvement/Participation requirements.
- The County will maintain the partnership with the Ashley Cooper Stormwater Education Consortium.
- The County will maintain the partnership with the South Carolina Stormwater Managers Association.

Illicit Discharge Detection and Elimination (IDDE):

- The County will identify and map all City stormwater outfalls to receiving waters.
- The County will perform periodic dry weather screening/monitoring of all stormwater outfalls within the City for illicit discharges as required by the NPDES MS4 Permit.
- The County will initiate enforcement actions as necessary to eliminate illicit discharges in accordance with the ERP for all illicit discharges found during outfall dry weather screening.
- The County will inventory and update the City's stormwater system and establish a GIS map of the City's stormwater system.

- The County will perform periodic inspections of the City's stormwater system for illicit discharges and initiate enforcement actions for any illicit discharges found.
- e The County will develop and perform illicit discharge training of all appropriate municipal staff as required by the NPDES MS4 Permit.
- The County will establish a hotline for citizens of the City to report illicit discharges.

Construction Site Stormwater Runoff Control:

- The County will review and update the City's Stormwater Construction Design Standards for consistency with the County Stormwater Design Standards.
- e The County will review stormwater, erosion & sediment control, pollution prevention, site prep and grading plans for all residential, commercial, and industrial development and other construction projects within the City for compliance with County and state requirements as required by the NPDES MS4 Permit.
- The County will track all active construction projects within the City and maintain a database of all active construction projects.
- e The County will perform stormwater and erosion and sediment control inspections of all residential, commercial and industrial construction projects within the City as required by the NPDES MS4 Permit.
- The County will track all active construction projects and maintain a database of all inspection reports from start of construction through construction completion and site stabilization.
- The County will initiate and manage enforcement actions for all non-compliant and deficient stormwater construction in accordance with the ERP.
- The County will provide staff training as required by the NPDES MS4 Permit.

Post-Construction Stormwater Management for Re-Development and Redevelopment:

- The County will review and update the City's Stormwater Post-Construction Design Standards for consistency with the County Stormwater Design Standards.
- The County will review stormwater plans for site performance post-construction stormwater control measures as required by the NPDES MS4 Permit.
- The County will review for and ensure long-term maintenance of post-construction stormwater control measures installed to meet site performance standards.
- The County will establish and maintain an inventory of all installed post-construction stormwater control measures.
- The County will inspect all post-construction stormwater control measures installed during construction, upon completion of construction and after construction as required by the NPDES MS4 Permit.
- The County will maintain a database of all post-construction inspection reports and enforcement actions in accordance with the NPDES Permit and ERP.

Pollution Prevention/Good Housekeeping for Municipal Operations:

- e The County will establish and maintain an inventory of all municipally owned facilities within the City.
- The County will establish and maintain an inventory of all municipally owned stormwater controls within the City.
- The County will develop and perform Pollution Prevention/Good Housekeeping training *o1* all appropriate municipal staff as required by the NPDES MS4 Permit.
- The County will perform a comprehensive assessment of all municipally owned facilities and maintain a database of assessment results.
- The County will identify all municipal High-Priority facilities within the City and perform facility specific inspections of all High Priority facilities as required by the NPDES MS4 Permit.
- The County will inventory and prioritize the municipally owned or operated stormwater system structures and catch basins within the City and implement a maintenance plan and schedule for the stormwater system structures and catch basins.
- The County will implement pollution prevention measures for all operation and maintenance activities performed within the City.
- The County will inspect and maintain all municipally owned or operated stormwater controls as required by the NPDES MS4 Permit.

Reviewing and Updating the SWMP:

- The County will perform an annual review of the City's SWMP.
- e The County will update the City's SWMP as necessary to add or modify selected BMPs and comply with the NPDES MS4 Permit.

Monitoring, Record Keeping and Reporting:

- e The County will maintain records of all outfall water quality screening, monitoring and testing data associated with TMDLs and discharges to impaired waters within the City.
- The County will maintain records of all illicit discharge inspection reports and enforcement actions within the City.
- The County will maintain records and track all active stormwater construction projects *within* the City.
- « The County will maintain records of all stormwater construction inspections, post-construction inspections and enforcement actions associated with construction activity within the—City.
- The County will maintain records of all post-construction BMPs and BMP inspections with the City.

- e The County will maintain records of illicit discharge and good housekeeping training of municipal staff.
 - The County will maintain records of all municipal facility assessments and high priority inspections within the City.
 - The County will maintain records of all stormwater system maintenance, catch basin maintenance, stormwater control maintenance and street sweeping within the City.
 - The County will prepare all annual reports to be submitted to SCDHEC in accordance with the NPDES MS4 Permit.
-
- The County will implement the Stormwater Management Utility Ordinance within the City.
 - The County will manage the Stormwater Management Utility within the City.
 - e The County will bill and collect Stormwater Management Utility fees on parcels and users within the City.
 - The County will perform, update and maintain impervious surface *area* calculation data within the City in association with the Stormwater Management Utility Rate Study.
 - e The County will incorporate parcels and users within the City in the Stormwater Management Utility Rate Study.
 - The County will maintain records of all stormwater utility fees collected and stormwater utility revenues spent within the City.

Stormwater Capital Improvements:

- The County and the City will establish a Stormwater Advisory Board consisting of representatives of the both the County and City.
- The Stormwater Advisory Board will program, schedule and fund stormwater capital improvement projects and stormwater BMPs utilizing Stormwater Utility fees collected from parcels and users within the County and City.
- The County will implement, manage and construct stormwater capital improvement projects and stormwater BMPs under the oversight of the Stormwater Advisory Board and in accordance with the Stormwater Management Utility Ordinance.

Appendix G
Berkeley County
City of Goose Creek Annual Report

South Carolina NPDES Permit # SCR030000
Small Municipal Separate Storm Sewer System (SMS4)
Annual Report Template

Permit Coverage #SCR _____ Reporting Period: _____

Permittee: _____

Program Name: _____

Reporting for more than one Program:

(Prepare copies of this page for each Program and attach to this report.)

Responsible Official Information

(Enter the information of the principal executive officer, mayor, or other duly authorized employee/elected official.)

Name: _____ Title: _____

Telephone Number: _____ E-mail Address: _____

Mailing Address: _____

Program Manager Information

(Enter the information of the person who is responsible for daily implementation of the program.)

Name: _____ Title: _____

Telephone Number: _____ E-mail Address: _____

Mailing Address: _____

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Responsible Official Signature: _____ Date: _____

(The responsible official may authorize another person or person occupying a specific position to certify this report if this authorization is made in writing and submitted to the Department. Please attach a copy of the authorization with this report, if applicable)

Submit the annual report to:
South Carolina Department of Health and Environmental Control
Bureau of Water, Water Pollution Compliance Section
2600 Bull Street
Columbia, SC 29201-1708

Questions? Contact (803) 898-4300

I. Special Conditions Applicable to Stormwater Discharges to Sensitive Waters

A. General (3.1)

1. Has an assessment been conducted to determine if the MS4 discharges to sensitive waters as described in the Permit Part 3? Yes No (what is the target date of completion of the assessment?) _____

2. Does the SWMP specifically address these sensitive waters through BMP, system design, etc.? Yes No

3. Does the MS4 discharge to waters classified as Outstanding Resource, Trout, or Shellfish Harvesting? If so, list the waters (3.5): No Yes _____

B. TMDL Monitoring and Assessment Plan (3.2)

1. Does the MS4 discharge to receiving waters within a TMDL watershed? If yes, list the water body and the pollutant(s) of concern. No Yes Cooper River / DO

2. Which of the TMDL pollutant(s) of concern listed above have the potential to occur within the MS4? DO

3. Report the current stage of development of a monitoring and assessment plan. Mark one or more that most accurately reflects the current status of the program as a whole:

Not started Research/Development Implementation

4. Has the plan been submitted to the Department?

Yes No, target date for submission: _____

5. Has monitoring been conducted for the pollutant(s) of concern in the past reporting year?

Yes (summary of data attached) No, target date to begin monitoring: June 2016

6. Are there any updates to the plan for this reporting year?

No Yes (updates attached)

7. Provide a brief description of the progress made on the plan in this reporting year and evaluate its effectiveness. The plan was completed in December 2014 and submitted for review. Monitoring was scheduled for 2016 after concurrence by SCDHEC.

C. Discharges to Impaired Water Bodies (3.4)

1. Does the MS4 discharge to receiving waters on the 303(d) list of impaired waters? If yes, list the water body and the pollutant(s) of concern. No Yes Goose Creek @ US 52 POC = Dissolved Oxygen & Total Phosphorous

2. Which of the 303(d) pollutant(s) of concern listed above have the potential to occur within the MS4? Both

II. Storm Water Management Program

A. Ordinance Information (4.1)

(Insert your website address if the ordinance is posted online. If your ordinance is not posted online, please submit a hard copy with this report.)

Website: http://www.cityofgoosecreek.com/232/Stormwater

Hard copy attached:

B. Storm Water Management Plan (SWMP) (4.1, 4.5)

(Answer the questions below about the SWMP for the current reporting year.)

1. Have there been any changes to the area covered by the MS4? If yes, is this reflected by updates to the SWMP?

No Yes (explain): _____

2. Are there any proposed changes to the goals or BMP (best management practices) in the SWMP?

No Yes (explain): _____

3. Do you have adequate resources to implement your SWMP?

Yes No (explain): _____

4. Provide information below about staffing levels for each Minimum Control Measure (MCM). This information should be presented as the amount of individuals performing duties directly related to each MCM and the estimated percentage of their time spent doing so. If you share responsibility for the MCM with another entity, indicate that in the corresponding spaces.

- MCM 1: 1 person - 1% Shared w/ Carolina Clear
- MCM 2: 1 person - 1% Shared w/ Carolina Clear
- MCM 3: 8 personnel - 5%
- MCM 4: 3 personnel - 5%
- MCM 5: 2 personnel - 5%
- MCM 6: 5 personnel - 10%

5. Has training been provided to staff as required by the permit in the last reporting year?

Yes (fill in the table below) No (explain, and provide implementation dates): _____

Date	Topics Covered
2013-05-29	Stormwater Plan Reviewer
2014-06-03	Housekeeping
2015-10-01	Stormwater Solutions - Drainage / Illicit Discharge / Materials
2015-11-06	Underground Storage Tanks - Inspection / Illicit Discharge / Spills / Reporting

III. Minimum Control Measures (MCM)

A. Sharing Responsibility (4.4)

1. Is responsibility shared for any minimum measures through an agreement with another entity?

No Yes (*name the entity in the chart below*)

MCM 1	Responsibility was transferred via an Intergovernmental Agreement dated 15 Oct2015
MCM 2	Responsibility was transferred via an Intergovernmental Agreement dated 15 Oct2015
MCM 3	Responsibility was transferred via an Intergovernmental Agreement dated 15 Oct2015
MCM 4	Responsibility was transferred via an Intergovernmental Agreement dated 15 Oct2015
MCM 5	Responsibility was transferred via an Intergovernmental Agreement dated 15 Oct2015
MCM 6	Responsibility was transferred via an Intergovernmental Agreement dated 15 Oct2015

If you have indicated that you are sharing responsibility above in any MCM, answer the questions below:

2. Have you submitted notice to the Department that you are relying on another entity?

Yes No (*submit a copy of any agreements that have not previously been sent to the Department*)

3. If applicable, provide the date of submission of the agreement(s) to the Department: Nov 2016

4. Are all control measures as stringent as the permit requires?

Yes No (*if no, provide an explanation*) _____

5. Did the other entity agree in writing to implement the measure on your behalf?

Yes No (*if no, provide an explanation*) _____

6. Did the other entity implement the measure and agree to report on your behalf?

Yes No (*if no, provide an explanation*) _____

7. Is the agreement maintained as part of the SWMP?

Yes No (*if no, provide an explanation*) _____

8. Have you dissolved any agreements with entities this reporting year?

No Yes (*if yes, who?*) _____

**Ashley Cooper Stormwater Education Consortium (ACSEC)
Table of Completed Activities, 2014-2015**

MCM 1, Public Education/Outreach

Date of Activity	Activity Description	Estimated Impact
1/9/14	WORKSHOP: SC DNR ACE BASIN NERR CTP and Sea Grant sponsored LID Stakeholder Meeting.	60
1/15/14	PRESENTATION: Presented "Protecting Water Quality Before the Pond" to Lakeside Homeowners Association.	10
1/21/14	PRESENTATION: Presented "Protecting Water Quality Before the Pond" to Mount Pleasant Rotary Club.	50
1/27/14	PRESENTATION: Presented "Protecting Water Quality Before the Pond" to Wando Woods Civic Group.	50
1/29/14	YOUTH PRESENTATION: Keep Dorchester Beautiful presented a composting and water resource-themed presentation to Ashley Ridge High School.	40
2/1/14	ARTICLE: "Soil Fertility" in Lakeside Magazine; included fertilizer management.	6,000
2/6/14-2/7/14	FAIRS/FESTIVALS: SC Horticulture Tradeshow; provided information on Carolina Yards program and stormwater best management practices (BMPs).	250
2/17/14	YOUTH PRESENTATION: Enviroscape used with youth at Mitchell Elementary as part of Green Hearts program.	48
2/19/14	WORKSHOP: Lunch and Learn Workshop for Berkeley County Master Gardeners; discussed impacts of stormwater on water quantity and quality and residential best management practices.	30
2/20/14	PRESENTATION: Presented "Celebrating South Carolina's Natural Heritage with Native Plants in the Home Landscape" as part of the Charleston County Parks and Recreation Commission Sustainability Series.	20
2/20/14-2/22/14	FAIRS/FESTIVALS: Charleston County Soil and Water Conservation District (CCSWD) hosted a booth at the Southeastern Wildlife Expo; included natural resource and stormwater outreach to visitors.	1,500
2/23/14	ARTICLE: "Planting Project" in The Post and Courier; Highlighted SC Native Plant Society dune restoration project on island communities.	96,005
2/27/14	YOUTH PRESENTATION: College of Charleston used the Enviroscape to discuss stormwater topics with youth (2nd-8th grade).	1,200
2/28/14	ARTICLE: "MUSC Grounds to Install Markers" in <i>The Catalyst</i> ; highlighted storm drain marking effort at MUSC.	4,500

Date of Activity	Activity Description	Estimated Impact
3/13/14	YOUTH PRESENTATION: College of Charleston used the Enviroscape model to discuss stormwater topics with local homeschool club.	30
3/13/14	WORKSHOP: ACSEC, SC DNR and the SC Marine Association hosted a "Clean Marina Workshop" for marina owners; focused on BMPs to protect water quality at marinas and boat landings.	13
3/15/14	FAIRS/FESTIVALS: Charleston County hosted stormwater management booth at the Charleston Black Expo 2014	125
3/15/14	ARTICLE: "Minding your N, P, and Ks - How to Interpret Clemson Extension Soil Test Results for a Bountiful Vegetable Garden" in <i>The Post and Courier</i> ; focused on soil health and fertilizer management.	96,005
3/22/14	WORKSHOP: "Carolina Yard Gardening School"; water-resource related topics included coastal stewardship and shoredscaping.	105
4/1/14	POSTCARD: Stormwater pond postcard sent to 9495 pond owners in the Tri-County areas; postcard included information on the purpose of ponds, importance of proper maintenance, and resources available for pond owners.	9,495
4/1/14	ARTICLE: "Recycle Yard and Kitchen Waste by Composting" in <i>Lakeside Magazine</i> ; included proper debris disposal information for waterway health.	6,000
4/3/14	PRESENTATION: Gardening with native plants use presentation provided to Bishop Gasden local retirement community; focused on benefit to stormwater management.	20
4/6/14	FAIRS/FESTIVALS: ACSEC hosted booth at Flowertown Festival and included information on the efforts of the consortium and upcoming education and involvement opportunities.	500
4/9/14	FAIRS/FESTIVALS: Berkeley County Backyard Naturescope, Kids Who Care: Used Enviroscape model with K-5 public school students in Berkeley County to demonstrate connections to waterways and problem solving for water quality protection.	2,000
4/9/14	PRESENTATION: "Rainwater Harvesting 101" presented to St. Johns Garden Club.	
4/12/14	WORKSHOP: South Carolina Native Plant Society (SC NPS) "Bog Workshop"; included an emphasis on native plant use and best management practices for healthy waterways.	20
4/12/14	FAIRS/FESTIVALS: CCSWD hosted a booth at the Hollywood Water Quality Day.	75
4/15/14	FAIRS/FESTIVALS: ACSEC hosted booth at Medical University of South Carolina Earth Day festival; provided information on upcoming education and involvement opportunities.	1,800
4/17/14	WORKSHOP: SC DNR ACE BASIN NERR CTP's "Coastal Wetlands Identification" training.	36
4/20/14	ARTICLE: "Tips for a green(er) house" in <i>The Post and Courier</i> ; sustainable landscaping practices guidance provided by Clemson Extension (CUCES) agents.	96,005

Date of Activity	Activity Description	Estimated Impact
4/26/14	FAIRS/FESTIVALS: ACSEC hosted booth at Charleston County Earth Day Festival; included information on stormwater management and upcoming education and involvement opportunities.	2,000
5/1/14	ARTICLE: "Know Your Beneficial Insects" in <i>Lakeside Magazine</i> ; include integrated pest management (IPM).	6,000
5/3/14	FAIRS/FESTIVALS: Multiple partners host booths as part of the Oakbrook Ashley River Festival; included information on ways to protect waterway health through BMPs in the landscape.	950
5/5/14	ACSEC Resolution Signing Event. Representatives from three county governments and mayors from municipalities attended the event to sign the ACSEC joint resolution and demonstrate continued partnership and support of the regional watershed scale education approach. Included presentations on ACEC activities and regional partnership efforts.	75
5/22/14	CONFERENCE: "Charleston Area Stormwater Pond Management Conference" focused on maintenance techniques for healthy stormwater ponds and waterways.	150
5/24/14	TELEVISION: Television interview with CUCES agents on Live Five News promoted practice of rainwater harvesting.	
5/31/14	FAIRS/FESTIVALS: Keep Charleston Beautiful 5K race raised awareness of litter prevention efforts in the community.	279
6/4/14	PRINT ADVERTISEMENT: "It Drains Here" promotional piece placed in <i>Moultrie News</i> by the Town of Mount Pleasant.	70,607
6/5/14	WORKSHOP: "Sediment Basin Workshop" reviewed design, inspection and maintenance techniques for sediment basins.	68
6/10/14-6/12/14	CONFERENCE: "American Ecological Engineering Society Annual Conference" included low impact development and habitat restoration tours.	120
06/18/14	PRINT ADVERTISEMENT: "Illicit Discharge" promotional piece placed in <i>Moultrie News</i> by the Town of Mount Pleasant	70,607
6/25/14	WORKSHOP: SC Sea Grant, SCDNR and CUCES Carolina Clear's "From Seeds to Shoreline Teacher Workshops," provided full day training for teachers on watershed outreach, saltmarsh restoration, the school curriculum.	12
7/29/14	PRESENTATION; "Expanding Stormwater-Related Outreach from Clemson Extension" presented at the American Public Works Association, South Carolina Chapter Annual Conference.	50
8/1/14	FAIRS/FESTIVALS: CUCES Carolina Clear hosted table at SC Association of Counties tradeshow and tabling event; provided information on Carolina Clear program and consortium initiatives.	150

Date of Activity	Activity Description	Estimated Impact
08/18/14; 10/9/14	WORKSHOPS: Train-the-Trainer workshops focused on fats, oils, and grease management with managers and owners from two local restaurants.	16
8/25/14	ARTICLE: <i>The Post and Courier's</i> "The Pond Next Door" article included ACSEC guidance on appropriate pond best management practices.	96,005
8/31/14	ARTICLE: <i>The Post and Courier's</i> article "Rethinking the Lawn"; ACSEC guidance was provided on fertilizer management, buffer establishment, and sustainable landscaping practices.	96,005
9/01/14-11/15/14	PRESENTATION: "The Carolina Yard Lecture Series" was a six-part gardening series offered as part of the Charleston County Community Foundation. Series covered environmental horticulture and landscape-level BMPs.	20
9/1/14	YOUTH PRESENTATION: Enviroscene demonstration at Cario Middle School; provided forum to discuss waterway protection through stormwater BMPs with youth.	108
9/9/14	PRESENTATION: Presented on the Carolina Schoolyards initiative, as part of the Charleston County School District Sustainability Symposium. Focused on what actions can be adopted on school property to protect downstream water quality.	200
9/10/14	PRESENTATION: "Pond Problem Solving: Evolving Opportunities in Stormwater Pond Management Outreach in South Carolina;" as part of the 2014 Water Education Summit.	30
9/10/14	PRESENTATION: "Seeing is Believing, Creating Sustainable Demonstration Sites to Interpret Stormwater and Environmental Horticulture Best Practices", 2014 Water Education Summit.	15
9/21/14	FAIRS/FESTIVALS: ACSEC tabled a booth at the Charleston Green Fair; promoted upcoming opportunities for stormwater education and involvement were shared.	600
9/22/14	PRESENTATION: Workshop with Del Webb at Cane Bay included two presentations that focused on stormwater pond management and benefits of gardening with native plants.	30
10/1/14	PRESENTATION: "Healthy Habitats Equals Healthy Watersheds" program highlighted design concepts for creating landscapes, with emphasis on environmental stewardship, sustainability and wildlife habitat.	30
10/4/14	FAIRS/FESTIVALS: ACSEC hosted a booth and the Enviroscene at the 2014 Sangaree Community Day.	900
10/8/14	WORKSHOP: ACSEC hosted a Low Impact Development Tour as part of the Southeastern Stormwater Association's Annual Conference.	40
10/8/14	PRESENTATION: Presentation at Sustainability Institute's ReThink Series on the importance of picking up after pets for waterway health.	25
10/10/14	PRESENTATION: Presentation at South Carolina Association of Aquatic Plant Management Annual Conference on stormwater pond maintenance for function and downstream ecosystem protection.	50

Date of Activity	Activity Description	Estimated Impact
10/15/14	PRESENTATION: Presentation at 2014 South Carolina Water Resources Conference on stormwater pond outreach successes and lessons learned in ACSEC.	30
10/15/14	PRESENTATION: Presentation at the 2014 SC Water Resources Conference on the ACSEC's rainwater harvesting programmatic efforts.	25
10/15/14 - 10/16/14	CONFERENCE: Two-day 2014 South Carolina Water Resources Conference hosted by The Center for Watershed Excellence.	340
10/31/14	FAIRS/FESTIVALS: Carolina Yards and ACSEC information booth at the Mount Pleasant Home and Garden Show provided information on sustainable landscapes and stormwater BMPs.	50
12/17/14	PRESENTATION: Partnering with Berkeley County, the ACSEC presented to approximately 100 staff and administration on Carolina Clear programming and messages, including actions for clean water protection.	100
Spring 2014	ONLINE TRAININGS: "Carolina Yards and Neighborhoods Online Guide to Environmentally Friendly Gardening" promoted sustainable landscaping and stormwater BMPs for home gardener.	38
Spring 2014; Fall 2014	ONLINE TRAININGS: Master Gardener training provided to residential audiences online; topics include landscape BMPs.	20
Fall 2014	TELEVISION: Street Interview Series on water resource topics filmed in Summerville, Goose Creek, Mount Pleasant, and Sullivan's Island; aired on Fox News and MyTV as short commercial spot rotation.	20,600
2014	BILLBOARDS: The Carolina Yards billboard series promoted Carolina Yards landscaping program and best management practices.	536,148
2014	BOOKLET: The Carolina Yards Workbook provides information on environmentally friendly gardening practices to residential audiences.	170
2014	BROCHURE: Leaf It On The Lawn; flyer includes tips for proper disposal of lawn debris and is offered in Spanish and English.	100
2014	BROCHURE: Project Impact's Recreational Boater Education Booklet; distributed by Charleston Waterkeeper as part of Boat Pumpout Program.	100
2014	IN-PERSON: Assistance provided to residents from CUCES agents and Master Gardener's on variety of home, garden, and water resource topics.	49,225
2014	MANUAL: The Rain Garden manual provides information on rain gardens to residential audiences.	250

Date of Activity	Activity Description	Estimated Impact
2014	MANUAL: The Rainwater Harvesting manual provides information on rainwater harvesting to residential audiences.	250
2014	NEW PERMANENT EXHIBIT: Clemson REC "Ed Shed" includes education signage and stormwater best management practices.	500
2014	NEW PERMANENT EXHIBIT: Clemson REC Urban Research and Demonstration Area includes rain garden and educational signage.	1,000
2014	NEW PERMANENT EXHIBIT: Rain garden at "Whirlin' Waters" at Wannamaker County Park.	500
2014	NEW PERMANENT EXHIBIT: Rain garden at Caw Caw Interpretive Center.	2,000
2014	NEW SCHOOL PERMANENT EXHIBIT: Cistern at Mitchell Elementary School's Green Hearts Project Garden.	350
2014	NEW SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Ashley River Creative Arts School.	500
2014	NEW SCHOOL PERMANENT EXHIBIT: Two rain barrels at Goodwin Elementary School.	100
2014	ONLINE NEWSLETTER: ACSEC's "Ripple Effect" published bi-monthly and included ACSEC education and involvement opportunities.	1,500
2014	PERMANENT EXHIBIT: Multiple BMPs highlighted at the Sustainability Institute, with tours offered.	150
2014	PERMANENT EXHIBIT: Rain barrel, rain garden, and signage installed at Berkeley County Extension Office.	150
2014	PERMANENT EXHIBIT: Rain barrel display at Charleston Aquarium.	1,000
2014	PERMANENT EXHIBIT: Rain garden and signage at Charleston Towne Landing State Historic Site.	1,000
2014	PERMANENT EXHIBIT: Rain garden at Bowen's Island Restaurant.	1,000
2014	PERMANENT EXHIBIT: Two rain barrels and drip irrigation at St. Julian Divine Community Center.	1,500
2014	PERMANENT EXHIBIT: Two rain gardens, cistern, native plants, and other best management practices at Fort Johnson Community Garden.	5,000
2014	POSTCARD: A More Green Way to Clean; Tips on proper pressure washing to protect water quality.	100
2014	POSTCARD: Better Manage Fats, Oil and Grease (FOGs); Provides information on proper FOG disposal.	200

Date of Activity	Activity Description	Estimated Impact
2014	POSTCARD: Freshwater Shorescapes; Benefits of shorescaping and tips and resources for pond owners.	100
2014	POSTCARD: Septic Systems Care and Maintenance; Tips for maintaining septic systems to reduce impact on water quality.	100
2014	POSTCARD: Trashing Our Environment; Provides information on what can be done to prevent litter in SC.	200
2014	POSTCARD: We All Live Downstream; Tips to preventing stormwater pollution in communities	350
2014	POSTCARD: What is a Rain Barrel?; Promotes the use of rain barrels for better lawn care and water quality.	200
2014	POSTCARD: What is a Rain Garden?; Provides brief description and purpose of a rain garden and links interested individuals to online resources and additional information.	200
2014	POSTCARD: What To Do About Pet Waste; Provides information to pet owners on proper disposal of pet waste.	200
2014	PROMOTIONAL ITEM: ACSEC Koozies distribution	100
2014	PROMOTIONAL ITEM: Clean Water Hero Bracelets distribution	230
2014	PROMOTIONAL ITEM: Dog Bag Dispenser distribution	120
2014	PROMOTIONAL ITEM: Fish Sponges, Includes a "Only Rain Down the Storm Drain!" message, distribution	120
2014	PROMOTIONAL ITEM: Pocket Ashtray distribution	50
2014	PROMOTIONAL ITEM: Thank You! For Protecting Waterways Reusable Bags distribution	100
2014	PROMOTIONAL ITEM: www.ashleycooper.org sticker distribution	500
2014	PROMOTIONAL ITEMS: Life in the Salt Marsh, information of salt marsh ecology and ecosystem health	100
2014	PROMOTIONAL ITEMS: Stormwater Pond Management Sticker distribution	180
2014	RADIO: "Your Day" One-hour weekly radio program addressing home and garden questions.	30,000
2014	SCHOOL PERMANENT EXHIBIT: Cistern at the College of Charleston's Political Science Building.	500
2014	SCHOOL PERMANENT EXHIBIT: Rain barrel system at Early Childhood Education Center.	100
2014	SCHOOL PERMANENT EXHIBIT: Rain garden, cistern, rain barrels, and other best management practices at Grice Green Teaching Garden.	500

Date of Activity	Activity Description	Estimated Impact
2014	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Ashley River Creative Arts School.	500
2014	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Stono Park Elementary.	400
2014	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system for school garden at Alston Middle School.	900
2014	SOIL SAMPLES: Soil samples processed in the Tri-County by Clemson Ag Services Lab; provides fertilizer recommendations.	4,083
2014	TRAININGS: Charleston Waterkeeper's program trained new volunteers to monitor water quality in Charleston Harbor.	7
2014	TRAININGS: Clemson Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program; impacts reflects current Tri-County certifications.	221
2014	TRAININGS: Clemson Department of Pesticide Regulation training and certification of pesticide applicators; impact reflects certified applicators in ACSEC region in 2015.	847
2014	TRAININGS: SC DNR'S SCORE program trained new volunteers to monitor water quality in Charleston Harbor.	9
2014	WEBSITE: Total unique views in 2014 for the Carolina Clear, ACSEC, Stormwater Pond Management and Carolina Yards.	40,000
2014	WEBSITE: Total views for the ACSEC Facebook page in 2014.	14,798
2014	YOUTH PRESENTATION: CCWSD-sponsored EnviroScape activities and a poster contest at local schools.	45,400
2014	YOUTH PRESENTATIONS: Keep Charleston Beautiful's offered school-based litter prevention programs for K-8 youth.	1,700
2014	YOUTH PRESENTATIONS: SC DNR's SCORE program provided in-school programs on "Oysters as Living Shorelines" and water quality.	300
1/8/15	PRESENTATION: Stormwater pond management discussion as part of South Carolina Vegetation Association's Annual Conference.	200
1/11/15	ARTICLES: "Buffers Protect Tidal Creeks" in <i>The Post and Courier</i> , written by CUCES agents, focused on importance of buffers along waterways.	96,005
1/14/15	WORKSHOP: SC DNR ACE BASIN NERR CTP's "Breaking Through Barriers"; placed emphasis on development of communication skills for discussing environmental issues with diverse audiences	62
1/22/15	YOUTH PRESENTATION: ACSEC EnviroScape presentation to James Island Elementary .	24

Date of Activity	Activity Description	Estimated Impact
2/7/15	FAIRS/FESTIVALS: ACSEC hosted a booth at Charleston STEM Festival and used Enviroscope with visiting youth and parents.	7,500
2/10/15	WORKSHOP: "2015 Turf School" was offered for commercial landscapers; topics included fertilizer management and IPM.	40
2/13/15	FAIRS/FESTIVALS: CCSWD hosted a booth at the Southeastern Wildlife Expo and provided information on natural resources and stormwater management.	2,500
2/24/15-2/25/15	CONFERENCES: Conservation District's Annual Partnership Conference included sessions on water quality and other related topics.	300
3/5/15	PRESENTATION: ACSEC presented to the Moncks Corner Rotary Club on stormwater management and actions residents can take to prevent pollution at home and in the landscape.	24
3/5/15	YOUTH PRESENTATION: CCSWD used Enviroscope to discuss waterway protection at Math & Science Fair at Eaglenest Elementary School.	350
3/14/15	FAIRS/FESTIVALS: Charleston County Stormwater Management hosted a booth at the 2015 Black Expo.	85
3/14/15	WORKSHOP: Carolina Yard Gardening School, "Healthy Soils" edition; included soil and fertilizer management.	100
3/25/15	YOUTH PRESENTATION: Enviroscope Presentation to CE Williams School.	110
4/9/15	FAIRS/FESTIVALS: FAIRS/FESTIVALS: ACSEC hosted a booth at the Berkeley County Backyard Naturescope, Kids Who Care Festival; used Enviroscope to discuss community connection to waterways.	2,000
4/15/15	FAIRS/FESTIVALS: ACSEC hosted table as part of Santee Cooper's Earth Day; provided information on upcoming ACSEC education and involvement opportunities.	250
4/15/15	FAIRS/FESTIVALS: ACSEC hosted a booth as part of MUSC's Earth Day Festival; provided information on upcoming ACSEC education and involvement opportunities.	1,000
4/26/15	FAIRS/FESTIVALS: ACSEC hosted table at the Charleston County Earth Day event	1,500
5/10/15	FAIRS/FESTIVALS: Multiple ACSEC partners hosted booths at the Mount Pleasant <i>Shem Dig</i> ; provided information on upcoming ACSEC education and involvement opportunities.	150
5/10/15	FAIRS/FESTIVALS: Multiple ACSEC partners hosted tables at Ashley Riverfest; provided information on upcoming ACSEC education and involvement opportunities.	2,000
5/26/2015 - 6/03/15	YOUTH PRESENTATIONS: CCSWD hosted eleven education outreach award presentations to students, teachers, and families on water quality contest topics	385
6/1/15	ARTICLES: <i>Naturally Kiawah's</i> "Native Plants for Lowcountry Gardens" featured Clemson Extension guidance on native plant use and benefit to waterways	6,636

Date of Activity	Activity Description	Estimated Impact
6/2/15	PRESENTATION: CCSWD Awards Program honored outstanding educators and Conservationists who promote stormwater, water, and soil quality conservation issues.	50
6/6/15	WORKSHOP: Carolina Yard Gardening School, "Water-Wise Gardening" edition; included topics on rain gardening and rain water harvesting.	50
6/12/15	PRESENTATION: Presentation to Ashland Plantation HOA/pond owners on stormwater pond management and best practices for shorelines.	10
6/13/15	PRESENTATION: "Rainwater Harvesting 101" presentation a part of SC Native Plant Society Annual Conference.	20
6/17/15	PRINT ADVERTISEMENT: "It Drains Here" promotional piece placed in <i>Moultrie News</i> by the Town of Mount Pleasant.	70,607
6/25/15	PRINT ADVERTISEMENT: "Illicit Discharge" promotional piece placed in <i>Moultrie News</i> by the Town of Mount Pleasant.	70,607
7/24/15; 7/25/15	WORKSHOP: SC Sea Grant, SCDNR and CUCES' Carolina Clear's "From Seeds to Shoreline Teacher Workshops," two full day trainings for teachers on watershed outreach, saltmarsh restoration, the school curriculum.	38
9/17/15	YOUTH PRESENTATION; Mount Pleasant Waterways used the Enviroscope to discuss waterway protection as part of its "Customer Appreciation Day."	100
9/18/15	YOUTH PRESENTATIONS: "Life in a Watershed" presentation as part of the Sustainability Symposium	350
9/18/2015	ARTICLES: CCSWD's "The Conservation Corner" Annual Report Newsletter reported on District's initiatives and opportunities.	1,000
9/20/15	ARTICLES: "Using Rain on Garden" in <i>The Post and Courier's</i> newspaper included information on applying harvested rainwater on edibles.	96,005
9/20/15	FAIRS/FESTIVALS: ACSEC hosted a table as part of the Charleston Green Fair; provided information on upcoming ACSEC education and involvement opportunities.	3,000
9/21/15-10/11/15	TELEVISION: Stormwater Pond Commercial; Knology and Comcast rotation	135,385
10/1/15	PRESENTATION: Presentation at Community Association Institute's Annual Conference on purpose of stormwater ponds and maintenance needs.	120
10/1/15	PRESENTATION: "Rain Garden Design" presented at the Hickory Hill Garden Club meeting.	16
10/14/15	YOUTH PRESENTATION: Enviroscope used at Mitchell Elementary School to discuss actions for preventing stormwater pollution.	32
10/17/15	FAIRS/FESTIVALS: Charleston Stormwater Management used the Enviroscope model at the 2015 Truck and Treat to teach youth about their connection to waterways.	525

Date of Activity	Activity Description	Estimated Impact
10/22/15	PRESENTATION: Presentation provided to "Neighbors for Clean Water Pond Conference" on upland management and protecting water quality before the pond.	22
10/22/15	PRESENTATION: Presentation provided to "Neighbors for Clean Water Pond Conference" on shorescaping for healthy ponds.	40
10/22/15	PRESENTATION: Presentation provided to "Neighbors for Clean Water Pond Conference" on stormwater pond management resources.	20
10/26/15	YOUTH PRESENTATIONS: Ashley Hall School used the ACSEC Enviroscope to discuss waterway health.	150
10/27/15	YOUTH PRESENTATION: Enviroscope used with students at Whiteside Elementary to discuss actions on landscape that can help to protect water quality.	87
10/29/15	YOUTH PRESENTATION: Stormwater Jeopardy! Used at Cario Middle School with students.	200
11/15/15	ARTICLES: "Planting for a Rainy Day" in <i>The Post and Courier's</i> newspaper highlighted resources for rain gardens; article written by CUCES agent.	96,005
12/2/15	FAIRS/FESTIVALS: ACSEC hosted a table as part of the MUSC Arbor Day Festival and included information on upcoming ACSEC involvement and education opportunities.	700
12/4/15	YOUTH PRESENTATIONS: As part of Arbor Day, CCSWD's "Twiggy the Tree" discussed benefits of trees to community and stormwater management with schools.	115
11/17/16	WORKSHOP: SC DNR ACE BASIN NERR CTP's "Coastal Wetlands Identification" training.	14
Spring 2015	ONLINE TRAININGS: "Carolina Yards and Neighborhoods Online Guide to Environmentally Friendly Gardening" highlighted landscape BMPs for the home gardener.	34
Summer 2015	ARTICLES: "Native Plants for Lowcountry Gardens" in the Charleston Garden Club's <i>Lowcountry Gardening Guide</i> .	500
Spring 2015; Fall 2015	ONLINE TRAININGS: Master Gardener training is provided to residential audiences online with topics focused on landscape BMPs for stormwater pollution prevention.	78
Fall 2015	ARTICLES: "Planning, Construction, and Operation Guide for Gardens, Greenhouses, and Rain Barrels," developed by CUCES agents, was distributed by local school district; developed by CUCES agents.	100
Fall 2015	ARTICLES: "Extension helps eateries serve waterways a healthier diet" published online and print in the <i>Clemson IMPACTS</i> ; highlighted ACSEC restaurant program.	16,140
Fall 2015	TRAININGS: Tri-County Master Gardener training; topics discussed include multiple stormwater BMP practices.	28

Date of Activity	Activity Description	Estimated Impact
2015	ARTICLES: SC DNR and SC Sea Grant's "Low Impact Development in Coastal South Carolina: A Planning and Development Guide;" impact represent number of downloads from host site location.	23,662
2015	BILLBOARD: Carolina Yard billboard series promoting landscape BMPs and the Carolina Yards program were located in high-visibility in 2015.	536,148
2015	BOOKLET: The Carolina Yards Workbook provides information on environmentally friendly gardening practices to residential audiences.	200
2015	BROCHURE: <i>Leaf It On The Lawn</i> ; flyer that includes tips for proper disposal of lawn debris and is offered in Spanish and English.	100
2015	IN-PERSON: Assistance provided to residents from CUCES agents and Master Gardener's on variety of home, garden, and water resource topics.	49,500
2015	MANUAL: The Rain Garden manual provides information on rain gardens to residential audiences.	200
2015	MANUAL: The Rainwater Harvesting manual provides information on rainwater harvesting to residential audiences.	200
2015	NEW PERMANENT EXHIBIT: Clemson REC "Ed Shed" includes education signage and stormwater best management practices.	500
2015	NEW PERMANENT EXHIBIT: Clemson REC Urban Research and Demonstration Area includes a rain garden, rain barrels, and educational signage.	1,000
2015	NEW PERMANENT EXHIBIT: Rain garden and cistern installed at a Berkeley County library location.	350
2015	NEW PERMANENT EXHIBIT: Rain garden and rain barrel installed at Dorchester County Government Building.	1,000
2015	NEW PERMANENT EXHIBIT: Rain garden and signage installed at Mount Pleasant fire station and recreation area.	800
2015	NEW PERMANENT EXHIBIT: Rain garden installed at Camp St. Christopher; tour of garden included as part of camp program.	650
2015	NEW PERMANENT EXHIBIT: Shorescaping planting and signage installed at Charleston County Government's stormwater pond.	100
2015	NEW SCHOOL PERMANENT EXHIBIT: Rain barrel and rain garden installed at Cape Romain Environmental Education Center.	175
2015	NEW SCHOOL PERMANENT EXHIBIT: Rain barrel and rain garden installed at Charleston Towne Montessori School	100
2015	ONLINE NEWSLETTER: ACSEC's "Ripple Effect" is published bi-monthly and provided ACSEC education and involvement opportunities.	2,310

Date of Activity	Activity Description	Estimated Impact
2015	OUTREACH MATERIALS: Packet of FOG management materials prepared for restaurant and food prep staff and distributed by multiple ACSEC partners.	30
2015	PERMANENT EXHIBIT: Rain barrel display at Charleston Aquarium.	1,000
2015	PERMANENT EXHIBIT: Rain garden and signage at Charleston Towne Landing State Historic Site.	1,000
2015	PERMANENT EXHIBIT: Rain garden at "Whirlin' Waters" at Wannamaker County Park.	500
2015	PERMANENT EXHIBIT: Rain garden at Bowen's Island Restaurant.	1,000
2015	PERMANENT EXHIBIT: Rain garden and signage at Caw Caw Interpretive Center.	2,000
2015	PERMANENT EXHIBIT: Two rain barrels and drip irrigation at St. Julian Divine Community Center.	1,500
2015	PERMANENT EXHIBIT: Two rain gardens, cistern, native plants and other best management practices at Fort Johnson Community Garden.	5,000
2015	PERMANENT EXHIBIT: Multiple BMPs installed at Sustainability Institute; tour of BMPs offered through organization.	150
2015	POSTCARD: A More Green Way to Clean; Tips on proper pressure washing to protect water quality.	100
2015	POSTCARD: Better Manage Fats, Oil and Grease (FOGs); Provides information on proper FOG disposal.	100
2015	POSTCARD: Freshwater Shorescapes; Benefits of shorescaping and tips and resources for pond owners.	200
2015	POSTCARD: Septic Systems Care and Maintenance; Tips for maintaining septic systems to reduce impact on water quality.	100
2015	POSTCARD: Trashing Our Environment; Provides information on what can be done to prevent litter in SC.	100
2015	POSTCARD: We All Live Downstream; Tips to preventing stormwater pollution in communities.	300
2015	POSTCARD: What is a Rain Barrel?; Promotes the use of rain barrels for better lawn care and water quality	200
2015	POSTCARD: What is a Rain Garden?; Provides brief description and purpose of a rain garden and links interested individuals to online resources and additional information.	200
2015	POSTCARD: What To Do About Pet Waste; Provides information to pet owners on proper disposal of pet waste.	300
2015	PROMOTIONAL ITEM: ACSEC Koozies distribution	200
2015	PROMOTIONAL ITEM: Be Wise if you Fertilizer Sticker distribution	50

Date of Activity	Activity Description	Estimated Impact
2015	PROMOTIONAL ITEM: Clean Water Hero Bracelets distribution	200
2015	PROMOTIONAL ITEM: Dog Bag Dispenser distribution	150
2015	PROMOTIONAL ITEM: Dog Bandannas distribution	50
2015	PROMOTIONAL ITEM: Fish Sponges, Includes a "Only Rain Down the Storm Drain!" message, distribution	50
2015	PROMOTIONAL ITEM: Pocket Ashtray distribution	75
2015	PROMOTIONAL ITEM: Thank You! For Protecting Waterways Reusable Bags distribution	75
2015	PROMOTIONAL ITEM: www.ashleycooper.org sticker distribution	200
2015	PROMOTIONAL ITEMS: Life in the Salt Marsh, information of salt marsh ecology and ecosystem health	100
2015	PROMOTIONAL ITEMS: Stormwater Pond Management Sticker distribution	200
2015	SCHOOL PERMANENT EXHIBIT: Cistern at Mitchell Elementary School's Green Hearts Project Garden.	350
2015	SCHOOL PERMANENT EXHIBIT: Cistern at the College of Charleston's Political Science Building.	500
2015	SCHOOL PERMANENT EXHIBIT: Four rain barrels at James Island Charter High School.	390
2015	SCHOOL PERMANENT EXHIBIT: Rain barrel system at Early Childhood Education Center.	100
2015	SCHOOL PERMANENT EXHIBIT: Rain garden, cistern, rain barrels, and other best management practices at Grice Green Teaching Garden.	500
2015	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Ashley River Creative Arts School.	500
2015	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system at Stono Park Elementary.	400
2015	SCHOOL PERMANENT EXHIBIT: Rainwater harvesting system for school garden at Alston Middle School.	900
2015	SCHOOL PERMANENT EXHIBIT: Two rain barrels at Goodwin Elementary School.	100
2015	SOIL SAMPLES: Soil samples processed in the Tri-County by Clemson Ag Services Lab; provided fertilizer recommendations.	4,426
2015	TELEVISION: SCETV and Clemson Extension's "Making It Grow" shares home and garden information for South Carolina residents; a water quality tip is included each week during the broadcast.	24,358

Date of Activity	Activity Description	Estimated Impact
2015	TRAININGS: Carolina Clean Watershed Restaurant program; trained and certified restaurant and staff in best practices in food prep industry, with a focus on fats, oils, and grease management.	20
2015	TRAININGS: Charleston Waterkeeper's program trained new volunteers to monitor water quality in Charleston Harbor.	7
2015	TRAININGS: Clemson Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program; impacts reflects current Tri-County certifications.	151
2015	TRAININGS: Clemson Department of Pesticide Regulation training and certification of pesticide applicators; impact reflects certified applicators in ACSEC region in 2015.	1,135
2015	TRAININGS: SC DNR'S SCORE program trained new volunteers to monitor water quality in Charleston Harbor.	10
2015	WEBSITE: Total unique views in 2015 for the Carolina Clear, ACSEC, Stormwater Pond Management and Carolina Yards.	45,996
2015	WEBSITE: Total views for the ACSEC and Carolina Clear Facebook page in 2015.	42,621
2015	YOUTH PRESENTATION: Charleston Waterkeeper's "In-School Education Program" for youth focused on waterway protection.	578
2015	YOUTH PRESENTATIONS: Keep Charleston Beautiful's offered a school-based litter prevention program for K-8 youth.	1,000
2015	YOUTH PRESENTATIONS: Keep Dorchester County Beautiful's youth education program focused on recycling and litter prevention.	478
2015	YOUTH PRESENTATIONS: SC DNR's SCORE program provided in-school programs on "Oysters as Living Shorelines" and water quality.	824

MCM 2, Public Involvement		
Date of Activity	Activity Description	Estimated Impact
July 2013-June 2014	LITTER SWEEPS: Beach Sweep/River Sweep, sponsored by SC Sea Grant and SC DNR; coordinated volunteer efforts to clean rivers and beaches.	1,770
July 2013-June 2014	LITTER SWEEPS: Adopt-A-Highway; Tri-county clean up coordinated volunteers to help pick up litter along state-owned highways and roadways.	2,726
July 2013-June 2014	LITTER SWEEPS: Keep Charleston Beautiful sponsored community cleanups throughout the City of Charleston community.	927

Date of Activity	Activity Description	Estimated Impact
July 2013-June 2014	LITTER SWEEPS: Multiple litter cleanups held or supported by Keep Dorchester County Beautiful.	245
July 2013-June 2014	LITTER SWEEPS: Regular litter cleanups are sponsored on island communities by Surfrider Foundation.	100
July 2013-June 2014	OYSTER REEF CONSTRUCTION: SC DNR's SCORE program facilitated 28 oyster reef building events and 32 oyster bagging events.	1,836
July 2013-June 2014	MONITORING: SC DNR's SCORE program facilitated volunteer water quality monitoring at multiple Tri-County waterway locations.	72
July 2013-June 2014	MONITORING: Charleston Waterkeeper implements a volunteer-based water quality monitoring program in Charleston Harbor.	11
July 2013-June 2014	MONITORING: Surfrider Foundation's "Blue Water Task Force" worked with volunteers to collect and analyze water samples in the Folly River.	10
2/22/14	DUNE RESTORATION: SC Native Plant Society organized a dune restoration event which used volunteers to transplant native grasses from Sullivan's Island to Folly Beach.	100
3/22/14	NATIVE PLANT SALE: SC Native Plant Society sponsored a fall and spring native plant sale; native plant use is considered a best management practice.	150
4/1/14-4/30/14	LITTER SWEEPS: "Clean Cities Sweep" promoted community-sponsored litter cleanup and beautification projects in the City of Charleston and North Charleston; sponsored by Keep Charleston Beautiful and North Charleston Beautiful affiliates.	1,821
Spring 2014	RAIN BARREL SALE: ACSEC rain barrel sale offered in partnership with regional manufacturer and community partners; offered Ivy rain barrels at a discounted price to residents.	257
2014	STORM DRAIN MARKING: Multiple storm drain marking programs hosted by ACSEC partners in the Tri-County; drains marked and literature distributed to surrounding community. Impact number represents volunteer participation.	394
2014	LITTER SWEEPS: Keep Charleston Beautiful and CARTA's "Adopt-A-Stop" program used volunteers to service bus stops and litter prevention.	10
2014	YARD CERTIFICATION PROGRAM: Certified yards recognized for their adoption of landscape BMPs; through the CUCES Carolina Yards program	20
2014	YARD CERTIFICATION PROGRAM: Surfrider Foundation's Ocean Friendly Gardens certified two landscapes in the Tri-County.	2

Date of Activity	Activity Description	Estimated Impact
2014	BOAT PUMPOUT PROGRAM: Charleston Waterkeeper and SC DNR partnership provided sewage pumpout service to boat owners. During 2014, 10,053 gallons of sewage removed and disposed. Impacts reflect number of regularly serviced boats.	39
2014	BMP INSTALLATIONS: Five new best management practices were installed with the assistance of diverse program participants and volunteers. BMPs included rain gardens and shoredscaping projects. Impacts are not referenced here as project impact has been reported as part of other listed activities.	*See description
3/14/15; 10/24/15	NATIVE PLANT SALE: SC Native Plant Society sponsored a fall and spring native plant sale; native plant use is considered a best management practice.	500
4/18/15; 7/18/15	LITTER SWEEPS: Town of Mount Pleasant sponsored two roadside cleanups with Charleston Running Club.	30
4/25/15	LITTER SWEEPS: Clean Marine event, sponsored by multiple ACSEC partners; focus on reducing marine debris through multi-day collection event. Volunteers man drop-off locations and assist community with disposal.	66
5/28/15-5/30/15	RAIN BARREL SALE: ACSEC rain barrel sale offered in partnership with regional manufacturer and community partners; offered Ivy rain barrels at a discounted price to residents.	501
9/2/15; 9/8/15	LITTER SWEEPS: "Litter Butt Study" and pickup sponsored by DHEC-OCRM, Surfrider Foundation, and others.	29
9/15/15	LITTER SWEEPS: Beach Sweep/River Sweep, sponsored by SC Sea Grant and SC DNR; coordinated volunteer effort to pickup litter on popular river and beach shorelines.	1,631
2015	BOAT PUMPOUT PROGRAM: Charleston Waterkeeper and SC DNR partnership provided sewage pumpout service to boat owners. During 2015, 310 pumpouts performed with 19,960 gallons of sewage removed and disposed. Impacts reflect number of regularly serviced boats.	76
2015	PET WASTE BAG DISPENSER PROGRAM: Keep Charleston Beautiful program sponsored pet waste bag dispensers and signage in strategic public space locations. Impact is bag distribution number.	283,200
2015	LITTER SWEEPS: Keep Charleston Beautiful sponsored multiple community cleanups during 2015.	1877
2015	LITTER SWEEPS: Multiple litter cleanups were held or supported by Keep Dorchester County Beautiful in 2015.	228

Date of Activity	Activity Description	Estimated Impact
2015	LITTER SWEEP: Adopt-A-Stop program, Keep Charleston Beautiful and CARTA program used volunteers to service bus stops in region.	13
2015	LITTER SWEEPS: Adopt-A-Highway; Tri-county wide clean up effort coordinated volunteer participation to pick up litter along state-owned highways and roadways.	3,530
2015	STORM DRAIN MARKING: Multiple storm drain marking programs hosted by ACSEC partners in the Tri-County; drains marked and literature distributed to surrounding community.	169
2015	OYSTER REEF CONSTRUCTION: SC DNR's SCORE program facilitated 28 oyster reef building events and 32 oyster bagging events using volunteer participation.	2,397
2015	MONITORING: SC DNR's SCORE program facilitated volunteer water quality monitoring at multiple Tri-County waterway locations.	32
2015	MONITORING: Charleston Waterkeeper implemented a volunteer-based water quality monitoring program in Charleston Harbor.	15
2015	YARD CERTIFICATION PROGRAM: Certified yards recognized through the Carolina Yards program for their adoption of landscape BMPs.	61
2015	YARD CERTIFICATION PROGRAM: Surfrider Foundation's Ocean Friendly Gardens has certified two landscapes in the Tri-County.	2
2015	PET WASTE BAG DISPENSER PROGRAM: Surfrider Foundation program sponsors pet waste bag dispensers and signage at Folly Beach locations. Impact is bag distribution number.	30,000
2015	BMP INSTALLATIONS: Eight new best management practices were installed with the assistance of diverse program participants and volunteers. BMPs included rain gardens and shoring projects. Impacts are not referenced here as project impact has been recorded as part of other activities.	*See description

MCM 1 and 2, Public Education/Outreach and Involvement

Date of Activity	Activity Description	Estimated Impact
4/25/14	YOUTH WORKSHOP: Enviroscape demonstration and rain garden installation with youth group at the Wannamaker County Park's Whilin' Waters.	20

Date of Activity	Activity Description	Estimated Impact
5/2/14	YOUTH INVOLVEMENT: SC Envirothon; CCSWD sponsored local student attendance to week-long, hands-on environmental learning workshop.	120
5/12/14	YOUTH PRESENTATION: Surfrider Foundation used the Enviroscape activity with students at Fort Dorchester High School; program followed by a storm drain marking project.	5
June 2014; July 2014	YOUTH: "4-H2O Exploring Lowcountry Waterways Summer Camp" provided learning and involvement opportunities for 10-13 year olds in Tri-County.	35
11/20/14	WORKSHOP: "Bioretention Workshop" focused on design and maintenance protocol for facility and maintenance staff. Program included participant installation of a bioretention cell.	15
7/15/14	WORKSHOP: Carolina Schoolyards Teacher Rain Garden Workshop focused on design and creation of environmentally-friendly school landscape curriculum; included a rain garden installation project.	5
11/6/14	WORKSHOP: Rain Garden presentation and installation workshop at Park Circle Community Center	35
Spring 2014	YOUTH INVOLVEMENT: "From Seeds to Shoreline" youth saltmarsh restoration initiative; students learn about coastal watersheds through <i>Spartina alterniflora</i> planting projects and curriculum.	724
Spring 2014	TRAININGS: Master Naturalist Training provided training on the natural world and the stewardship of shared resources; included installation of a rain garden.	12
Fall 2014	TRAININGS: Tri-County Master Gardener training; topics included multiple stormwater BMP practices. Program included installation of a rain garden.	32
5/1/15	WORKSHOP: SC Envirothon sponsored by DNR and statewide Conservation Districts. CCSWD sponsored 126 local youth to attend and learn about water resource topics through hands-on activities.	126
5/21/15	WORKSHOP: Rain garden presentation and rain garden installation with staff and volunteers at Dorchester County Government.	16
June 2015; July 2015	YOUTH INVOLVEMENT: 4-H2O "Exploring Lowcountry Waterways Summer Camp" provided learning and involvement opportunities for 10-13 year olds in Tri-County.	42
6/21/15 - 6/27/15	WORKSHOP: CCSWD environmental camp for youth; provided hands-on opportunities for water resource learning.	150
10/9/15	WORKSHOP: "Naturalist Gardening for the Green Thumb" presentation and rain garden installation at the 2015 SC Master Naturalist Conference.	14

Date of Activity	Activity Description	Estimated Impact
10/14/15	WORKSHOP: CUCES, Carolina Clear, and SC DNR ACE BASIN NERR CTP's "Shorescaping Workshop" included a series of presentations and a hands-on shoreline planting installation.	19
Spring 2015, Fall 2015	TRAININGS: Master Naturalist Training provided training on natural world and the stewardship of shared resources; included rain garden installation as part of the Spring 2015 training.	24
Spring 2015; Fall 2015	TRAININGS: "Rain Gardens for Professionals;" full-day presentations and rain garden installation for landscape professionals. Program offered twice in ACSEC in 2015.	36
Spring 2015; Fall 2015	HYBRID TRAININGS: Master Pond Manager course; online and field based course in pond maintenance providing stormwater maintenance instruction and hands-on application.	52
Summer 2015	HYBRID TRAININGS: Post-Construction BMP Inspector course; online and field based course providing instruction and hands-on application for BMP maintenance.	35
2015	YOUTH INVOLVEMENT: "From Seeds to Shoreline" youth saltmarsh restoration initiative; students learn about coastal watersheds through <i>Spartina alterniflora</i> planting project curriculum.	989

III. Minimum Control Measures (MCM)

B. Minimum Control Measure 1: Public Education and Outreach on Storm Water Impacts (4.2.1, 5.3)

1. Use the table below to summarize outreach strategies, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Pollutant of Concern	Outreach Strategy <i>(include target audiences)</i>	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>	Number of People Reached
Nitrogen, Phosphorous Pesticides	Web Site	Available to all visitors to the City web site	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Web Site is fully functional and has the capability for updates.	2014 = 121
Dirt, Oil, Grease	Web Site	Available to all visitors to the City web site	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Web Site is fully functional and has the capability for updates.	& 2015 = 113
Any in the Stormwater Runoff	Meeting w/ each neighborhood in the City.	Meet w/ each neighborhood at least bi-annually	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	1 or 2 meetings per month, see attached schedule	2014 = 207 2015 = 125
ACSEC	ACSEC - Hands-On training, Mass Media	Maximize distribution of stormwater information	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	See Attached for specifics	
			<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation		

C. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: This MCM has been successfully completed per the implementation schedule.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: Improvement may be realized with additional participation by the citizens of the City and a more diverse distribution of educational materials by the Ashley Cooper Stormwater Education Consortium (ACSEC).

III. Minimum Control Measures (MCM)

D. Minimum Control Measure 2: Public Involvement/Participation (4.2.2, 5.3)

1. How can the public find information about the SWMP? Visit the city website, call DPW or Berkeley County Stormwater Utility

2. Use the table below to summarize public involvement opportunities, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Public Involvement Opportunity	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>	Number of Participants
		<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation		
See Attached Carolina Clear	Annual Report from - Ashley Cooper	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation		
Stormwater Education Consortium		<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation		
		<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation		
		<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation		

E. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The partnership with Carolina Clear and the Ashley Cooper Stormwater Education Consortium has allowed the City to successfully implement this MCM and meet the goals established to measure success.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: None

III. Minimum Control Measures (MCM)

F. Minimum Control Measure 3: Illicit Discharge Detection and Elimination (IDDE) (4.2.3, 5.3)

1. How can the public notify the MS4 of suspected illicit discharges? Via a phone call to DPW or City Hall, or they can use social media (Facebook page) to report their concerns.

2. Complete the list below for the last reporting year:

- Total number of suspected illicit discharges: 2
- Total number of illicit discharges found: 1
- Number of illicit discharges with enforcement escalation (action taken beyond written warning): 0
- Total number of illicit discharges eliminated: 1

3. Use the table below to summarize priority areas (and associated rationale for selection) for screening. If these areas have changed since the last reporting year, provide a brief explanation. Add rows where needed and attach additional sheets if necessary.

Priority Areas	Rationale for Selection	Changed within last reporting year? (If so, provide an explanation.)
TMDL Area Evaluation	All TMDL receiving points should be monitored	No
Impaired Waters	To prevent any additional impairment	No
Stormwater Outfalls	Illicit discharges will convey through ditches	No

4. Use the table below to summarize IDDE action items, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

IDDE Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned (specific implementation dates)
Investigation of citizen complaints	100%	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Two possible incidents were reported and investigated
Training of personnel to recognize illicit discharge	Conduct Training	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Training has been completed for applicable staff
Conduct ditch and outfall inspections	Evaluate all ditches maintained by the city for any illicit discharges	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	276 inspections conducted 1143 CY of debris removed with no noted illicit discharges
Post Clean up inspections	100%	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	The one recorded violation was resolved by the party immediately and has not been found to be in violation since.
Field Screening	Develop and conduct dry weather field screening	<input checked="" type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	2016 - Develop a procedure for dry weather field screening and incorporate it into the SWMP.

G. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The goals of the MCM have been achieved successfully.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: None

III. Minimum Control Measures (MCM)

H. Minimum Control Measure 4: Construction Site Storm Water Runoff Control (4.2.4, 5.3)

1. How can the public notify the MS4 of possible noncompliance at construction sites? Via phone call to DPW / City Hall or they can use social media (Facebook page) to report their concerns.

2. How does the MS4 communicate with construction operators to ensure understanding of requirements and improvements that may be needed? Pre-development and Pre-construction meetings are held with the owners / contractors / engineers to ensure that all parties are aware of the stormwater controls necessary for the project.

3. Has an enforcement response plan (ERP) been developed and utilized?

Yes No (*explain*): _____

4. Complete the list below for the last reporting year:

- Number of new construction sites: 7
- Total number of active construction sites: 16
- Total number of inspections performed: 586
- Number of sites with unsatisfactory/noncompliant inspection results: 2
- Number of sites with enforcement escalation (action taken beyond written warning): 0
- Number of sites inspected past the deadline specified in the permit: 0

5. Use the table below to summarize construction site action items, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Construction Site Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>
Silt Fence Maintenance Frequency	All silt fence repaired immediately if damaged by site contractor	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Since 1/1/2013, the building superintendents have been made aware of the need to immediately repair contractor damaged silt fence.
Potential illicit discharge items	Eliminate illicit discharge from the construction site	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Pre-construction and all site visits investigate potential illicit discharge by contractors on the sites.
Eliminate tracking of soil onto roadways from residential construction sites.	No tracking of soil from the construction site to the roadways.	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Building superintendents are required to immediately address issues noted by City personnel.
		<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	
		<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	

I. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The goals of the MCM have been achieved successfully.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: None

III. Minimum Control Measures (MCM)

J. Minimum Control Measure 5: Post-Construction Storm Water Management (4.2.5, 5.3)

1. Complete the list below for the last reporting year:

- Number of newly completed construction sites: 6
- Number of inspections performed within 30 days of construction completion: 24
- Total number of inspections performed: 59
- Number of sites with unsatisfactory/noncompliant inspection results: 0
- Number of sites with enforcement escalation (action taken beyond written warning): 0

2. Use the table below to summarize post-construction action items, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Add rows where needed and attach additional sheets if necessary.

Post-Construction Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>
Ensure maintenance of new structures and facilities	Verify all projects include maintenance agreements with submittals	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	All projects require a signed maintenance agreement be submitted with the stormwater review plans
Create inventory of all stormwater facilities within the MS4	Ensure as-built drawings of the stormwater system are on file before issuing NOT	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	All projects must submit a survey grade as-built of the stormwater system before the NOT letter is generated for closeout.
Construction completion Inspections	All projects should have a final inspection conducted to ensure SWMP compliance.	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Inspections have continued until 70% vegetation is established on the site.
		<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	
		<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	

K. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The goals of the MCM have been achieved successfully.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: None

III. Minimum Control Measures (MCM)

L. Minimum Control Measure 6: Pollution Prevention/Good Housekeeping for Municipal Operations (4.2.6, 5.3)

1. Has a comprehensive assessment of the pollutant discharge potential for all municipally owned facilities been conducted? If not, indicate a status and planned completion date in the chart below.

Yes No In Progress (*explain*): _____

2. Have yearly comprehensive inspections been conducted at high priority facilities? If not, indicate a status and planned completion date in the chart below.

Yes No In Progress (*explain*): _____

3. Has training been conducted for employees? If not, indicate a status and planned completion date in the chart below.

Yes No In Progress (*explain*): _____

4. Use the table below to summarize municipal facility pollution prevention action items, goals, and progress for the current reporting year. In the “activities conducted and planned” section, focus on activities that were conducted in the last reporting year and those that are planned for the upcoming reporting year, providing implementation dates. Ensure that the maintenance and inspection of MS4 catch basins and structural storm water controls are addressed in the chart. Add rows where needed and attach additional sheets if necessary.

Pollution Prevention Action Item	Measurable Goal(s)	Progress on Goal(s)	Activities Conducted and Planned <i>(specific implementation dates)</i>
Establish GIS map of all municipal stormwater facilities	Complete mapping of all Municipal facilities on the GIS	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	City facilities are mapped and as new facilities or parcels are acquired, they are added to the map.
Identify possible sources of municipally generated pollutants.	Assess municipal facilities for potential pollutants	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Facility assessment has been completed at the City Garage and other areas will be evaluated in 2016.
Implement pollution protection measures	Document protection / prevention measures at City facilities	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Ongoing fuel leak detection inspections, installed oil spill kits, monitor pond weed control and monthly street sweeping.
Employee training	Train employees on good housekeeping and pollution prevention measures.	<input type="checkbox"/> In Planning <input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Employees have received training on spill prevention / containment and good housekeeping practices.
Contractor Oversight	Pollution prevention compliance on the job site	<input type="checkbox"/> In Planning <input checked="" type="checkbox"/> Ongoing <input type="checkbox"/> Completed <input type="checkbox"/> Evaluation	Inspections are conducted on the job sites to ensure pollutants are not released.

M. Control Measure Evaluation (5.3)

1. Evaluate the success of this MCM. Refer to goals implemented and achieved, and adherence to the implementation schedule: The goals of the MCM have been achieved successfully.

2. Provide an evaluation of where the program needs improvement and explain any actions that will be taken to achieve objectives: None

City of Goose Creek Town Meeting Schedule | 2014

<u>Date of Meeting</u>	<u>Subdivision</u>	<u># of Residents</u>	<u>Letter Deadline</u>	<u>Letter Mail Date</u>	<u># Attended</u>
January 16, 2014	Persimmon Hill (Phases 1 and 2)	381		01/02/14	24
February 6, 2014	Montague Plantation Montague Pointe Royal Oaks Medway Landing Cokers Commons Townhomes Cokers Crossing	392		01/23/14	34
February 20, 2014	Woodland Heights Quail Hill	321		02/06/14	18
March 6, 2014	Liberty Village	340		02/20/14	9
March 20, 2014	St. Charles Place Nello Farms Sophia Landing Waterford & Wedgewood Townhomes	349		03/06/14	14
April 3, 2014	Liberty Hall Plantation (1 of 2)	378		03/20/14	9
April 17, 2014	Liberty Hall Plantation (2 of 2)	378		04/03/14	3
May 1, 2014	Longleaf	337		04/17/14	2
May 15, 2014	Brickhope Greens	246		05/01/14	8
June 5, 2014	Colonial Heights Braemoor Woodland Lakes	476		05/22/14	16
July 3, 2014	Bushy Park Greenview The Oaks	521		06/19/14	27
August 7, 2014	Foxborough & Foxborough Townhomes	587		07/24/14	24
September 4, 2014	Camelot Ryan Creek	349		08/21/14	19

City of Goose Creek Town Meeting Schedule | 2015

<u>Date of Meeting</u>	<u>Subdivision</u>	<u># of Residents</u>	<u>Letter Deadline</u>	<u>Letter Mail Date</u>	<u># Attended</u>
February 12, 2015	Pineview	613		01/29/15	31
March 5, 2015	Hunters Woods Cobblestone Carnes Crossroads	358		02/19/15	25
April 2, 2015	Cherry Hill Stratford Forest Stratford Gardens	307		03/19/15	15
May 7, 2015	The Commons	317		04/23/15	12
June 4, 2015	Friars Grove Bedford Chase Cadbury Stonehurst Hearthstone	551		05/21/15	5
July 2, 2015	Pembroke Adthan Place Haleswood Bridgecreek Alston Court	528		06/18/15	11
August 6, 2015	Chatfield The Preserve Lakeview Terrace	265		07/23/15	20
September 3, 2015	Bloomfield Gibbs Forest Piedmont Place Deerfield Place	351		08/21/15	6

ASHLEY COOPER

STORMWATER EDUCATION CONSORTIUM



Annual Report of Activities

year 7 / january 2015 - December 2015

February 2016



The Ashley Cooper Stormwater Education Consortium's Year Seven Annual Report of Activities summarizes outreach and involvement programming offered by the Ashley Cooper Stormwater Education Consortium (ACSEC) community and education partners in 2015. The ACSEC implements a region-wide outreach strategy to educate Charleston Tri-County residents on water quantity, quality and the cumulative impacts of stormwater. Education programming is steered by the ACSEC Stormwater Outreach Strategic Plan 2012-2017, which identifies priority issues to address through messaging and outreach that targets residential and commercial audiences. The year 2015 marks the fourth year of strategic plan implementation and allows for opportunities for evaluation and evolution of new and existing programs.

During 2015, new programming was implemented that provided for hands-on education and involvement trainings for technical and commercial audiences, including the Carolina Rain Garden Initiative's Rain Garden for Professionals Workshop, the Master Pond Manager course, Post-Construction BMP Inspector certification course, and the Carolina Clean Watershed Restaurant program. Several of these programs resulted in the development of new permanent exhibits across the Tri-County, including a first for the ACSEC, a shorescaping demonstration site at a stormwater pond.

New mass media efforts focused on stormwater pond management, with a commercial rotation featuring best practices for stormwater pond function and performance. The commercial was rotated in the ACSEC region in Fall 2015 and garnered 135,385 impacts. The commercial is slated for broadcast again during Spring 2016.

Existing programming also grew during 2015, reaching new audiences across the Tri-County region. Highlights include the Seeds to Shoreline restoration program targeting youth and teachers, water resource-related training for Master Gardener and Master Naturalist volunteers, residential workshops on rain garden installation and design, the ACSEC 3rd annual Ivy rain barrel sale and more. ACSEC's impact on print and publications continue to be a strength of the program, with new opportunities and topics to reach across the state of South Carolina.

As a result of these new and existing efforts, the ACSEC recorded over an estimated 1.5 million educational impacts, including 1.2 million through indirect outreach methods and almost 400,000 through direct. As the ACSEC's Strategic Plan exists as a "living" document, the ACSEC will incorporate strategies in 2016 to address bacteria management in runoff through programming targeting pet owners and homeowners in the community. The ACSEC partners look forward to 2016 and our work in and around Lowcountry waterways.



ACSEC Co-Coordinator

Kim Counts Morganello (left) and Guinn Wallover (right) are Water Resource Agents for the Clemson Carolina Clear program, and work to co-coordinate the Ashley Cooper Stormwater Education Consortium. Kim's professional interest include landscape-level best management practices, rainwater harvesting, rain gardens and community involvement projects. Guinn's professional interests include water quality monitoring, stormwater pond management and commercial and construction best management practices. In their spare time, both Kim and Guinn can be found outside enjoying SC's water resources.

2015 Highlights

- In 2015, the ACSEC was excited to announce the recognition of its first two “Carolina Clean Watershed Restaurants.” Through training and adoption of best management practices in the workplace, Carolina Clean Watershed Restaurants take proactive steps to reduce fats, oil and grease, bacteria and other pollution in our waterways.
- The Carolina Rain Garden Initiative made a splash in 2015 with new resources for residential and commercial audiences alike, including a “Rain Garden Workshop for Professionals Workshop” training. This training, hosted twice in the ACSEC, provided hands-on application for contractors in rain garden design and installation.
- The Master Pond Manager course and Post-Construction BMP Inspector course launched in the Tri-County in 2015. These courses, developed as a partnership between Clemson Extension, The Center for Watershed Excellence, and Clemson Online, provide professional level training to staff involved in maintenance of stormwater best management practices. These courses are “hybrid” trainings with both online classroom and field day curriculum.
- The College of Charleston Masters of Environmental Studies program and the ACSEC wrapped up a multi-year study evaluating the use and application of harvested rainwater. The implications of this work have led to the development of several resources through Clemson Extension, including application instructions for use of harvested rainwater on edibles in the home and school setting.
- The latest mass media blitz focused on stormwater pond management tips and resources for pond owners. During the Fall of 2015, the pond-focused television commercial aired reached 135,385 impacts in the ACSEC region.

Outreach activities and total number reached (estimated)

1. ACSEC Internet Resources including ACSEC E-newsletter, Facebook page, factsheet series and website.
number reached: 76,985
2. Mass Media Campaign including television and billboard efforts to reach homeowners and pond owners.
NUMBER REACHED: 695,891
3. Permanent Demonstration Sites across the Ashley Cooper region demonstrate diverse best management practices for protecting water quality.
number reached: 20,415
4. ACSEC representation at fairs and festivals, providing information on ACSEC and ways to protect water quality.
number reached: 20,210
5. Diverse array of public workshops, trainings, presentations and conferences pertaining to stormwater.
number reached: 61,545
6. ACSEC Public Involvement opportunities including rain garden installations, storm drain marking, litter sweeps, oyster reef construction, water quality monitoring and rain barrel sales.
number reached: 325,127

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The majority of designated Small Municipal Separate Storm Sewer Systems (SMS4) communities in the Charleston Urbanized Area, representing approximately 90% of the population, have committed to the ACSEC regional collaboration. These communities are represented by a dedicated group of public servants who have been engaged for many years in building the partnership.

Local SMS4 Consortium Representatives

Berkeley County	Clint Busby, Kelsey Gagnon
Charleston County	John Carullo, Frank Pandullo, Stuart Ruelle, Chris Wannamaker, Taylor Anthony
Dorchester County	Kacy Byrd
City of Charleston	Laura Cabiness, Kinsey Holton
City of Folly Beach	Represented by Charleston County via Inter-Governmental Agreement (IGA)
City of Goose Creek	Steve Price, Chick Foster
City of Isle of Palms	Represented by Charleston County via IGA
Town of James Island	Represented by Charleston County via IGA
Town of Lincolnville	Represented by Charleston County via IGA
Town of Mount Pleasant	Hillary Repik, Brett Champion
City of North Charleston	Mike Dalrymple, John Peckham, Merry Barton
Town of Sullivan's Island	Represented by Charleston County via IGA
Town of Summerville	Ross Cornette, Bonnie Miley



Collaboration is integral in developing and delivering a successful watershed-scale outreach program that reaches diverse audiences. The ACSEC is fortunate to have a variety of organizations in the Charleston Tri-County region that have joined the effort. Education partners include universities, state and local government agencies, utilities and non-profits. Each brings unique expertise, resources, ideas and programs to the ACSEC. The ACSEC fosters communication among organizations and through this cooperative effort programs are being created or enhanced.



ACSEC Education Partners



acSec mISSIOnSTaTement

Improve water quality within the Ashley and Cooper River basins by providing educational opportunities on stormwater impacts and our community roles in supporting healthy, fishable, and swimmable waterways.

PrOgram gOals

- Develop and implement an education plan that defines a cohesive education strategy which outlines target audiences and associated target pollutants relevant to the region using a prioritized approach.
- Facilitate compliance with existing and future educational regulatory requirements by capitalizing on local resources and service providers.
- Foster citizen involvement in stormwater management through ACSEC education and participation programs.
- Encourage behavioral change towards environmental quality improvement through stormwater education.
- Utilize mainstream and developing technologies and tools to maximize citizen exposure to ACSEC stormwater goals and objectives.
- Create an interactive reporting process to facilitate information exchange and dissemination among member entities.





Education and Involvement Program History

To meet the ACSEC program goals, community and education partners meet twice a year or more frequently as needed to work collaboratively in the development, implementation, and evaluation of new and existing programming. These meetings and decision making process is also open to the public.

ACSEC programming priorities were identified and developed through the Ashley Cooper Stormwater Education Consortium Stormwater Outreach Strategic Plan 2012-2017. The Strategic Plan can be found online at: www.ashleycooper.org. The Strategic Plan provides a framework for prioritizing regional issues, developing target outreach methods, and determining program evaluation metrics to improve the delivery and impact of ACSEC efforts. It is considered a “living” document to allow for refinement, supplementation, and flexibility as regional efforts evolve over the five-year period. The development of the Strategic Plan was a multi-year effort that involved community and education partner input and an evaluation of geography, pollutant concerns, and public perception as identified from the 2008 Carolina Clear Statewide Survey.

The Strategic Plan process helped identify priority issues and education strategies to address pollutants of concern in the region. The ACSEC residential and commercial audience priorities are as follows:

RESIDENTIAL AUDIENCE PRIORITIES		COMMERCIAL AUDIENCE PRIORITIES	
<i>issue</i>	<i>goal</i>	<i>issue</i>	<i>goal</i>
Home landscaping nutrient management	Proper application of fertilizer, use of low or no-phosphorous fertilizers	Landscapers and pond management company nutrient management	Proper application of fertilizer, use of low or no-phosphorus fertilizers, post construction BMP (pond) maintenance
Residential stormwater pond management	Proper maintenance, homeowner association responsibilities, and neighborhood awareness	Restaurants and hospitality fats, oil, and grease (FOG) management	Proper disposal of fats, oil and grease
Home auto repair hazardous material	Proper management and disposal of oil, grease and other automotive fluids	Automotive businesses oil, grease and hazardous fluids management	Proper management and disposal of petroleum and hazardous materials

These priority issues have formed the core of efforts by the ACSEC; education strategies include five-year timelines for program implementation (see Appendix B.). To evaluate the effectiveness of outreach and involvement campaigns, evaluation metrics include but are not limited to:

- Five-year surveys to gauge perceptions, knowledge gained, and behavior change of residents living in the consortium area.
- Google analytics to evaluate impacts of web-based programming and outreach.
- Short-term and long-term program evaluation to evaluate workshop and training success in delivering information, assisting participants in overcoming barriers to practice implementation, and meeting the needs of the target audience.
- Other methods including analysis of distribution numbers, feedback, viewership, and participant reach.

The ability of the ACSEC to implement and deliver consistent messaging and programming as well as leverage partner-lead initiatives helps the Consortium-model to successfully address community priorities and concerns across multiple waterway “lines.”

Annual Report of Activities Format

The annual report utilizes the same general format as the first six ACSEC reports and the other regional stormwater consortiums in South Carolina. This annual report, the seventh for the Consortium, is intended to give the reader a comprehensive look at the ACSEC from January 1, 2015 and December 31, 2015. This report delineates activities into public education and public involvement categories. For each activity, a brief description is provided as well as information on lead provider, supporting partners, date, number of impacts, and target audiences. Furthermore, public education activities are identified as either direct or indirect outreach strategies.

Clemson Extension’s Carolina Clear program developed an online database in the first ACSEC reporting cycle to record detailed information on activities conducted by Consortium partners. The data collected in the online database includes information on target audiences, pollutants addressed, activity type, lead service providers, supporting partners, number of impacts, location and several other categories. This annual report provides a condensed version of the information collected in the online database as well as additional, supplementary information sourced from ACSEC partners.

The activities in the report are listed in table format. Due to space limitations, target audiences are abbreviated as follows:

Target Audience Abbreviations

GP	General Public
R	Residential: Homeowners and Renters
YT	K-12 Youth and Teachers
HE	Higher Education
T	Technical: Engineers, Contractors, Landscapers, Developers, Staff
EA	Elected and Appointed Officials and High Level Staff
C	Commercial
SP	Stormwater Pond Managers
B	Boat Owners, Boat Operators, and Marinas
P	Pet Owners

Rainwater Harvesting: A Tool for Stormwater Outreach

research: The Clemson Extension Service partnered with the College of Charleston Master of Science in Environmental Studies Program to sponsor a student thesis research project on water quality in harvested rainwater systems. The objective of the research was to examine the effectiveness of the first flush diverter on bacteria presence and other pollutant indicators in two cistern systems in the Charleston region. Findings were used to create management recommendations incorporated in new resources and training opportunities.

new resources: Two newly published Clemson Extension HGIC publications:
HGIC 1728 “Best Practices for Application of Harvested Rainwater on Edibles”
HGIC 1729 “Rainwater Harvesting Systems Guidance for Schoolyard Applications.”

Additionally, a rainwater harvesting interpretive sign was created for use in demonstration areas to provide information on system components, design and recommendations for use.

education & Public Involvement: Rainwater harvesting training was provided to technical audiences during the Clemson Extension **bMP Inspection and maintenance course** which piloted in the Charleston region during the summer/fall of 2015. This hybrid course includes a 7-week online portion & a day in the field for hands-on training. The field day took place at Trident Technical College (TTC) on September 9, 2015 with 35 participants and included a visit to cisterns as well as other BMPs on TTC campus.

Information on rainwater harvesting was provided to residential audiences during the **carolina yards gardening School Water-Wise edition** on June 6, 2015 at Trident Technical College. Hosted by Clemson Extension, the Tri-County Master Gardeners, Carolina Clear and the ACSEC, programming was provided on rainwater harvesting and other “water-wise” practices to over 50 participants.

The **carolina Schoolyard Program** was piloted in the Ashley Cooper Region with focus on rainwater harvesting. Teachers were trained in the practice and two area schools received standards-based curriculum on rainwater harvesting & schoolyard implementation of a rain barrel and rain garden.

The **2015 acSec Ivy rain barrel Sale** took place from May 28 to 30th in Gahanagan Park in downtown Summerville, the City of Goose Creek Water Tower and the Charleston County Public Services Building in North Charleston. The ACSEC partnered with Rainwater Solutions to provide Ivy Rain Barrels at a near 50% reduced price to the general public. Through this partnership, over 500 rain barrels were purchased, nearly twice as many as were purchased in the 2014 sale.



Public education activities are classified into two broad categories, **direct** and **indirect** outreach methods, to express mechanisms by which information has been communicated to the public. Direct methods include activities that are implemented via direct personal contact. Examples of direct methods include workshops, presentations, trainings and public involvement activities. In contrast, indirect outreach methods refer to contacts through traditional media channels including television, radio, print and billboards. Indirect methods generally reach a much greater portion of the population due to the nature of their mediums; however, it is often more difficult to gauge specific impacts. Whereas when dealing with direct methods, smaller numbers of people are reached yet the ones that are reached generally provide a forum for direct evaluation and feedback. Each method is important in the overall education campaign, and are both part of the five year educational strategy for the ACSEC. Throughout the document, the words “direct” or “indirect” are provided at the top of each reporting table to indicate which category an effort belongs.

Data provided are as accurate as possible and are reviewed by multiple individuals involved in the reporting process. However, due to the nature of indirect outreach initiatives, indirect impact numbers are typically estimates.

Internet (Indirect)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target audience
Clemson Carolina Clear		Website, Clemson Extension (stormwater related only), Carolina Yards, Carolina Clear, and ACSEC: Impacts are based on Google Analytics unique page views.	Continuous	50,432	GP, R, PO, P, T, B, C



WEBSITE: The ACSEC website is part of the Carolina Clear website, which continues to add new features for the public, including links to free resources like the SCWaterWays factsheet series, an ACSEC Facebook feed and archived editions of the ACSEC’s e-newsletter, the “Ripple Effect”. The ACSEC website also includes archived information including annual report and meeting minutes, and the ACSEC Strategic Education Plan. Clemson Extension maintains a Stormwater Pond Management website and the Carolina Yard website. The Stormwater Pond Management website provides targeted information on pond inspection and maintenance to ensure stormwater pond function and water quality protection; the Carolina Yard website serves as a gateway to information on best management practices for an environmentally friendly lawn and garden.

Internet (Indirect) continued

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Clemson Carolina Clear	ACSEC SMS4 and Education Partners	ACSEC Electronic Newsletter: <i>The Ripple Effect</i> : Bimonthly Consortium e-newsletter.	Bi-monthly (6 editions Total)	2,310	GP, R, HE, EA, PO, P, T, B, C



WebSITE: *The ACSEC e-newsletter “Ripple Effect” is designed to provide awareness of ACSEC-related activities, including past, ongoing and future events. The “Ripple Effect” also includes links to pertinent electronic resources providing information on good stewardship practices. The “Ripple Effect” is issued on a bi-monthly basis. ACSEC community and education partners are encouraged to submit information for inclusion in the “Ripple Effect” and also to distribute the e-newsletter to others. The “Ripple Effect” is archived on multiple partner websites; therefore, the number of impacts is likely underestimated. Archived editions can be viewed at www.ashleycooper.org.*

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Clemson Carolina Clear	ACSEC Partners	ACSEC Facebook Page: Provides daily/weekly information regarding ACSEC activities, news, and events.	Continuous	24,243	GP, R, PO, P, T, B, C



acSec FacebOOK Page: *The ACSEC Facebook page is visually driven, utilizing photographs to provide awareness of Consortium-related activities and information. The page also provides time sensitive information including camp and workshop registration deadlines, volunteer opportunities, watershed stewardship reminders and other pertinent news items. Facebook allows for an additional avenue for communication as followers may post to the page or message the administrators (ACSEC co-coordinators). A live news feed of the ACSEC Facebook page is provided on www.ashleycooper.org.*

During Year Seven, 393 people followed the ACSEC Facebook page, 100 posts were made totaling 24, 243 “views.” Average Facebook views were 242 per post.

Television (Indirect)

leaD PrOVIDer	SuPPORtIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Clemson Extension	SC ETV	Television, <i>Making It Grow</i> : Award-winning weekly one-hour TV program on ETV. Live call-in show airs Tuesday evenings from 7-8PM and answers home gardening and landscape questions from around South Carolina.	Continuous	24,358	GP, R
Clemson Extension, Clemson Carolina Clear	Knology, Comcast	Television, Stormwater Ponds Commercial: Commercial rotation on Knology and Comcast stations that featured best management practices for a stormwater pond management, and highlighted resources available through the Clemson Extension service and Carolina Clear program. For more information, see Highlight, p. 11-12.	September 21, 2015 through October 11, 2015	135,385	GP



Making It Grow, a production of Clemson Extension, is a live call-in television show hosted on ETV. It features Clemson Extension agents and special guests to answer questions on home gardening and landscaping topics. A member of the Clemson Extension Water Resources program team and Carolina Clear program is a host on the show; each week, she highlights a water-related stewardship practices and address questions concerning best management practices for protecting water quality.



Billboards (Indirect)

lead PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Clemson Carolina Clear		Billboard, <i>Buffer Zones</i> : Part of the Carolina Yards billboard series. Two locations: Interstate 26 at Montague Avenue; Highway 17 South, approximately 15 miles south of downtown Charleston.		205,540; 12,000	GP
Clemson Carolina Clear		Billboard, <i>Healthy Soils</i> : Part of the Carolina Yards billboard series. Billboard located on Interstate 26, three miles west of Heriot Street.		250,672	GP
Clemson Carolina Clear		Billboard, <i>Give it a Rest</i> : Part of the Carolina Yards billboard series. Billboard located on Interstate 26, four miles east of State Route 453.		67,936	GP



billbOarD: *The statewide “Carolina Yards: Do you have one?” billboard series promoted shoreline buffers, proper grass and lawn maintenance and healthy soil management. Outreach messages were selected to address nutrient reduction in stormwater and pond management. Billboards were located in select Tri-County locations and number of impacts represent daily estimated counts.*



Commercial: Shoreline Management Solutions for Healthy Waterways

To assist connecting residents to information and resources, and in support of widespread efforts focused on nutrient and shoreline management, Carolina Clear filmed our latest media campaign along the shoreline of a pond in South Carolina. With assistance from an animated water drop, the commercial seeks to educate viewers on five simple actions to protect lake and pond health:

1. Raise mowers and mow less often along the shoreline.
2. Create a fertilizer and herbicide-free zone around the full perimeter of your pond.
3. Plant pond-friendly and native plants along the shoreline to prevent erosion and bank loss.
4. Do not feed Canada Geese, as high fiber foods like bread upset their simple digestive system (and encourage them to break their natural migration pattern).
5. Be responsible about stormwater runoff up-gradient of your pond by soil testing and fertilizing only as recommended for plant growth.

With partnership efforts across the state that include shoreline stabilization workshops and demonstrations, Master Pond Manager hybrid course, SC WaterWays fact sheets on shoreline vegetation and resident Canada Goose management, floating treatment wetland demonstrations and videos, and the Stormwater Pond Conference, Carolina Clear sought to highlight these to interested viewers by offering assistance and directing viewers to www.clemson.edu/carolinaclear.

The Clemson acting crew arranged plant materials along the shoreline while Guinn Wallover, Extension Agent, conversed with our animated water drop about best practices.



Screen shot of commercial featuring Guinn Wallover, Charly McConnell, and Daniel Dixon.

Publications (Indirect)

arTicleS

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
SC DNR ACE Basin CTP NERR, SC Sea Grant Consortium, North Inlet-Winyah Bay CTP NERR		ARTICLES, Manual: <i>Low Impact Development in Coastal South Carolina: A Planning and Development Guide</i> ; manual is hosted on North Inlet-Inlet Winyah Bay website.	Continuous	23,662	T, C, EA
The Post and Courier	Clemson Extension, Carolina Clear	ARTICLES, Newspaper: "Buffers Protect Tidal Creeks"	January 11, 2015	96,005	GP, R
The Gardeners Guide for Charleston and the Lowcountry	Garden Club of Charleston, Clemson Extension, Carolina Clear	ARTICLES, Guide: "Native Plants for Lowcountry Gardens"; chapter featured in the Charleston Garden Club's <i>The Gardener's Guide for Charleston and the Lowcountry</i> publication.	Summer 2015	500	GP, R, C
Naturally Kiawah	Clemson Extension, Carolina Clear	ARTICLES, Magazine: "Native Plants for Lowcountry Gardens"	Summer/Fall 2015	6,636	GP, R



LOW IMPACT DEVELOPMENT
IN COASTAL SOUTH CAROLINA:
A PLANNING AND DESIGN GUIDE



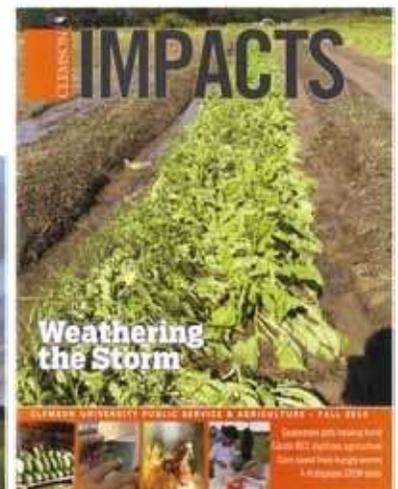
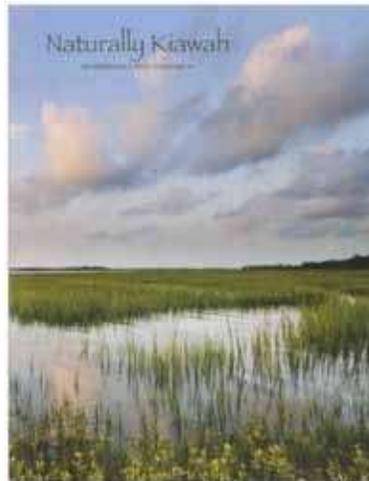
The *Low Impact Development in Coastal South Carolina: A Planning and Design Guide* was produced through a partnership between the SC Department of Natural Resources ACE Basin NERR CTP, SC Sea Grant Consortium, the University of South Carolina's North Inlet-Winyah Bay NERR CTP, NOAA's National Estuarine Research Reserve (NERR), and the Center for Watershed Protection. The manual provides guidance for South Carolina stormwater management and design community on the use of low impact development in coastal communities. Since it's publication on the North Inlet-Winyah Bay NERR website in early 2015, the manual has been downloaded 23,662 times by interested constituents.

Publications (Indirect)

articles

lead Provider	Supporting Partner	activity	Date	number OF Impacts	Target audience
The Conservation Corner Annual Report Newsletter	Charleston Soil & Water Conservation District	ARTICLES, Newsletter: "The Conservation Corner Annual Report Newsletter" reported on the District's 2015 initiatives and opportunities.	September 18, 2015	1,000	GP, R, EA, T
The Post and Courier	Clemson Extension, Carolina Clear	ARTICLES, Newspaper: "Using Rain on Garden" described best practices for application of harvested rainwater on edibles.	September 20, 2015	96,005	GP, R
Charleston County School District	Clemson Extension, Carolina Clear	ARTICLES, Online Guide: "Planning Construction and Operation Guide for Gardens, Greenhouses and Rain Barrels", included in a manual on the CCSD website.	Fall 2015	100	YT, GP
Clemson IMPACTS	Clemson Extension, Carolina Clear	ARTICLES, Magazine and Online: "Extension helps eateries serve waterways a healthier diet"	Fall 2015	16,140	GP, R, C
The Post and Courier	Clemson Extension, Carolina Clear	ARTICLES, Newspaper: "Planting for a Rainy Day" focused on efforts in the ACSEC region to increase rain garden awareness and use.	November 15, 2015	96,005	GP, R

In 2015, *Clemson IMPACTS* and *Naturally Kiawah* both featured articles highlighting ACSEC programs and messaging. *Clemson IMPACTS* is a publication of the Clemson University Public Service and Agriculture, with 16,140 copies distributed per edition statewide to agriculture and natural resource clientele, Clemson Extension offices, and Clemson University staff. *Naturally Kiawah* is a publication of the Kiawah Conservancy; its readership includes Kiawah Island surrounding community residents and visitors. Distribution of *Naturally Kiawah* is 6,636 per edition. For a copy of these and other articles, please see Appendix A.



Carolina Clean Watershed Restaurant Program

Improper handling and disposal of fats, oils, and grease (FOGs) from restaurants can contribute to sanitary and stormwater sewer system blockages and the degradation of downstream water quality. As part of its Strategic Plan development, input from municipal and county level stormwater management programs the ACSEC showed a demonstrated demand for outreach encouraging restaurant industry staff to adopt stormwater pollution prevention practices.

To address the identified industry audiences as well as community needs, in 2015, the ACSEC kicked off the Carolina Clean Watershed recognition program for restaurant and food preparation services. The Carolina Clean Watershed Restaurant program encourages adoption of proper FOG disposal and pollution prevention best management practices through the recognition of participants as watershed stewards. This recognition can be used as a marketing tool in greater Tri-County community that has a growing interest in sustainable or environmentally friendly opportunities. The Carolina Clean Watershed program included a facility walkthrough, a user workbook, a toolbox of resources including spill kit, posters and training guides, and a Train-the-Trainer session with manager staff resulting in potential modifications to work practices.

The ACSEC is proud to announce that two restaurants have been certified in the Charleston Tri-County region, including Triangle Char and Bar in Mount Pleasant and West Ashley, with others in the initial stages of participation. Recognized restaurants have taken steps to modify outdoor area management, spill cleanup and employee training to address the potential for polluted runoff from the workplace. Train-the-Trainer sessions with restaurants have been conducted, directly impacting 20 managerial staff and owners but with indirect impacts on all restaurant staff (estimated 30-40 each). Through work with these pilot restaurants, feedback, lessons learned, and additional needs were identified; modifications were incorporated to strengthen the Carolina Clean Watershed program delivery and impacts.

The ACSEC looks forward to working with new restaurant participants in the community. This program offers a role model for how a unique partnership between multiple stakeholders can address community wide concerns water quality protection.



Outreach Materials (Indirect)

brochures, booklets, manuals

lead Provider	Supporting Partner	activity	Date	number OF Impacts	Target audience
Clemson Extension	SCDHEC	Booklet, <i>Carolina Yardstick Workbook</i> : Highlights Carolina Yards principles for sustainable landscapes.	Continuous	170	GP, R, P
Clemson Extension, Carolina Clear		Brochure, <i>Leaf it on the Lawn</i> : Discusses tips for proper disposal of lawn debris; flyer in Spanish and English.	Continuous	100	C, R, GP
Clemson Extension, Carolina Clear		Manual, <i>Rain Gardens-Green Solutions to Stormwater Pollution</i> : Provides overview and procedures for installing a rain garden in the landscape	Continuous	250	GP, R
Clemson Extension, Carolina Clear		Manual, <i>Rainwater Harvesting for Homeowners</i> : Provides an overview and procedures for installing and maintaining a residential rainwater harvesting system	Continuous	250	GP, R
Clemson Extension, Carolina Clear	Multiple	Poster, Stickers, Magnets, “Fats, Oil, and Grease (FOG) Restaurant Guidance”: Materials distributed for use in food-prep areas focused on proper handling and management of FOG.	Continuous	30	C

Carolina Clear produced both a Rainwater Harvesting and Rain Garden Manual specifically geared towards residential audiences in South Carolina. The Rainwater Harvesting manual is written to assist homeowners with designing and installing small-scale rainwater harvesting systems, primarily rain barrels. The Rain Garden manual provides information on constructing a rain garden and emphasizes the step-by-step planning process including site selection, plant design, and soil preparation. Both manuals are distributed at public events, including fairs and festivals, as well as to individuals attending workshops and presentations. The publications are also made available, as free low-resolution downloads in the Carolina Clear toolbox to best serve the public and water resource protection.



Outreach Materials (Indirect) continued

Postcards

lead Provider	Supporting Partner	activity	Date	number OF Impacts	Target audience
Clemson Carolina Clear	Multiple	POSTCARD, <i>What is a Rain Garden?</i> : Provides brief description and purpose of a rain garden and links interested individuals to online resources and additional information.	Continuous	200	GP, R, YT
Clemson Carolina Clear	Multiple	POSTCARD, <i>Trashing Our Environment</i> : Provides information on what can be done to prevent litter in SC.	Continuous	100	GP, R, YT
Clemson Carolina Clear	Multiple	POSTCARD, <i>What To Do About Pet Waste</i> : Provides information to pet owners on the hazards of pet waste in runoff and how to properly dispose of waste.	Continuous	300	GP, R, YT, P
Clemson Carolina Clear	Multiple	POSTCARD, <i>We All Live Downstream</i> : Highlights that stormwater is not treated; includes tips to preventing stormwater pollution.	Continuous	300	GP, R, YT
Clemson Carolina Clear	Multiple	POSTCARD, <i>Septic Systems Care and Maintenance</i> : Tips for maintaining septic systems to reduce negative impacts on water quality.	Continuous	100	GP, R
Clemson Carolina Clear	Multiple	POSTCARD, <i>Better Manage Fats, Oil and Grease (FOGs)</i> : Provides information on the hazards of FOGs in our sewer system; includes information on proper FOG disposal.	Continuous	100	GP, R, C
Clemson Carolina Clear	Multiple	POSTCARD, <i>A More Green Way to Clean</i> : Tips on proper pressure washing to protect water quality.	Continuous	100	GP, R, C
Clemson Carolina Clear	Multiple	POSTCARD, <i>What is a Rain Barrel?</i> : Describes rainwater harvesting; promotes the use of rain barrels for smarter lawn care as well as for water quality.	Continuous	200	GP, R, YT
Clemson Carolina Clear	Multiple	POSTCARD, <i>Freshwater Shorescapes</i> : Describes the benefits of shorescaping and tips and resources for pond owners.	Continuous	200	GP, R, SP

Educational postcards provide a take-home outreach material for distribution to residents and visitors at tabling events, workshops and presentations, office displays and more. All postcards provide links to free resources for more information. Postcard impacts are in thanks to distribution by the ACSEC education and community partners.



Outreach Materials (Indirect) continued

Promotional Items

lead Provider	Supporting Partner	activity	Date	number OF Impacts	Target audience
Clemson Extension, Carolina Clear		PROMOTIONAL ITEMS, Stormwater Pond Management Sticker: Promotes the Clemson Stormwater Pond Management website.	Continuous	200	P, T, C, R, GP, SP
Clemson Extension, Carolina Clear		PPROMOTIONAL ITEM, www.ashleycooper.org Sticker: ACSEC logo and website utilized to promote website visitation and Consortium awareness.	Continuous	200	GP, R, YT
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Pocket Ashtray: Encouraged responsible disposal of cigarette butts.	Continuous	75	GP, R
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Clean Water Hero Bracelets: Promoted water stewardship, distributed to youth during programs.	Continuous	200	GP, YT
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Thank You! Reusable Bags: Promoted the ACSEC and protection of local waterways.	Continuous	75	GP, R
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, ACSEC Koozies: Promoted the ACSEC and includes a "Ask About Watersheds message." Distributed at events and programs.	Continuous	200	GP, R
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Fish Sponges: Includes a "Only Rain Down the Storm Drain!" message. Distributed to youth at tabling events and presentations.	Continuous	50	GP, YT
Clemson Extension, Carolina Clear		PROMOTIONAL ITEM, Dog Bag Dispenser: Distributed to dog owners at tabling events to remind owners to pick up pet waste.	Continuous	150	GP, R, P
SC DNR, SC Sea Grant Consortium		PROMOTIONAL ITEM, Life in the Salt Marsh Poster: Provides information on salt marsh ecology and ecosystem health; distributed as part of Seeds to Shoreline training.	Summer 2015	100	YT

Permanent Exhibits (Indirect)

Site Development

lead Provider	Supporting Partner	activity	Date	number OF Impacts	Target audience
Clemson Extension	Carolina Clear, Tri-County Master Gardeners	PERMANENT EXHIBIT DEVELOPMENT: Clemson University Research and Education Center's "Ed Shed."	Continuous	500	GP, R, YT, HE, T, EA, P, C

The "Ed Shed" located at Clemson University's Coastal Research and Education Center, provides a demonstration and training area with several examples of stormwater best management practices to include pervious pavers, pervious concrete, both above-ground and below-ground rainwater harvesting systems, rain gardens, and landscaping utilizing native plants and no-till gardening techniques. During Year Seven, "Carolina Yards" interpretive signage was added to highlight environmentally-friendly gardening practices such as reducing runoff and supporting wildlife. The "Ed Shed" was used to host 4-H2O summer camp, teacher workshops, ACSEC meetings, Master Naturalist and Master Gardener trainings and more.



leaD PrOVIDer	SuPPORtIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Clemson Extension, Tri-County Master Gardeners	Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: Urban Research and Demonstration Area Rain Garden	Continuous	1,000	GP, R, YT, HE, T, EA, P, C

In the fall of 2015 the rain garden located at the Clemson Urban Research and Demonstration Area, located on the premises of the Clemson Coastal Research and Education Center was revamped. This effort required removal of existing trees, which were too large for the rain garden, and reshaping the area to provide ponding depth in the rain garden. The soil was amended, native perennials and grasses were planted and cedar mulch added. This project was completed in partnership between the Clemson Research and Education Center staff, Master Gardeners and the ACSEC members. Furthermore, a rain barrel and interpretive signage was added to the existing kiosk.



Permanent Exhibits (Indirect)

SITe DeVeLOPment

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
The Town of Mount Pleasant	Clemson Carolina Clear, SC DNR ACE Basin NERR CTP	PERMANENT EXHIBIT DEVELOPMENT: A rain garden was installed at the Town of Mount Pleasant Fire Station #2; interpretive signage was also installed.	Continuous	800	GP, R, YT, T



As part of the Rain Garden for Professionals Workshop, a rain garden was installed at the Town of Mount Pleasant Fire Station Number 2. This rain garden captures water off of a portion of the fire station roof surface, any overflow is directed towards adjacent turf area and stormwater pond. Interpretive signage is present. The rain garden is also in close proximity to a Town of Mount Pleasant Recreation Center.

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Berkeley County, Keep Hanahan Beautiful	Clemson Carolina Clear, SC DNR ACE Basin NERR CTP	PERMANENT EXHIBIT DEVELOPMENT: A rain garden and cistern were installed at the Hanahan Library as part of Keep Hanahan Beautiful's Butterfly Garden.	Continuous	350	GP, R, YT



As part of Keep Hanahan Beautiful's Butterfly Garden located at a Berkeley County Public Library, a rain garden and 500 gallon cistern were installed. The rain garden features butterfly plantings and interpretive signage. The cistern captures water from a portion of the library roof surface area, overflow is then directed towards the rain garden.

Permanent Exhibits (Indirect)

SITe DeVeLOPment

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITY	DaTe	number OF ImPacTS	Target auDience
Camp St. Christopher, Clemson Carolina Clear	SC Master Naturalists, CCPRC	PERMANENT EXHIBIT DEVELOPMENT: A rain garden was installed at the Camp St. Christopher Activity Hall on Seabrook Island, a visit to the garden is included in their "human impacts" class that is offered to visitors.	Continuous	650	GP, R



As part of the Master Naturalist State Conference, a rain garden was installed on the campus of Camp St. Christopher adjacent to the activities center. The rain garden is highlighted as part of an ongoing class offered at the camp; the class educates visitors on human impacts on the environment and ways to mitigate those impacts.

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITY	DaTe	number OF ImPacTS	Target auDience
Dorchester County, Keep Dorchester County Beautiful	Clemson Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: A rain garden and rain barrel were installed at the bus stop in front of the Dorchester County Government Building.	Continuous	1,000	GP, R, EA, T



Before



After

In partnership with Keep Dorchester County Beautiful and Dorchester County Government, a new BMP demonstration site was established at the County building located in downtown Summerville. A rain barrel captures the runoff from a bus stop waiting area, and the overflow is directed to an adjacent rain garden. Overflow from the rain garden enters the existing storm drain system. Interpretive signage is present.

Permanent Exhibits (Indirect)

SITe DeVeLOPment

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Charleston County	Clemson Extension, Clemson Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT: A shoreline planting project was installed at a stormwater pond located on the Charleston County Public Services Building campus.	Continuous	100	GP, R, EA, T, C

As part of the Master Pond Manager class in Spring 2015 and Shorescaping Workshop in Fall 2015, a planted shoreline was installed at a stormwater pond on the Charleston County Public Services Building's campus in North Charleston. This new demonstration site is a first for the ACSEC and showcases best management practices that can be used in stormwater pond to provide for erosion control and bank stabilization, as well as other potential water quality and habitat benefits.



Permanent Exhibits (Indirect)

SITe DeVeLOPment - SCHOOl INITIATIVeS

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Cape Romain Environmental Education Charter School (CREEC)	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: As part of the Carolina Schoolyards Initiative, a rain garden and rain barrel were installed at the CREEC School.	Continuous	175	YT
Charles Towne Montessori School	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: As part of the Carolina Schoolyards Initiative, a rain garden was installed at Charles Towne Montessori School.	Continuous	100	YT

The Carolina Schoolyard Initiative was piloted in 2015 to provide standards-based curriculum to teachers and students on watershed stewardship topics. This pilot effort placed particular emphasis on the practices of rain gardens and rainwater harvesting; participating schools received a rain barrel and rain garden installation.



Permanent Exhibits (Indirect)

EXISTING SITES

lead Provider	Supporting Partner	activity	Date	number OF Impacts	Target audience
SC Native Plants Society	Charles Towne Landing State Historic Site, Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: Rain garden demonstration site at the Legare-Waring House at Charles Towne Landing State Historic Site. This site includes interpretive signage and is frequented by public walking the grounds of Charles Towne Landing, as well as those visiting for other public and private events.	Continuous	1,000	GP, R
SC Aquarium	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: Rain barrel display at the SC Aquarium; site located at Aquarium entrance.	Continuous	1,000	GP, R, YT, HE, T, EA, P, C
Clemson Extension, Carolina Clear	Tri-County Master Gardeners	PERMANENT EXHIBIT EXISTING: Bowens Island rain garden is a 900-square foot large-scale rain garden managing nearly 2000-square feet of roof area runoff. This popular dining destination provides rain garden exposure to the public.	Continuous	1,000	GP, R, C
St. Julian Divine Community Center	City of Charleston, Charleston Horticulture Society, Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: Two 55-gallon rain barrels are installed at the entry way to the St. Julian Divine Community Center. The rain barrels are connected to drip irrigation system utilized for adjacent landscaping.	Continuous	1,500	GP, YT, R



Permanent Exhibits (Indirect)

eXISTIng SITES

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
SC Department of Natural Resources	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: <i>Ft. Johnson Community Garden</i> is a demonstration garden adjacent to the SCDNR outdoor classroom at the Marine Resources Center on James Island. Stormwater best management practices present include two rain gardens, a 1500-gallon cistern, over 30 species of native plants and multiple waterwise irrigation practices. An additional demonstration site exists on the Fort Johnson Campus at the Marine Turtle Conservation Office, at this location a small-scale cistern and rain garden are present with interpretive signage.	Continuous	5,000	GP, R, HE, YT
Charleston County Park and Recreation Commission	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: <i>Caw Caw Interpretive Center</i> is home to a full-shade rain garden located at the park's picnic shelter. The site includes a 50-gallon rain barrel which overflows into the rain garden. This location is visited by school groups, birding groups and various other types of visitors to Caw Caw.	Continuous	2,000	GP, R, YT
Charleston County Park and Recreation Commission	Clemson Extension, Carolina Clear	PERMANENT EXHIBIT EXISTING: <i>Wannamaker County Park's "Whirlin Waters"</i> is home to a residential scale, full sun rain garden that was installed with the help of area youth. The rain garden captures stormwater from surrounding impervious areas, including sidewalks and patios, and includes educational signage.	Continuous	500	GP, R, C



Permanent Exhibits (Indirect)

EXISTING SITES - SCHOOL INITIATIVES

lead Provider	Supporting Partner	activity	Date	number OF ImPacTS	Target audience
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: The <i>Green Teaching Garden</i> demonstrates stormwater best management practices at the Grice Marine Lab. Features include a rain garden, cistern, multiple rain barrels, composting station, native plants and raised beds. Tours are provided upon request.	Continuous	500	HE, GP, R, YT
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Rainwater harvesting cistern and pump located adjacent to the Political Science Building on College of Charleston's downtown campus.	Continuous	500	HE, GP, R, YT, C
College of Charleston	Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Early Childhood Development Center features rain barrels to raise awareness of water quality sustainability features.	Continuous	100	YT, HE, GP, R
Farms to Schools Initiative	Clemson Extension, Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: Alston Middle School utilizes harvested rainwater and drip irrigation for raised beds.	Continuous	900	YT, GP
Charleston Children's Garden Project	Clemson Carolina Clear	PERMANENT EXHIBIT, SCHOOL INITIATIVES: 300-gallon rainwater harvesting system installed at Stono Park Elementary School.	Continuous	400	YT, GP



Permanent Exhibits (Indirect)

eXISTIng SITeS - ScHOOl INITIAITVeS

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Green Hearts Project, Keep America Beautiful, Keep Charleston Beautiful	Clemson Carolina Clear	PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Mitchell Elementary School- As part of the Green Hearts Project, a 1550-gallon cistern was installed to supply water to surrounding raised beds using drip irrigation. The cistern is located adjacent to the school's outdoor classroom and captures runoff from the structure's roof.	Continuous	350	YT
Clemson Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Ashley River Creative Arts School- Bicycle pump installed on existing 300-gallon cistern. Students peddle the stationary bicycle as part of the bicycle pump system that moves water from the cistern to garden areas.	Continuous	500	YT
Clemson Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: Goodwin Elementary School- Two 50-gallon rain barrels were installed adjacent to the school's small greenhouse and butterfly garden area.	Continuous	100	YT
Clemson Carolina Clear		PERMANENT EXHIBIT DEVELOPMENT, SCHOOL INITIATIVES: James Island Charter High School- Four 50-gallon rain barrels were installed at a school garden used by biology students, science club and camp youth.	Continuous	390	YT



Public Events (Indirect)

FairS and FeSTIVaIS

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Lowcountry STEM Collaborative	Multiple	EXHIBITS: <i>Charleston STEM Festival</i> ; Youth visited multiple education partners as part of this one-day Science, Technology, Engineering, and Math Festival; the ACSEC hosted a booth and used the Enviroscape to discuss connections with waterways.	February 7, 2015	7,500	YT
Charleston Soil and Water Conservation District	SC DNR, NRCS	EXHIBITS: <i>Southeastern Wildlife Exposition</i> : Exhibits in the Conservation Tent provided Program informational handouts on water quality, soils and other conservation topics. Focus on educational and water quality materials.	February 13-15, 2015	1,500	GP, YT, R, C
Charleston County	Clemson Carolina Clear	EXHIBITS, <i>The Black Expo 2015</i> : Informational handouts and giveaways accompanied stormwater education program discussion at this event held at the the North Charleston Colesium.	March 14, 2015	85	GP
Berkeley County	Clemson Carolina Clear	EXHIBITS: <i>Naturescope/Kids Who Care</i> ; Enviroscape activity as part of the Berkeley County K-5 Naturescope "Kids Who Care" program.	April 9, 2015	2,000	YT
Santee Cooper	Clemson Carolina Clear	EXHIBITS: <i>Santee Cooper Earth Day Festival</i> ; Discussed ACSEC programming and opportunities with Santee Cooper employees.	April 15, 2015	250	GP, R
Medical University of South Carolina	Clemson Carolina Clear, Community Pride, Inc.	<i>MUSC Earth Day Festival</i> : Hosted on the MUSC campus; multiple ACSEC partners were present to provide information to MUSC staff, students, visitors and general public.	April 15, 2015	1,000	HE, GP, R, YT



Public Events (Indirect) continued

FairS and FeSTIVALS

leaD PrO-VIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Charleston County	Multiple	EXHIBITS: <i>Charleston County Earth Day Festival</i> ; The festival is a hands-on, science based-experience with multiple ACSEC education partners provided information on watershed stewardship.	April 15, 2015	1,500	GP, R, YT
Town of Mount Pleasant	Clemson Carolina Clear, Charleston Waterkeeper	EXHIBITS: <i>Shem Dig</i> ; With twenty booths representing multiple ACSEC partners, the Shem Dig was hosted at Shem Creek Park along the boardwalk. Visitors learned how to protect area waterways through interactive exhibits.	May 10, 2015	150	GP, R, YT, BO
Ashley Scenic River Advisory Committee	Multiple	EXHIBITS: <i>Oakbrook Ashley Riverfest</i> ; Event held along the Ashley River at Jessen Boat Landing & Colonial Dorchester State Park. Participants meet representatives from various natural resource organizations.	May 10, 2015	2,000	GP, R, YT, BO
Charleston Green Fair	Multiple	EXHIBITS: <i>Charleston Green Fair</i> ; Held at James Island County Park, Fair provides a venue for participants to learn more about environmental stewardship. ACSEC tabled the event and provided information on watershed stewardship topics.	September 20, 2015	3,000	GP, R, YT
Charleston County	Clemson Carolina Clear	EXHIBITS: <i>Truck or Treat</i> ; Held at the North Charleston Coliseum. The Enviroscape was used to discuss community connections to waterways with youth.	October 17, 2015	525	YT
Medical University of South Carolina	Multiple	EXHIBITS: <i>Charleston Arbor Day</i> ; Hosted on the MUSC campus; multiple ACSEC partners were present to provide information to MUSC staff, students, visitors and general public.	December 2, 2015	700	HE, GP, R



In-Person, Phone, Email (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDIence
Clemson Extension, Tri-County Master Gardeners		In-Person, Phone, Email: In the Tri-County, Clemson Extension Agents and Master Gardeners answered questions relating to a variety of home landscaping issues; topics including compost, mulch, fertilizers, native plants, irrigation, etc.	Continuous	49,000	GP, R, C
Clemson Extension		In-Person, Phone, Email: Clemson Extension Agents answered questions and provided services to a variety of home owners, pond owners, commercial, and teachers throughout the Tri-county area.	Continuous	500	PO, R, C, YT
Clemson Extension, Clemson's Agricultural Service Lab		Soil Samples: Clemson Extension, in cooperation with Clemson's Agricultural Service Lab processed soil samples for the Tri-county residents and commercial audiences.	Continuous	Tri-County Total: 4,426	R, C



The charleston Tri-county area is home to 12 clemson extension agents and nearly 450 active master gardeners. Throughout the year, Extension Agents and Master Gardeners in the Berkeley, Charleston and Dorchester County Extension offices respond to calls, walk-ins and emails from the public, as well as field questions during public events. Information is requested by individuals representing both the private and commercial sector, with diverse interests ranging from agriculture, forestry, home landscaping, horticulture and pond management. Extension offices also provide services in concert with the University, including processing soil samples, irrigation water analysis, plant and weed identification and identification of plant problems. These direct contacts with the public yield some of the most positive results in addressing specific concerns and problems, most of which relate to water quality at some level.



Presentations (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
SCDNR SCORE		PRESENTATION: "Oysters as living shorelines" on the water quality, shoreline stabilization and habitat effects of oyster reefs (5 separate presentations).	Continuous	125	R, HE
Clemson Extension, Carolina Clear		PRESENTATION: Presentation on stormwater pond management and new resources available through Clemson Extension, provided to "SC Vegetation Management Association" annual meeting	January 8, 2015	200	GP, SP, C
Charleston County Soil and Water Conservation District		PRESENTATION: Presentation provided to legislators on program updates and water quality initiatives through statewide Soil and Conservation Districts.	February 24, 2015	310	EO
Clemson Extension, Carolina Clear		PRESENTATION: Presentation to Moncks Corner Rotary Club on community water resources and actions to protect water quality.	March 5, 2015	24	GP, R
Charleston County Soil and Water Conservation District		PRESENTATION: Presentation at the Charleston District's Environmental Awards Recognition Program honored outstanding educators and Conservationists who promote stormwater, water and soil quality conservation issues.	June 2, 2015	50	GP, R, YT, EO
Clemson Extension, Carolina Clear		PRESENTATION: Presentation provided to Ashland Plantation HOA Garden Club on the benefits of shoreline plantings for stormwater ponds.	June 12, 2015	10	R
Clemson Extension, Carolina Clear	SC Native Plant Society	PRESENTATION: "Rainwater Harvesting 101" presentation provided at SCNPS Symposium; presentation describes the basic premisis of rainwater harvesting	June 13, 2015	20	GP, R, C
Clemson Extension, Carolina Clear		PRESENTATION: Presentation to Hickory Hill Garden Club on rain garden design in residential landscape.	October 1, 2015	15	GP, R
Clemson Extension, Carolina Clear		PRESENTATION: Presentation at the SC Community Association Insitutute's Annual Conference on purpose of stormwater ponds and maintenance needs	October 1, 2015	120	GP, SP, C, R

Presentations (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTs	TargeT auDience
Clemson Extension, Carolina Clear	ACE Basin NERR CTP, SC Sea Grant	PRESENTATION: “Resources for Your Community” presentation at the “Neighbors for Clean Water Stormwater Pond Conference” provided information on stormwater pond management resources.	October 22, 2015	20	GP, SP, C, R,
Clemson Extension, Carolina Clear	ACE Basin NERR CTP, SC Sea Grant	PRESENTATION: “Upland Management: Protecting Water Quality Before the Pond” presentation at the “Neighbors for Clean Water Stormwater Pond Conference” provided information on stormwater pond management resources.	October 22, 2015	22	GP, SP, C, R,
Clemson Extension, Carolina Clear	ACE Basin NERR CTP, SC Sea Grant	PRESENTATION: “Shorescaping for Healthy Ponds” presentation at the “Neighbors for Clean Water Stormwater Pond Conference” provided information on benefits of shorelines buffers as well as installation and design tips.	October 22, 2015	40	GP, SP, C, R,



Youth Presentations (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
SC DNR SCORE		YOUTH PRESENTATION: "Oysters as living shorelines"; water quality, shoreline stabilization and habitat benefits of oyster reefs.	Continuous	824	YT
Keep Charleston Beautiful	Palmetto Pride	YOUTH PRESENTATION: School-based litter prevention programs for grades K-8; 18 programs held in 2015	Continuous	1,000	YT
Charleston Waterkeeper		YOUTH PRESENTATION: In-School Education Program for youth focused on waterway protection; 12 programs held in 2015	Continuous	578	YT
Keep Dorchester County Beautiful	Dorchester County	YOUTH PRESENTATION: Youth education program focused on recycling and litter prevention.	Continuous	478	YT
SC Sea Grant Consortium		YOUTH PRESENTATION: Enviroscape model used with James Island Elementary School students to discuss community connection with local waterways.	January 22, 2015	24	YT
Charleston County Soil and Water Conservation District	NRCS	YOUTH PRESENTATION: Presentation provided at Math & Science Fair at Eaglenest Elementary School. A coastal Watershed Demonstration was shown to attending students and parents.	March 5, 2015	350	YT
SC Sea Grant Consortium		YOUTH PRESENTATION: Enviroscape model used with CE Williams Elementary School students to discuss community connection with local waterways.	March 25, 2015	110	YT
Charleston County Soil and Water Conservation District		YOUTH PRESENTATION: "Essay Award Presentations;" Education outreach awards presented to and presentations by students, teachers, and families on water quality topics.	May 26 to June 3, 2015	385	YT, R



Youth Presentations (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Mount Pleasant Waterworks	Clemson Extension, Carolina Clear	YOUTH PRESENTATION: Presentation using the Enviroscape model to teach youth about their connection to community waterways.	September 17, 2015	30	YT
Charleston County School District	Clemson Extension, Carolina Clear	YOUTH PRESENTATION: "Life in a Watershed" presentation provided to youth at the CCSD's Sustainability Symposium; students learned about our shared connection with local waterways and action to protect.	September 18, 2015	350	YT
SC Sea Grant Consortium		YOUTH PRESENTATION: Enviroscape model used with Mitchell Elementary School students to discuss community connection with local waterways.	October 14, 2015	32	YT
Ashley Hall School	Clemson Extension, Carolina Clear	YOUTH PRESENTATION: Ashley Hall teachers worked with the Enviroscape model to discuss stormwater and actions to protect water quality in the community.	October 26, 2015	150	YT
SC Sea Grant Consortium		YOUTH PRESENTATION: Enviroscape model used with Whitesides Elementary School students to discuss community connection with local waterways.	October 27, 2015	87	YT
Town of Mount Pleasant, Clemson Extension, Carolina Clear		YOUTH PRESENTATION: Students at Cario Middle School learned about watershed stewardship through the interactive and hands-on Stormwater Jeopardy! activity.	October 29-30, 2015	200	YT
Charleston County Soil and Water Conservation District		YOUTH PRESENTATION: "Twiggy the Twig" visited area schools to discuss benefits of trees to communities, including their role in stormwater management.	December 4, 2015	115	YT



Workshops - Residential Audiences (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Clemson Extension; Tri-County Master Gardener Association		WORKSHOP: Carolina Yard Gardening Series, "Healthy Soils" edition; Participants learned about aspects of soil health, including best practices for fertilizer application.	March 14, 2015	100	GP, R
Clemson Extension, Carolina Clear	Berkeley County, Keep Hanahan Beautiful	WORKSHOP: A rain garden workshop for homeowners including a rain garden installation at Berkeley County's Hanahan Library.	May 27, 2015	15	GP, R
Clemson Extension; Tri-County Master Gardener Association; Carolina Clear		WORKSHOP: Carolina Yard Gardening Series, "Water-Wise Gardening" edition; Participants learned a variety of water smart practices for landscaping. Sessions included the lecture and hands-on discussion of rain garden design, installation, and maintenance, entitled "Somewhere Over the Rain Garden".	June 6, 2015	50	GP, R



Workshops - Residential Audiences (Direct)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target audience
Charleston County Soil and Water Conservation District	SC DNR	WORKSHOP: Hands-on outdoor environmental camp that provides the knowledge and appreciation needed to protect and wisely use our natural resources. Instruction is given in areas of fisheries, water quality, and other related natural resource topics.	June 21-27, 2015	150	YT
SC Sea Grant Consortium	SC DNR, Clemson Extension, Carolina Clear	WORKSHOP: <i>From Seeds to Shoreline (S2S) Teacher Workshops (2)</i> : Two full-day trainings held at the Fort Johnson Marine Center. Provided curriculum and step-by-step information for teachers on how to grow <i>Spartina alterniflora</i> with students. Workshop allowed for hands-on training opportunities including greenhouse construction and salt marsh exploration. Presentations included "Carolina Schoolyards" and "The Salt Marsh Watershed."	June 24, 2015; June 25, 2015	21; 17	YT
Clemson Extension, Carolina Clear	Master Naturalist Program	WORKSHOP: <i>Naturalist Gardening for the Green Thumb</i> workshop held as part of the SC Master Naturalist Annual Conference. This workshop focused on best practices in the home landscape and included a rain garden installation.	October 9, 2015	14	GP, R
Clemson Extension, Carolina Clear, ACE Basin NERR CTP	Charleston County	WORKSHOP: <i>Shorescaping Workshop: Planted Shorelines For Your Pond</i> ; Half-day workshop for pond owners and managers focused on shoreline management for stormwater ponds. Workshop included classroom lecture and shoreline plant installation at a pond on Charleston County's Public Services Building complex.	October 14, 2015	19	GP, R, SP



Workshops - Professional Audiences (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target audience
ACE Basin NERR CTP	North Inlet Winyah Bay NERR CTP	WORKSHOP: <i>Breaking Through Barriers</i> ; The Breaking Through Barriers series provided big concepts and practical tips to help professionals communicate environmental issues with multiple audiences.	January 14, 2015	62	T, EA
Clemson University	Clemson Extension, Carolina Clear	WORKSHOP: <i>2015 Turf School</i> ; All-day training on turf management for commercial landscapers; topics included fertilizer application and integrated pest management.	February 10, 2015	40	C
Clemson Extension, Carolina Clear	Dorchester County, Keep Dorchester County Beautiful	WORKSHOP: A rain garden workshop geared for public works and stormwater department staff; the training included an installation of a rain garden at a Dorchester County Government Building.	May 21, 2015	16	EA, T
ACE Basin NERR CTP	Army Corps of Engineers	WORKSHOP: <i>Coastal Wetlands Identification</i> ; This one-day training sought to increase the ability of local decision-makers in identifying wetlands and wetland boundaries based on the hydrologic, soil, and vegetative indicators commonly found in Lowcountry wetlands. Training included both classroom and field instruction.	November 17, 2015	14	EA, T



Training and Certifications (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Clemson University		TRAININGS: Clemson's Department of Pesticide Regulation provides training and certification for commercial, non-commercial and private applicator licenses. Number of impacts represents the number of Tri-County area licensed applicators current through 2015.	Certification exams given quarterly	1135	C, R, GP, SP
Clemson University		TRAININGS: Clemson provides training and certification for the Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program to assist in pollution prevention control on construction projects. Number of impacts represents the number of Tri-County certifications current through 2015.	Recertification class taught June 10, 2015	151	C, T

Land disturbing activities and sediment pollution have significant potential to adversely impact water quality. The Certified Erosion Prevention and Sediment Control Inspector (CEPSCI) program educates field personnel on the proper installation, maintenance and inspection of erosion prevention and sediment control measures.



leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Clemson Extension, Carolina Clear		TRAININGS: Carolina Clean Watershed Restaurant program trains and certifies restaurants who incorporate best management practices for stormwater pollution prevention into their facility and everyday operations. To date, two restaurants have been certified with two others taking action to improve their site. Impact numbers represent number of upper management, owners and staff trained as part of the program.	Continually	20	C

Triangle Char and Bar in West Ashley and Mount Pleasant were recognized as the first Carolina Clean Watershed Restaurants! See Highlight, pg X, for more information on the program and restaurant involvement.



Training and Certifications (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Clemson Extension	Tri-County Master Gardener Association, Carolina Clear	TRAININGS: Master Gardener Training; A four month certification program. Special topics include fertilizer application, benefits of native plants, stormwater best management practices (rain gardens and rainwater harvesting), and stormwater ponds.	Fall 2015	28	GP, R

As part of the Master Gardener (MG) coursework training, information and programs are incorporated on both structural and behavioral stormwater best management practices (BMPs). Once an individual has completed the course, their status remains active by performing internship and volunteer hours focused on community outreach. MGs are an enormous asset to the Charleston Tri-County area as each year this dedicated group of volunteers provide garden and landscape information to thousands of people from the public via phone, email, office visits, etc. (as reported in "Direct Contacts", p.30). The MGs provided support to the ACSEC during Year Seven in a variety of ways including assistance with rain barrel sales, workshops and demonstration site projects.



Charleston County Park and Recreation Commission	Clemson Extension, College of Charleston, SCDNR	TRAININGS: Master Naturalist Certification Programs hosted in Spring and Fall 2015	Spring 2015; Fall 2015	24	GP, R
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Charleston County Park and Recreation Commission is the lead provider for the Charleston Area Master Naturalist program. Master Naturalists receive training in a 13-week field study course led by a variety of experts. Participants learn about coastal ecology by visiting unique and diverse habitats. Water resource education is a fundamental component of the program, as participants learn about stormwater runoff and associated water quality issues. During Year Seven, all Master Naturalists in training participated in a rain garden installation project. Master Naturalists help disseminate information to the public, ideally becoming leaders in their community to support conservation and education of coastal resources.



Training and Certifications (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Clemson Extension, Carolina Clear		TRAININGS: <i>Rain Gardens for Professionals</i> ; A full-day workshop for landscape professionals that is focused on rain garden purpose and design, installation, and maintenance.	Spring 2015; Fall 2015	36	GP, R

The Rain Gardens for Professionals Workshop is a one-day intensive training developed for landscape professionals interested in learning more about residential-scale rain garden installation and design. The program includes classroom lecture and hands-on training, including installing a rain garden at the workshop host location. In 2015, the workshop was hosted twice in the Tri-County; in the Spring, the ACSEC and ACE Basin NERR CTP partnered with Berkeley County and Keep Hanahan Beautiful to offer the training at the Hanahan Public Library. In the fall 2015, the workshop was hosted in partnership with The Town of Mount Pleasant and offered at Fire Station Number 2, located at one of the Town's recreation complexes. This workshop is part of the Carolina Rain Garden Initiative and is a requirement to be recognized as a Certified Rain Garden Installer. For more information on the Carolina Rain Garden Initiative, see the highlight on page 40.

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
SC DNR-SCORE Program		TRAININGS: SCORE program trained new volunteers to monitor water quality parameters in the Charleston Harbor and vicinity.	Continually	10	GP, YT
Charleston Waterkeeper		TRAININGS: Charleston Waterkeeper trained new volunteers to monitor water quality in the Charleston Harbor as part of their monitoring program.	Continually	7	GP

SC Department of Natural Resources' SC Oyster Restoration and Enhancement (SCORE) program trains volunteers to monitor water quality at designated sites around the Charleston Harbor vicinity. Charleston Waterkeeper's water quality monitoring program trains and works with volunteers to measure bacteria presence in popular waterways in the Charleston Harbor area. Read more about the impacts of these programs in the "Public Involvement " section of this report.

Carolina Rain Garden Initiative

The Carolina Rain Garden Initiative was piloted and launched in the ACSEC region in 2015 with the objective of increasing the number of residential-scale “pocket” rain gardens in South Carolina. The program brings together new and existing resources that provide awareness and practical information on the practice, installation and maintenance of rain gardens.

As part of this initiative, one of the newly developed resources is the **Professional Rain Garden Design and Installer Certification Program**, which was piloted in the Berkeley, Charleston, and Dorchester County region in 2015. This full-day training was hosted at a Berkeley County Library in spring 2015 and a Town of Mount Pleasant Fire Station in fall 2015 with a total of 36 participants attending, representing 16 private sector businesses, 12 university staff, ten county/municipal government and two non-profit organizations. Individuals who attended this training have the option to become a Certified Rain Garden Design and Installer by submitting their rain garden portfolio to a review committee. In 2015, four professionals have become certified with more expected in 2016; a list of those recognized is provided on the Carolina Rain Garden Initiative website: www.clemson.edu/extension/raingarden/professional.html

Also as part of the Carolina Rain Garden Initiative, the **Virtual rain garden** was developed over the course of 2015; created to provide a step-by-step approach for rain garden design, installation and maintenance. This series of 17 short videos guides the viewer through all aspects rain gardening including site assessment, soil analysis, rain garden sizing, design, plant selection, maintenance and more. The Virtual Rain Garden is intended to assist with addressing flooding and erosion issues in the home landscape and provide information to those interested in environmentally friendly gardening practices.

Other Carolina Rain Garden Initiative’s resources, including the **rain garden Tracker**, **rain garden of the month**, and plant selection tools, along with the Virtual Rain Garden can all be viewed at: www.clemson.edu/extension/raingarden.



Master Pond Manager

South Carolina's unique water resources provide for agriculture, recreation, tourism, and commercial industry opportunities that help support the state's economy. Recreational and stormwater pond systems can play a significant role in watershed function and, if poorly managed, may impact the health of the pond and services provided, adjacent land values and profitability, and potentially, downstream water quality. As the result of a demonstrated demand across the state for in-depth and comprehensive pond management resources, including in the ACSEC community, the Master Pond Manager course was launched in 2015 through a partnership between Clemson Extension and ClemsonOnline.

The Master Pond Manager (MPM) certification course provides participants with the tools to assist in developing an integrated pond management approach that provides for healthy pond function and water quality. Curriculum incorporates multi-week online and field based training, allowing for participants to learn in a self-paced and hands-on environment. Course tract can be tailored to the individual participant, whether a pond management professional or HOA board member tasked with pond management.

The ACSEC was excited to serve as host for the field days associated with the pilot offering of the Master Pond Manager class in Spring 2015. Field site locations were held at Charleston County and Charleston County Park and Recreation Commission facilities and included a shoreline planting installation at a newly retrofitted stormwater pond. More than 30 participants across the state took part in the pilot Master Pond Manager offering, resulting in the certification of 11 professionals.

The course was offered again in the Fall 2015, with 23 individuals participating representing South Carolina, Georgia, and North Carolina. Field days were hosted in the Waccamaw region, at the Baruch Institute and Horry County Government locations.

With a growing demand for the course across the region, look for another course to be hosted in the Spring/Summer of 2016! For more information on the Master Pond Manager program, visit: www.clemson.edu/watershed/mpm.



Training and Certifications (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Clemson Extension, Clemson Online, Center for Watershed Excellence	Multiple	HYBRID TRAINING: <i>Master Pond Manager</i> ; Online and field-based training in stormwater and recreational pond management. The class was offered twice in 2015; there were 52 total participants with more than 20 pursuing certification.	Spring 2015; Fall 2015	52	C, SP, R, T

The statewide *Master Pond Manager* course offers research-based pond management strategies to pond owners and managers through an online classroom and in-person field training. The course was offered twice in 2015; in the Spring, field days were hosted at the Charleston County Park and Recreation Commission and Charleston County Government sites. In the fall, field days were hosted at Clemson University and Horry County Government facilities. For more information on the *Master Pond Manager*, see the highlight on page 41.



leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Clemson Extension	Carolina Clear	HYBRID TRAINING: <i>Post-Construction BMP Inspector</i> ; Online and field-based training focused on inspection and maintenance of best management practices used for stormwater management. The class was offered once in 2015, with field days hosted at the Trident Technical College Campus.	Summer 2015	35	C, SP, T

Another hybrid training offered through Clemson Extension, the *Post-Construction BMP Inspector* course is a statewide technical training with lectures hosted in an online classroom and field days sponsored in different communities to allow applied learning. In the Summer 2015 course, field days were hosted at the Trident Technical College's campus where students had a chance to discuss and view bioswales, dry detention basins, wet detention basins, green roofs, pervious pavement, rainwater harvesting and more.



Training and Certifications (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITY	DaTe	number OF ImPacTS	Target auDience
Clemson Extension	Carolina Clear	ONLINE TRAINING: <i>Carolina Yards and Neighborhoods, Online Guide to Environmentally Friendly Gardening</i> ; Online course based on Carolina Yards principles with an emphasis on stormwater best practices for residential audiences.	Spring 2015	34	GP, R
Clemson Extension		ONLINE TRAINING, Master Gardener Online Training: Online horticulture programs training and certifying Master Gardeners. Two online classes were offered in 2015.	Spring 2015; Fall 2015	78	GP, R

The Carolina Yards and Neighborhoods Online Guide to Environmentally Friendly Gardening is a five-week course that was first piloted in the Charleston Tri-County area during Spring 2013. Deemed as a success, the class is now offered statewide. Participants learn about the Carolina Yards principles through interactive presentations and discussion forums, complete tasks in their own home landscape and have the opportunity to certify their yard as a "Carolina Yard."

Conferences (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITY	DaTe	number OF ImPacTS	Target auDience
SC Statewide Conservation Districts	Charleston County Soil and Water Conservation District	CONFERENCE: <i>Conservation District's Annual Partnership Conference</i> ; This event highlights awards and achievements accomplished in conservation and water quality. Presentations and Displays are provided with brochures and handouts on water quality and other conservation topics. Speakers addressed ways to improve water quality initiatives at this event.	February 24-25, 2015	300	GP, EA, T



Litter Sweeps (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
SC Sea Grant Consortium	SC DNR	LITTER SWEEPS: Beach Sweep/River Sweep	September 15, 2015	1,631	GP, R, C

During the 2015 Beach Sweep/River Sweep litter cleanup, 1,631 volunteers in Berkeley, Charleston, and Dorchester Counties collected 16,822 pounds of litter from the local beaches, waterways, and surrounding uplands. A total of 85.44 miles of shoreline were cleaned. By participating in Beach Sweep/River Sweep, the public is more informed about natural resource issues, such as litter's detrimental effects on the landscape and wildlife, and people are empowered to take action and become environmental stewards. Results are available online at: www.scseagrant.org



leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
SC Sea Grant Consortium	Multiple	LITTER SWEEPS: Clean Marine	April 25, 2015	66	GP, R, C

During 2015, SC Sea Grant Consortium worked with multiple ACSEC partners, including Charleston County Park and Recreation Commission, Charleston Waterkeeper, SC DNR, Clemson Extension, Keep Charleston Beautiful and the City of Charleston to host the Clean Marine event series. Clean Marine focused on reducing and preventing marine debris in the Charleston Harbor and surrounding waterways by sponsoring litter dropoff events, removing marine debris from waterways, and implementing an anti-litter campaign. A two-day litter collection event included nine drop-off sites at popular public boat ramps; 66 volunteers were on hand to help receive 9.64 tons of material and equipment, like fishing gear, used oil, and event boats, from residents. Through this event, the volunteers helped protect our waterways by keeping this type of material and equipment from becoming marine debris.



Litter Sweeps (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Keep Charleston Beautiful (KCB)	Multiple	LITTER SWEEP: Community groups host two hour cleanups in marshes, parks and green spaces.	Continuous	1,877	GP, HE, R, C, YT
Keep Charleston Beautiful (KCB)	CARTA	LITTER SWEEP, <i>Adopt-A-Stop</i> : Volunteers collect litter and service trash cans once a week at local CARTA bus stops.	Continuous	13	GP

Keep Charleston Beautiful (KCB) promotes the cleanliness and beautification of the City of Charleston through education, public awareness and community involvement. KCB strives to teach litter prevention and waste responsibility through education programs and public awareness campaigns, all of which are offered free of charge to the community. During the 2015 reporting year, kcb organized 1,877 citizens whom volunteered 3797 hours of community service and removed 40,321 pounds of trash.



leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Keep Dorchester County Beautiful	Multiple	LITTER SWEEP: Community cleanups were hosted in partnership with concerned citizen groups to remove litter along area waterways and roadways.	Continuous	228	GP, R, YT, C

Keep Dorchester County Beautiful (KDCB) promotes public interest in the general improvement of the environment of Dorchester County and coordinates programs for litter control and recycling. During the 2015 reporting year, kDcb organized 228 citizens whom removed 12,160 pounds of trash from roadways and waterways.



Litter Sweeps (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
DHEC-OCRM	Surfrider Foundation Charleston Chapter, Folly Green, NOAA	LITTER SWEEP: "Litter Butt Study"; Volunteers collected littered cigarette butts from Folly Beach public spaces and completed a survey on prevalence and impact in landscape.	September 2, 2015; September 8, 2015	29	GP, R, YT, C

The Charleston Chapter of The Surfrider Foundation is a volunteer organization that concentrates on reducing litter in area beaches and waterways and works to raise awareness of the importance of ocean stewardship. The Charleston Chapter of The Surfrider Foundation has roughly 300 members and offers educational programming and litter removal efforts throughout the year. A highlight for 2015 included the "Litter Butt Study".



leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Adopt-a-Highway, Community Pride Inc, Clemson Extension	SC DOT	LITTER SWEEPS: Adopt-a-Highway conducts four sweeps seasonally each year. Volunteers adopt a 2 mile stretch of highway.	Quarterly		GP, R, C

Initiated in South Carolina in 1988, the Adopt-A-Highway program utilizes volunteered time of caring citizens to combat litter along SC highways. The program eliminates thousands of pounds of debris from roadsides, which can end up in nearby waterways, as well as improve South Carolina's scenic beauty. During the 2015, X volunteers X adopted miles of highway to remove X pounds of litter in the Tri-county.



2015 aDOPT-a-HiGHWay TOTaIS FOr Tri-cOunTy

County	Total Pounds Collected	Total Miles Adopted	Total Groups Participating	Total Volunteers Participating
Berkeley				
Charleston	64,442	412	206	2,898
Dorchester				
Totals				

Storm Drain Marking (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target audience
Clemson Extension, Carolina Clear	Charles Towne Montessori	STORM DRAIN MARKING: The 12 volunteers worked to mark 30 storm drains along the West Ashley Greenway.	Feburary 18, 2015	12	YT
Clemson Extension, Carolina Clear	Charleston Good	STORM DRAIN MARKING: The five volunteers worked to mark 25 storm drains in Downtown Charleston.	March 9, 2015	5	GP, R
Clemson Extension, Carolina Clear	Ashley Hall School	STORM DRAIN MARKING: The 82 volunteers worked to mark 50 storm drains in Downtown Charleston.	March 20, 2015	82	YT
Clemson Extension, Carolina Clear		STORM DRAIN MARKING: A volunteer marked four storm drains along Dorchester Road.	September 8, 2015	1	R
Clemson Extension, Carolina Clear	Surfrider Foundation	STORM DRAIN MARKING: The 10 volunteers worked to mark 26 storm drains along Middle Street on Sullivan’s Island.	November 16, 2015	10	GP, R, C
Clemson Extension, Carolina Clear	College of Charleston	STORM DRAIN MARKING: The 18 volunteers marked 94 storm drains in downtown Charleston.	November 21, 2015	18	HE
Clemson Extension, Carolina Clear	College of Charleston	STORM DRAIN MARKING: The eight volunteers marked 39 storm drains in downtown Charleston.	December 5, 2015	8	HE
Clemson Extension, Carolina Clear	Ashley Hall School	STORM DRAIN MARKING: The 24 volunteers marked 13 storm drains around Ashley Hall School.	December 15, 2015	24	YT

During the 2015 reporting year, 160 individuals participated in storm drain marking, resulting in 281 newly marked storm drains in the Tri-county. *Messaging on both the plastic and metal storm drain markers read “Don’t Pollute, Flows to Waterways” as a reminder. Reported impact numbers are conservative as nearly all houses or businesses located along marking routes received a door hanger with information on watershed stewardship.*



Best Management Practice Installations (Direct)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Clemson Extension	Cape Romain Environmental Education Charter School (CREEC)	RAIN GARDEN INSTALLATION: As part of the Carolina Schoolyards Initiative, the ACSEC worked with students and teachers at CREEC to install a rain garden.	Spring 2015	See Site Development, p. 22	YT
Clemson Extension, CCPRC		RAIN GARDEN INSTALLATION: Participants in the Spring 2015 Master Naturalist in Training program helped to install a rain garden at the CREC "Ed Shed."	Spring 2015	See Training, p. 38	GP, R
Charleston County	Clemson Extension, Carolina Clear, ACE Basin NERR CTP	SHORESCAPING INSTALLATION: As part of the Master Pond Manager class and Shorescaping Workshop, a planted shoreline was installed by program participants at the Charleston County Public Services Building.	Spring 2015; October 14, 2015	See Training (p.35) and Workshops (p.42)	SP, R, C, EA, T
Dorchester County, Keep Dorchester County Beautiful	Clemson Extension, Carolina Clear	RAIN GARDEN INSTALLATION: "Rain Garden Workshop for Public Works" As part of this workshop, a rain garden was installed at a Dorchester County Government building by Public Works staff and volunteers with Keep Dorchester County Beautiful.	May 21, 2015	See Workshops (p. 34) and Trainings (p. 39)	T, EA

The installation of best management practices in trainings and workshops allows residential, commercial and youth audiences the opportunity to learn about practices through hands-on experience and involvement. For the practices installed and included as part of this "Best Management Practice Installation" section, please use the associated workshop, presentation, site development or training participant impact highlighted in the "Public Education" chapter of this report.



Best Management Practice Installations (Direct)

leaD PROVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Berkeley County, Keep Hanahan Beautiful	Clemson Extension, Carolina Clear	RAIN GARDEN INSTALLATION: As part of trainings associated with the Rain Garden for Professionals program, as well as a residential workshop training for homeowners, a rain garden was installed by participants at the Hanahan Library.	May 27, 2015	See Training, p. 39	GP, R, C
Clemson Extension, Camp St. Christopher	Charleston County Park and Recreation Commission	RAIN GARDEN INSTALLATION: A rain garden was installed with Master Naturalists at the "Gardening for the Green Thumb" program, held at Camp St. Christopher and part of the SC Master Naturalist Annual Conference.	October 9, 2015	See Presentations, p. 35	GP, G
Clemson Extension, Tri-County Master Gardener Association	Carolina Clear	RAIN GARDEN INSTALLATION: As part of the Fall 2015 Master Gardener in training program, a rain garden was installed at the Clemson Research and Education Center.	October 29, 2015	See Training, p. 38	GP, R
Town of Mount Pleasant	Clemson Extension, Carolina Clear, ACE Basin NERR CTP	RAIN GARDEN INSTALLATION: Participants involved in the Fall 2015 Rain Garden for Professionals program helped to install a rain garden at Fire Station #2 in Mount Pleasant.	November 5, 2015	See Training, p. 39	GP, R, C



Oyster Reef Construction (Direct)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
SC DNR SCORE	Multiple	OYSTER REEF CONSTRUCTION: SCORE facilitated 28 oyster reef building events and 32 oyster bagging events.	Continuous	2,397	GP, R, YT, HE

The SC DNR's South Carolina Oyster Restoration and Enhancement (SCORE) program coordinates oyster shell recycling and community-based restoration. During the 2015 ACSEC reporting year, SCORE utilized 1,149 individuals volunteering 2,092 hours of time to construct the bags for oyster reef builds. An additional 1,248 people donated 2,615 hours of volunteer time to construct oyster reefs in the Berkeley, Charleston, and Dorchester County areas. The total combined number of volunteers and hours for bagging oyster shell and reef building events was 2,397 volunteers donating 4,707 hours. A component of the SCORE volunteer events includes presentation or discussion on the impacts of stormwater on the Lowcountry's oyster reefs. The SCORE program not only involves the public and provides awareness of water quality and the need to recycle oysters, but the reefs themselves help to improve water quality as new oysters inhabit them and filter the water.



Water Quality Monitoring (Direct)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
SC DNR SCORE	Multiple	MONITORING: SCORE program utilized trained volunteers to gather water quality parameters at multiple sites. During this reporting year, 32 volunteers donated 250 hours to monitor water quality in the Tri-County area at twelve locations. Data can be found at: score.dnr.sc.gov .	Weekly - Monthly	32	GP, R, HE
Charleston Waterkeeper	College of Charleston	MONITORING: Charleston Waterkeeper implements a volunteer-based water quality monitoring program to conduct bacteria monitoring in the Charleston Harbor vicinity. In 2015, eight volunteers participated in monitoring 15 sites. Data can be found at: charlestonwaterkeeper.org	Weekly - Monthly	15	GP, B

Rain Barrel Sales (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
Rainwater Solutions, Clemson Extension, Carolina Clear	Charleston County, City of Goose Creek, Town of Summerville	RAIN BARREL SALE: ACSEC general public sale held at three centralized locations in the Tri-County; 501 barrels were sold at a discounted rate through partnership with Rainwater Solutions and community partners.	May 28-30, 2015	501	GP, R

Rainwater harvesting provides a platform to increase awareness of impervious surfaces, volume of stormwater runoff and potential pollutants that may be picked up with runoff when water is unable to infiltrate. Furthermore, harvested rainwater can be utilized for a number of household needs, primarily irrigation, to help conserve water. In order to raise awareness about the practice, the ACSEC partnered with Rainwater Solutions to provide Ivy Rain Barrels at a discounted price to the general public. Through this partnership, there were 501 rain barrels purchased in the Ashley Cooper region during the Spring 2015 sale. Funds generated from the ACSEC rain barrel program are utilized to support community-based rainwater harvesting education projects and awareness.



Native Plant Sales (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
SC Native Plants Society		NATIVE PLANT SALE: The biannual SCNPS native plant sale is open to the public and offers a variety of native plants for home landscaping.	February 226, 2015; October 24, 2015	500	GP, R,



Landscaping with native plants requires little to no fertilizer, and typically requires less irrigation, or no irrigation once established. Therefore, use of native plants in landscaping is considered an important best management practice for protecting water resources. The Lowcountry Chapter of the Native Plant Society sponsors two native plant sales per year; the plant sales are open to the public, free of charge, and provide an opportunity to purchase native plants for home landscaping that may not be readily available otherwise.

Yard Certification Programs (Direct)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Clemson Extension Service, Carolina Clear		Yard Certification Program: <i>Carolina Yards</i> is a yard certification program offered by Clemson Extension Service that encourages environmentally friendly gardening practices. In the Tri-County, there are 61 yards currently certified through the program, with 30 of those yards certified in 2015 alone.	Continuous	61	R
Surfrider Foundation	Charleston Chapter of the Surfrider Foundation	Yard Certification Program: <i>Ocean Friendly Gardens</i> is a yard certification program offered by Surfrider Foundation that encourages water conservation, permeability and retention in the home landscape.	Continuous	2	R



Pet Waste Bag Dispenser Programs (Direct)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Keep Charleston Beautiful, City of Charleston		Pet Waste Bag Dispenser Program: Keep Charleston Beautiful's "Pick Up After Your Pet" program has sponsored the installation of 100 pet waste bag stations with pickup bags in the City of Charleston; in 2015, the community used 283,200 bags as part of the program.	Continuous	283,200	P
Surfrider Foundation		Pet Waste Bag Dispenser Program: Since 2007, the Surfrider Foundation has sponsored the "Mutt Mitt" program which stocks pet waste pickups in dispenser sites on Folly Beach. In 2015, 30,000 bags were used by residents and visitors to the beach community.	Continuous	30,000	P

To encourage proper pet waste disposal and prevention of bacteria in stormwater runoff, multiple partners sponsor pet waste pickup and dispensing stations in the community. The bags and stations often contain signage on the benefits of pet waste pickup and tips for proper disposal.

Boater Pumpout Program (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Charleston Waterkeeper	SCDNR	BOAT PUMPOUT PROGRAM: Charleston Waterkeeper provides a sewage pumpout service to boat owners in the Charleston Harbor.	Continuous	76	B

In an effort to reduce the discharge of untreated sewage to our waterways, Charleston Waterkeeper, in partnership with SCDNR's Clean Vessel Act Program, offers a free sewage pumpout program to boat owners in the Charleston Harbor community. In 2015, the Charleston Waterkeeper's "no. 2" pumpout boat has helped properly dispose of 19,960 gallons of sewage from boat sanitary waste tanks through 310 pumpouts. Currently, the "No. 2" services 76 regular customers with 20 of those new as of 2015.



Youth Involvement Events (Direct)

leaD PrOVIDer	SuPPOrTIng ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Charleston County Soil and Water Conservation District	SC DNR; state-wide conservation districts	WORKSHOP: SC Envirothon; Youth educational week-long program at Sandhills Research Center in Columbia. Students study soils, water quality, aquatics, and other conservation topics.	May 1, 2015	126 (local)	YT



Youth Involvement Events (Direct)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	Target auDience
Clemson Extension, Carolina Clear	SC Sea Grant Consortium, Multiple	YOUTH INVOLVEMENT: 4-H2O “Exploring Lowcountry Waterways” Summer Camp for youth ages 10-13 and is a week long day camp emphasizing watershed stewardship and water resource protection.	June 15-19, 2015; July 20-24, 2015	42	YT



The 4-H2O Exploration Program is a statewide effort implemented by Clemson University Cooperative Extension Service and provides hands-on, experiential learning opportunities with emphasis on water quality, conservation and watershed stewardship. In the ACSEC region, the 4-H2O program is entitled “Exploring Lowcountry Waterways” and is available to children living in Berkeley, Charleston, and Dorchester Counties. During the two week-long sessions, students have the opportunity to learn about and travel through local watersheds, from cypress swamps to barrier islands. Activities include macroinvertebrate sampling, water quality testing, seining, kayaking, fishing, birding and much more. In the ACSEC region, Consortium partners play a vital role in the camps’ success with partnerships including the SC Sea Grant Consortium, SC Department of Natural Resources, Charleston County Park and Recreation Commission and others.



Youth Involvement Events (Direct)

leaD PrOVIDer	SuPPOrTing ParTner	acTIVITy	DaTe	number OF ImPacTS	TargeT auDience
SC Sea Grant Consortium	SC DNR, Clemson Extension Service	YOUTH INVOLVEMENT: <i>From Seeds to Shoreline</i> initiative involves students in germination and planting of <i>Spartina alterniflora</i> to emphasize the significance of the salt marsh and actions for clean water.	Continuous	959	YT

From Seeds to Shoreline is the first of its kind, student driven wetland restoration project in South Carolina. Led by SC Sea Grant Consortium and offered in partnership with SC Department of Natural Resources and Clemson Extension, *Seeds to Shoreline* is a school program aimed at engaging students in hands-on education that includes seed collection, germination, cultivation and planting of *Spartina alterniflora*, the dominant plant in a SC salt marsh. The program creates an opportunity to learn about the importance of salt marsh ecosystems and water quality while participating in a community service learning project with emphasis on environmental stewardship. Charleston Tri-County schools participating during the 2013-2014 school year included James Island Charter, Fort Johnson Middle, Cape Romain Environmental Education Charter School, James Island Middle, Mason Prep, Whitesides Elementary, James B. Edwards Elementary, Sullivan’s Island Elementary, Ashley Hall, University School of the Lowcountry, Garrett Academy, and Stratford High. collectively, the effort of these schools resulted in the transplanting over 3,000 seedlings to multiple local restoration sites.



SC Sea Grant Consortium: Stormwater Pond Research and Management Collaborative

Effective management of stormwater runoff is especially challenging in the S.C. coastal communities because of the low elevation, shallow water tables, continued rise in population, and in the face of climate change and sea level rise. Recent estimates indicate about 21,000 engineered ponds exist in the coastal counties alone, but almost no information exists regarding their effectiveness, long-term functionality, maintenance requirements, and potential impacts on the adjacent coastal landscape.

The S.C. Sea Grant Consortium has begun establishing partnerships and implementation of the S.C. Stormwater Pond Research and Management Collaborative program to help address these information gaps. This new Program brings together scientists and resource managers from across the state to further investigate and address challenges associated with stormwater ponds in the coastal areas.

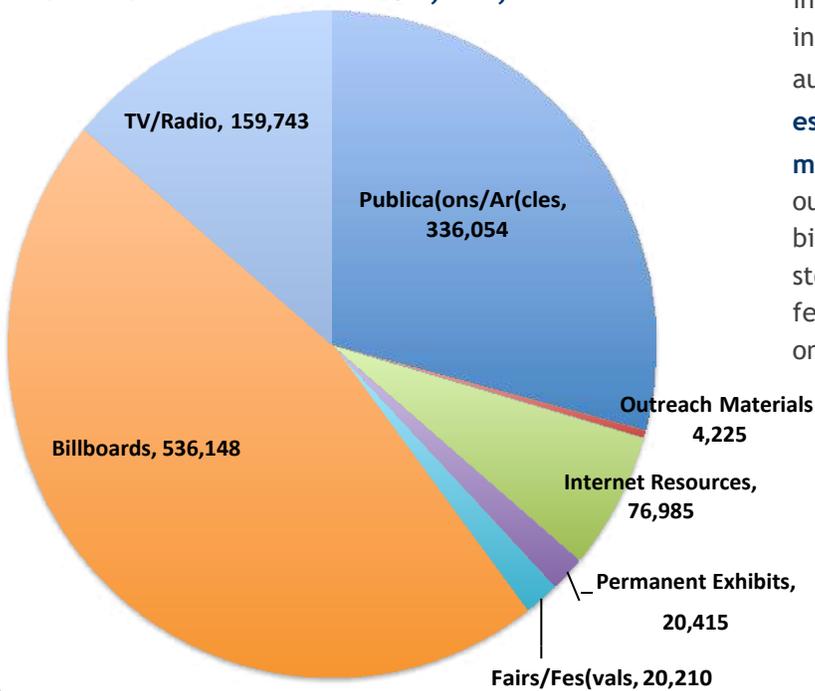
As part of this effort three products are nearing completion including: a) a geospatial inventory and classification of existing stormwater ponds; b) a State of the Knowledge Report, and; c) a strategy for public awareness and outreach messaging. Several ACSEC partners are involved with this Sea Grant-lead collaborative and research, including: the College of Charleston, the SC Department of Natural Resources and the ACE Basin NERR Coastal Training Program, Clemson Extension, and Clemson University.



Outreach Summary

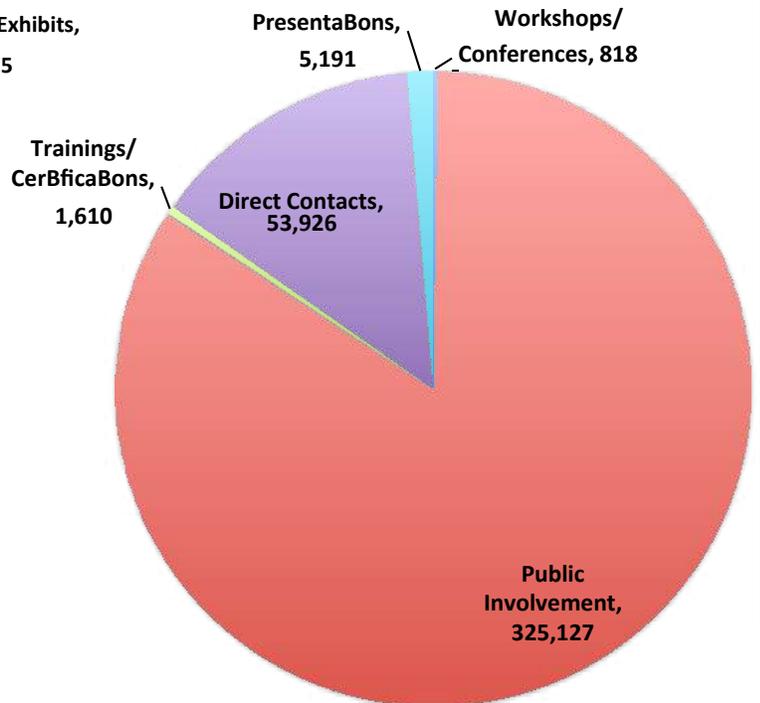
ACSEC program success is, in part, measured by outreach impacts and represent an estimate of individuals reached through direct and indirect education and involvement activities. **Total impacts for the year Seven reporting year (january 1, 2015-December 31, 2015) total an estimated 1,540,138 individuals.**

InDirecT meTHODS Summary, TOTAl eSTImaTeD ImPacTS: 1,153,780



The ACSEC employs indirect outreach methods, including mass-media, permanent exhibits, festivals, internet, and print publications, to reach diverse audiences across the community. **In 2015, total estimated impacts from acSec indirect outreach methods reached 1,153,780 individuals.** Indirect outreach highlights included the Carolina Yard billboard series, new permanent exhibits, the stormwater pond commercial, and publications featured in multiple local and statewide print and online news and magazine resources.

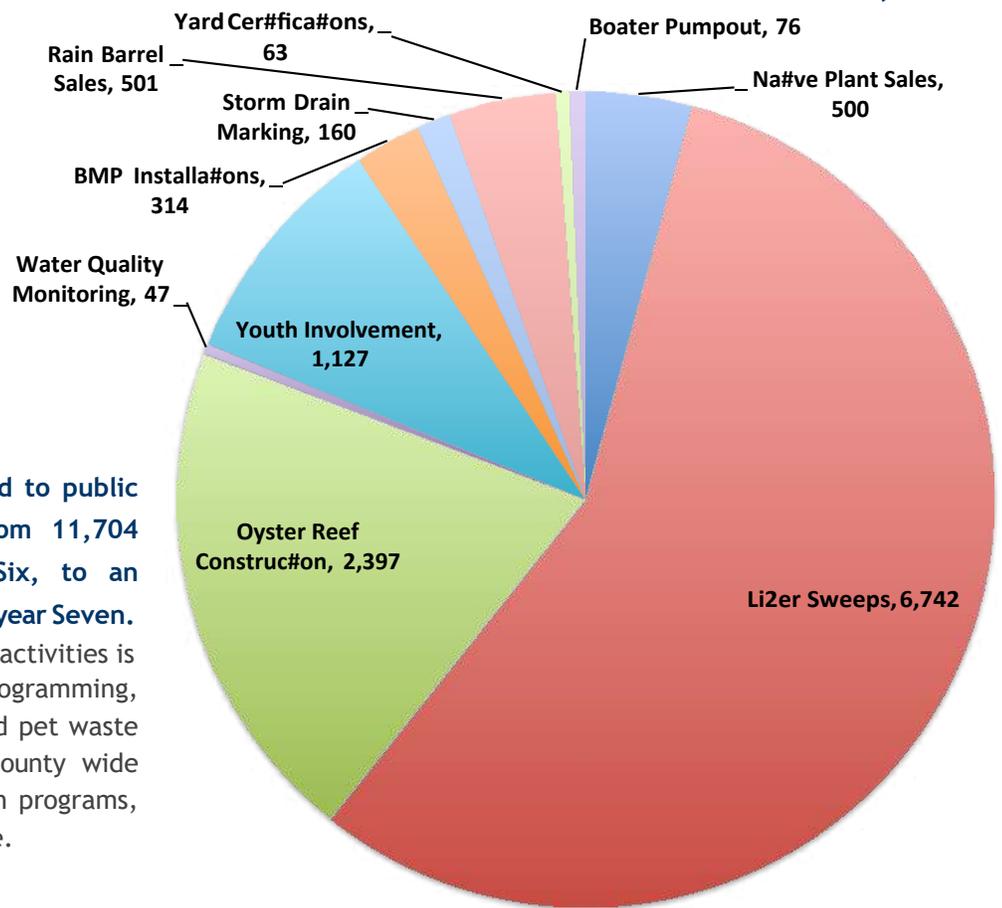
DirecT meTHODS Summary, TOTAl eSTImaTeD ImPacTS: 386,358



Outreach Summary

Direct method impacts include initiatives from direct contacts, presentations, training and professional development, certification courses, workshops, and public involvement opportunities. Public involvement is considered to be an activity that provided hands-on opportunities for target audiences to take part in stormwater management and pollution prevention. **estimated impacts in year Seven attributed to direct methods of outreach was 386,672.** This represents more than a 300% growth from impacts attributed to direct methods reported during Year Six; this significant increase in direct impacts is a result of growth in public involvement opportunities.

**Public InVOlVemEnT Summary*,
TOTAL eSTImaTeD ImPaCTs: 325,127**



In 2015, total impacts attributed to public involvement activities grew from 11,704 individuals reported in year Six, to an estimated 325,127 individuals in year Seven. This growth in public involvement activities is attributed to inclusion of new programming, including ACSEC partner-sponsored pet waste bag dispenser programs, a Tri-County wide rain barrel sale, yard certification programs, boater pumpout program and more.

* Pet waste bag dispenser program impacts, which totaled 313,200, were not included in this summary graph in order to show impact of all public involvement activities. Impacts of pet waste bag dispenser programs does contribute to the total estimated impacts of Public Involvement activities.

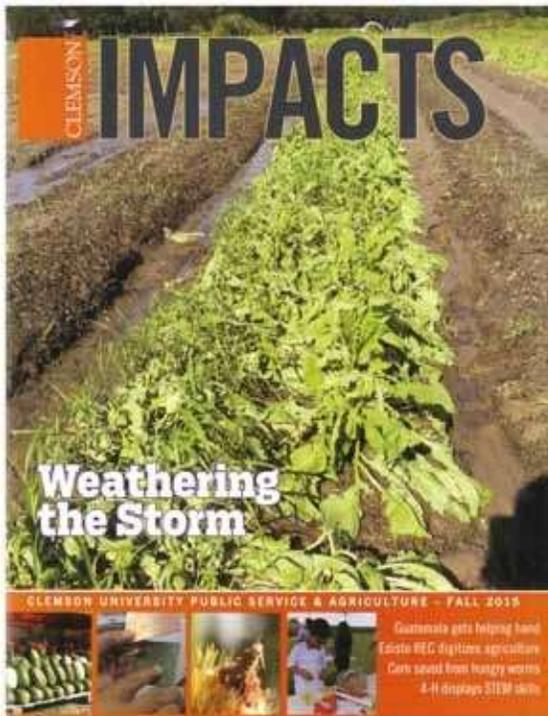
Articles

The Summer/Fall 2015 edition of *Naturally Kiawah* (Volume 34) featured an article penned by Clemson Extension agents Amy Dabbs and Kim Counts Morganello. The article focused on native plant use for the South Carolina Lowcountry; native plants require little to no fertilizer, and typically requires less irrigation. Use of native plants in landscaping is considered an important best management practice for protecting water quality.



Articles

The Clemson University *IMPACT* magazine, a magazine of the Clemson University's Public Service and Agriculture service, highlighted the ACSEC's Carolina Clean Watershed Restaurant program initiative as part of its Fall 2015 edition.



Extension helps eateries serve waterways a healthier diet

Scott Miller

No one wants to swim in fat, grease and oil, especially the marine life that are an integral part of Lowcountry cuisine and culture.

Pollutants from restaurants reduce oxygen in water and can impact populations of oysters, shrimp and all kinds of edible fish. That's if the waste reaches the waterways. If not properly disposed of, fats, oils and greases — or FOG — clog drains, creating costly problems for property owners and utilities and contributing to sanitary sewer overflows and untreated wastewater in local creeks, streams and marshes.

Clemson Extension is working to help reduce restaurant-related pollutants in Lowcountry drainage systems and waterways through the new Clean Watershed Restaurant Program.

"Extension is launching the program this year as FOG has thickened in Lowcountry marshes and drains," said Extension water resources agent Guinn Wallover. "Fat, oils and greases are showing up in storm drains leading into the marsh and contributing to expensive sanitary sewer repairs."

In Berkeley County, a family lived two weeks in a hotel while crews cleaned flooding in their home caused by a grease clog in the sewer line, said Doug Tompkins, deputy director of operations at Berkeley County Water and Sanitation.

"We are constantly cleaning lines. We have crews that just do that," Tompkins said. "Customers are paying for it. It's not a cheap proposition to keep these wet wells clean."

Wallover and fellow Extension agents Kim Counts Morganello and Harry Crissy can help restaurants incorporate proper equipment and best practices for managing FOG and other pollution. Restaurants also receive training and a myriad of resources for running clean operations, including tips on landscaping, composting and recycling. Restaurants that complete the Clean Watershed Restaurant Program receive door decals to advertise their environmental stewardship to customers along with recognition on the Carolina Clean Watershed Restaurant website.

"In Charleston, there is a green movement for restaurants to source food locally, buy local seafood. Our community is interested in going to restaurants that are environmentally responsible," Wallover said.

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Articles

The Post and Courier's "Home and Real Estate" section, included in the Sunday edition of the newspaper, featured two stormwater outreach articles. As part of this series, in January, Kim Counts Morganello provided information on the benefits on buffers along tidal creeks for water quality; in September, Morganello offered tips on best practices for using harvested rainwater on vegetables.



ACSEC 2012-2017 Strategic Plan: Education Timelines

Home Auto Repair

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Clean up engine spills and leaks using absorbent material	Residential	Storm Drain Marking Programs	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ <i>Ripple Effect</i>	Develop and Implement	Implement	Implement	Implement	Website hits/ <i>Ripple Effect</i> recipients
		Interpretive signage			Develop and Pilot	Implement	Store participation, feedback
		Outreach Material	Develop	Develop and Distribute	Distribute	Distribute	Store participation, ACSEC education programs including message & material
Dispose of used motor oil at collection stations	Residential	Mass Media	Develop and Implement				Number of Impacts
		Storm Drain Marking Programs	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ <i>Ripple Effect</i>	Develop and Implement	Implement	Implement	Implement	Website hits/ <i>Ripple Effect</i> recipients
		Outreach Material	Develop	Develop and Distribute	Distribute	Distribute	Store participation, ACSEC programs
		Interpretive signage			Develop and Pilot	Implement	Store participation

Appropriate Fertilizer Application

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Utilize zero to low phosphorus fertilizers in the Tricounty area	Residential	Storm Drain Marking	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ <i>Ripple Effect</i>	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Interpretive signage			Develop	Develop and Pilot	Store participation, feedback
		CYN Series	Develop and Pilot	Pilot	Implement	Implement	Participant feedback
		Outreach Materials		Develop	Pilot	Implement	ACSEC distribution at education programs
		Blue Business		Develop	Develop	Pilot	Business feedback
Reduce the frequency of fertilizer application	Residential	Storm Drain Marking	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ <i>Ripple Effect</i>	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Interpretive signage			Develop	Develop and Pilot	Store participation, feedback
		CYN Series	Develop and Pilot	Pilot	Implement	Implement	Participant feedback
		Outreach Materials		Develop	Pilot	Implement	ACSEC distribution at education programs
		Blue Business		Develop	Develop	Pilot	Business feedback

ACSEC 2012-2017 Strategic Plan: Education Timelines

Stormwater Pond Management

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Awareness Campaign: Only Rain Down the Storm Drain	Residential	Storm Drain Marking Programs	Develop and Implement	Develop and Implement	Implement	Implement	Program participants/ Drains marked
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Interpretive signage	Develop	Develop	Develop and Pilot	Implement	Host pond sites
		Pond Conference	Develop and Implement		Develop and Implement		Participation, feedback
		Thank You! Campaign	Develop and Pilot	Pilot	Implement	Implement	Number of Impacts
Utilize vegetative buffers to stabilize stormwater pond shorelines	Residential	Outreach Material	Develop	Develop and Pilot	Distribute	Distribute	ACSEC distribution at education programs
		Pond Conference	Develop and Implement		Develop and Implement		Participation, feedback
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		CYN Event Series/ Partner Programs	Develop and Pilot	Pilot	Implement	Implement	Participation, feedback, yard certifications

Commercial Landscaping Practices

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Appropriate Fertilizer Application ("Be Wise When You Fertilize")	Commercial	Blue Business			Develop	Pilot	Program participants, feedback
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Outreach Materials	Develop and Distribute	Distribute	Develop	Develop and Pilot	Materials distributed
		Interpretive Signage in Stores			Develop	Develop and Pilot	Store participation, feedback
Disposal of Yard Debris ("Only Rain Down the Storm Drain")	Commercial	Blue Business			Develop	Pilot	Program participants, feedback
		CES Website/ Ripple Effect	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Outreach Material	Develop and Distribute	Distribute	Develop	Develop and Pilot	Materials distributed
		Thank You! Campaign	Develop and Pilot	Develop and Pilot	Implement	Implement	Number of impacts
		Interpretive Signage in Stores			Develop	Develop and Pilot	Store participation, feedback

ACSEC 2012-2017 Strategic Plan: Education Timelines

Restaurant Fats, Oils, and Grease Management

Focus Area	Audience	Strategy	Year 1	Year 2	Year 3	Year 4	Evaluation Year 5
Maintain grease trap	Commercial	Blue Business		Develop	Pilot	Pilot	Program participants, feedback
		CES Website/ <i>Ripple Effect</i>	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Outreach Materials	Develop and Pilot	Pilot	Distribute	Distribute	Materials distributed
Educate employees about proper FOG management	Commercial	Blue Business		Develop	Pilot	Pilot	Program participants, feedback
		CES Website/ <i>Ripple Effect</i>	Develop and Implement	Implement	Implement	Implement	Website hits, <i>Ripple Effect</i> recipients
		Outreach Material	Develop and Pilot	Pilot	Distribute	Distribute	Materials distributed

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.....

and

Ashley Cooper Stormwater Education Consortium Representatives



Carolina Clear is a program of Clemson University's Public Service Activities. Information is provided by Faculty and Cooperative Extension Agents. Clemson University Cooperative Extension Service offers its programs to people of all ages, regardless of race, color, sex, religion, national origin, disability, political beliefs, sexual orientation, marital or family status and is an equal opportunity employer.

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ACSEC meeting at the Clemson University Coastal Research and Education Center's "Ed Shed." ACSEC Community and Education Partners discuss education strategies and future programming efforts.



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